

RECORD OF THE PERFORMANCE BASED NAVIGATION WORKSHOP  
HELD AT THE MINISTRY OF TRANSPORT, WELLINGTON,  
25 JUNE 2008

1 The Ministry of Transport (MOT) and the Civil Aviation Authority (CAA) hosted a workshop on Performance Based Navigation (PBN) for the aviation industry on 25 June 2008. The attendees are listed in Annex A.

2 Glen-Marie Burns, Manager Aviation Team in the Ministry welcomed participants, noting that the workshop was a joint MOT/CAA initiative arising from industry comment (notably Air New Zealand and the Aviation Community Advisory Group). She particularly welcomed the representatives from the Civil Aviation Safety Authority of Australia (CASA) in light of Australia's prior experience with PBN and the obvious synergies from aligning each country's PBN system to the extent possible.

3 The first part of the workshop involved a series of presentations as follows:

- MOT/CAA, presented by Graeme Harris, General Manager Personnel Licensing and Aviation Services Group at CAA. Graeme explained that there was an expectation that New Zealand develop a 'PBN Implementation Plan' by 2009 in accordance with Resolution A36/23 of the International Civil Aviation Organisation's Triennial Assembly in September 2007. (<http://www.icao.int/icao/en/anb/fls/programme/pbn/Docs/A36-23%20from%20Draft%20Bound%20Volume%20Resolutions.pdf>). While elements of a PBN system were operational in New Zealand, a holistic view was necessary, as PBN was just one element of the framework of rules, standards etc to enable safe aircraft operation. A collaborative effort and common understanding of the technical and regulatory aspects of PBN implementation within a cohesive framework would benefit both government and industry stakeholders. Progress in adoption of PBN and development of an implementation plan could occur in parallel.
- CASA, presented by Ian Mallett, Team Leader Aerodromes CNS-ATM and Chair of the ICAO Asia-Pacific Regional PBN Task Force. Ian noted that almost every element of a PBN system was totally dependent upon receiving signals from the US Global Positioning System (GPS) via satellite. Thus the opportunity for aircraft equipment to also be capable of receiving signals from the European 'Galileo system would reduce vulnerability.' PBN was important in helping deliver ICAO's global ATM concept, and there needed to be integration of other ICAO standards (e.g. Annex 14 –Aerodromes) with the developing PBN standards which were still restrictive over aircraft separation. He emphasised several safety aspects related to PBN, both positive and negative:
  - PBN includes the capability for vertical guidance, but airline and flightcrew confusion as to the 'mechanics' was a potential safety issue;
  - Data errors were possible and thus States' aeronautical information systems (AIS) needed to be 'perfect' and regulated;
  - A PBN approach with vertical guidance (APV) to an airport was eight times safer than a traditional Non-Directional Beacon (NDB) circling approach, and a stable, straight-in approach was 25 times safer.

- Australia had two decades of experience with PBN, but was 'still learning'; and
- the major impediment to the implementation of PBN was a shortage of qualified approach procedure designers – Australia only had two and on average it took four months to develop and authorise an approach procedure.

Ian noted that by using PBN through the Automatic dependent surveillance broadcast system (ADS-B) Australia would achieve the equivalent of continent-wide radar coverage for some \$A25m vs. approximately \$A2b for radar coverage.

- Airways Corporation presented by Greg Atkins, Service Improvement Manager at ACNZ. Greg supported the use of PBN, noting that the Airways Oceanic Control System (OCS) launched over a decade ago had delivered 85-90% of efficiency improvements available for aircraft using current technology, but these benefits could all be squandered if the domestic area and terminal control systems were inefficient. Thus in 2004 Airways had launched its domestic "Required Navigation Performance" (RNP) project, terminal control services were identified as the area where a more strategic approach management approach based on PBN could deliver the most benefit. Airways did not think it necessary for New Zealand to 'reinvent the wheel' as there was considerable guidance and experience available through ICAO, the United States Federal Aviation Administration, and from CASA. While Airways facilitated and led an Industry agreed ATM plan for 2015+, it supported the preparation of a State implementation plan using the information already developed by Industry, to accelerate the adoption and benefits that PBN could provide.
- Air New Zealand (1) presented by David Morgan, General Manager Airline Operations and Safety. David supported the use of PBN and spoke to the potential environmental benefits that PBN could deliver in reduced distances, fuel burn, emissions and noise. He also illustrated how the sharp rise in oil prices was driving Air New Zealand's decisions to use more fuel-efficient aircraft, and that PBN would contribute to future fuel savings.
- Air New Zealand (2) presented by Bob Fletcher, Manager Operations Support. Bob traversed the advantages of PBN and the necessity for a State plan backed by the appropriate regulatory system. He referred to the early results of fuel and emissions savings through the RNP trials at Brisbane airport and depicted an 'ideal' trans-Tasman crossing using PBN elements such as RNP and Area Navigation (RNAV). He noted that the airline was participating in 'tailored arrival procedures' at San Francisco for continuous descents and that in August it would conduct a trial flight Auckland to San Francisco 'using' PBN (through equivalent flight techniques in the current approach and area control zones) to measure the distance and fuel savings that might be expected in future. He closed by saying that Air New Zealand and the country received economic benefits from its 'green' image and it was important that New Zealand be seen to be in the 'top tier' of countries addressing airspace efficiencies and environmental benefits.

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- Aviation Community Advisory Group (ACAG) presented by Paul Drake of the Royal New Zealand Aero Club. Paul indicated that ACAG strongly supported the use of PBN and the development of a State plan. ACAG members were currently working on an economic analysis of the potential benefits of PBN use in New Zealand. Paul indicated that ACAG members would want to be involved in the next steps.

4 The meeting then discussed the key points of the presentations and next steps.

5 Capt Stuart Julian of the International Federation of Airline Pilots' Associations (IFALPA) in supporting the use of PBN commented that the principal issue for pilots was in 'managing energy' and avoiding unnecessary use of thrust during the descent phase of flight. . Nevertheless, a level segment on the approach was necessary to slow the aircraft for the landing configuration, and this had to be borne in mind when tailoring approach procedures. It is important not to reduce safety or increase risk in implementing PBN. He endorsed Ian Mallett's remarks about stable approaches being considerably safer and in respect of PBN implementation in New Zealand noted that non-precision instrument approaches were eight times riskier than precision approaches and thus eliminating non-precision approaches should be a priority.

6 Bob Fletcher (Air New Zealand) agreed with the IFALPA comments on stable approaches, and with Ian Mallett's concern about the shortage of approach procedure designers, with only two each in Australia and New Zealand, so design would need prioritisation, e.g. for Air New Zealand some airports in the South Pacific, but other aspects of PBN are simpler to implement.

7 Ian Mallett (CASA) reaffirmed the difficulties in designing approaches, and commented that even if the CAA did employ new people for work on the regulatory aspects of PBN, it would not advance procedure design. ICAO expected 30% of a State's approaches to be designed by 2010 which was impossible in the current circumstances. He also noted that second-level aircraft (e.g. turboprops) are also capable of using PBN but not necessarily certificated as such by the manufacturer and that was another impediment to reaping the benefits of PBN.

8 There were other comments on technical aspects and Bob Fletcher suggested that the discussion not be bogged down. The fact was that the CAA needed more resources to scope and develop a regulatory environment for PBN including rules. The airline was happy to assist with expertise but the crunch was more funding. Likewise the industry as a whole was happy to assist but the 'building blocks' were needed.

9 Graeme Harris (CAA) welcomed the positive comments and support for moving forward on PBN. He noted that the work might be sourced from the CAA's Government Relations area. Simon Clegg (General Manager Government and International) explained that the CAA had received extra funding for policy capacity and that PBN supported the goals of the New Zealand Transport Strategy (NZTS). CAA needed an airspace/environment policy function and needed to develop a government strategy with MOT and the New Zealand Defence Force (NZDF). Graeme Harris indicated that CAA would be recruiting within two months and would like to develop Terms of Reference for the work.

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10. Bob Fletcher reiterated Air New Zealand's willingness to assist CAA. David Rollo (Group Manager ANS Delivery, ACNZ) supported the necessity of a national plan and common understanding. Industry input into the plan would be essential and some aspects of the plan might be outside the role of the regulator. Graeme Harris commented that CAA had a broader role to deliver NZTS objectives, but needed to collaborate with the industry to deliver the appropriate regulatory environment to enable PBN progress. David Rollo agreed that all parties must understand their respective roles.

11 Glen-Marie Burns (MOT) noted that the government's budget for the financial year to 30 June 2008 was set. The budget process typically commenced in December with initial bids being made to Treasury and a case for resourcing of PBN implementation would have to be made by CAA and MOT at that time for funding in the 2009/10 year. David Rollo (ACNZ) queried the resources needed to develop the national plan and regulatory environment. Simon Clegg (CAA) indicated he was considering a manager for ATM plus an environmental policy person.

12 Capt Stuart Julian (IFALPA) considered that New Zealand aircraft operators would derive benefits from PBN more quickly and economically through use of RNAV technology rather than RNP. Greg Atkins (ACNZ) agreed, saying that the Airways plan was for RNAV with specific RNP approaches only where appropriate. Steve Kelly (Navigation Services Manager, Air New Zealand) commented that even conventionally equipped aircraft would benefit from the more efficient traffic flows afforded by PBN and this had been illustrated in the Brisbane RNP trials.

13 Simon Clegg (CAA) said that the policy challenge was to translate the technical aspects into plain language for outside consumption in seeking resources and Glen-Marie Burns indicated that in her experience that was unlikely to be a significant issue.

14 Glen-Marie Burns then drew attention to the CAA's suggested structure for a government-industry process to take PBN forward and this was discussed. Ian Mallett (CASA) recommended that within the proposed structure, New Zealand needed to keep actively involved in the ICAO Regional PBN Task Force. Attendees agreed on the structure (attached) and the following 'next steps':

- Meeting notes and presentations would be distributed to all;
- CAA would commence recruitment action;
- MOT/CAA would seek volunteers from the industry organisations to be involved.

15 In closing the meeting, Glen-Marie Burns thanked industry attendees for their interest, and the presenters. She stated that MOT/CAA were committed to the process now being commenced and that the Minister of Transport and Minister for Transport Safety had been briefed.

<b>PBN WORKSHOP REGISTER</b>	
<b>NAME</b>	<b>ORGANISATION</b>
Capt. David Morgan	Air New Zealand Ltd
Bob Fletcher	Air New Zealand Ltd
Capt. Robert Guard	Air Nelson Ltd/Air NZ Link
Steve Kelly	Air New Zealand Ltd
David Rollo	Airways Corporation
Greg Atkins	Airways Corporation
Dave Watson	Aviation Industry Association (Inc)
Francis Kuriger	Air New Plymouth/Aviation Industry Association (Inc)
Capt Roland Griffin	Jetconnect Ltd/Qantas
Simon Dore	Vincent Aviation Ltd
John Beckett	Board of Airline Representatives New Zealand (inc)
Dennis Hosking	Wellington Airport/NZ Airports Association
Paul Drake	Royal New Zealand Aero Club (Inc)
Sqn Ldr Dave Forbes-Dawson	NZ Defence Force
Fg Off Simon Costello	NZ Defence Force
Ray Abbott	NZ Defence Force
Ian Mallett	Civil Aviation Safety Authority of Australia/Chair ICAO Regional PBN Task Force
Hugh Faris	New Zealand Airline Pilots' Association (inc)
Capt. Stu Julian	International Federation of Airline Pilots' Associations
Barrie Malloch	ATCANZ Ltd
Chris Read	Queenstown Airport/NZ Airports Association
Dave Park	Astral Ltd/NZ Airports Association
Ross Crawford	Civil Aviation Authority Member
Graeme Harris	Civil Aviation Authority
Ron Doggett	Civil Aviation Authority
Mark Hughes	Civil Aviation Authority
Simon Clegg	Civil Aviation Authority
John Lanham	Civil Aviation Authority
Mike Haines	Civil Aviation Authority
Merv Falconer	Civil Aviation Authority