ADS-b nATIONAL nETWORK pLANNING TASK FORCE;

Meeting #1

## **MINUTES**

## Thursday 26 July 2012 09:30-16:15

## Commodore Hotel; Christchurch

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| Lew Jenkins representing the Airways Executive Board welcomed everyone and introduced Geoff Hounsell, Manager of Strategy and Development.  Geoff overviewed the intentions and objectives of having an Industry Task Force, and introduced Howard Anderson Project Manager for Airways ADS-B Planning. |
| Howard thanked everyone for travelling and attending this meeting. The offer for industry participation was sent out to the heads of representative organisations.  Not all could say who they wished to have involved as participants, or be able to release them to attend this meeting, so consequently the project will send all those organisations (and their participants) the relevant meeting materials, agendas and minutes.  The meeting was expected to be entirely about learning – what is ADS-B, what is Airways’ experience - its motivations and reasoning. A view of World and Regional ADS-B activities. TF members will be invited to bring to the next meeting (October 3) the organizational responses: views, issues, comments and forward thinking and/or planning.  No questions were raised in response to the ‘ADS-B 101’ paper, although a correction was made regarding the reference to a low end 2k Euro Filser transponder – that in fact does not include GPS at that price.  ADS-B principles and variations were described, ADS-B OUT, ADS-B IN, and capability of Multilateration systems to deliver ADS-B. Covered the agreed ICAO standards, the Asia-Pacific agreements, the fit with ICAO ASBU commitments, SASP & OPLINKP Panels/APANPIRG conclusions, and the APAC Regional TF.  Also consistency between those plans and Airways Surveillance Policy and Strategy document of 2010 - and the recent work on CAA’s National Airspace and Air Navigation Plan.  An overview of our view of Australia which has shown the leadership with ADS-B, their experience, status and forward plans.  Conceptually the current dependence for current radar surveillance in controlled airspace (mode a/c transponder move to change to Mode S) compared with the future dependence for controlled airspace - being GPS + Mode S/ADS-B transponder.  Two key points:   1. Airways are convinced that whatever outcome with ADS-B it is critical to be aligned to the standards and requirements established in Australia. 2. Importance for industry to note the commitments in the U.S. and in Europe, especially as avionics manufacturers are ramping production up, and the noticeable increase in information – but this can be misleading - as American views often assume the rest of the world is like the U.S.: WAAS and UAT being available - and that everyone will meet the higher (cost) accuracy and more complex DO260B standard for ADS-B OUT. Hence there are a number of pitfalls to look out for when considering the U.S. views or advice.   Greg Dunstone of AirServices Australia has led Australian Surveillance for decades and ADS-B since 2001. He remains chair of the ICAO Asia Pacific ADS-B Study and Implementation Task Force. Greg gave the first of two presentations which led to a number of questions and clarifications. This presentation covered Australian ADS-B history, current status, issues and developments. It was noticeable that CASA have set ADS-B regulation through to 2017.  These include:   * Since regulation in 2007 non-compliant ADS-B must be disabled before flight (no bad data transmitted). * AIC issued in March 09: Airlines operating above FL280 should have already started equipment projects. * AIC issues June 11: Reinforced that without ADS-B, access above FL280 is unlikely. * WEF 9/2/12 All new registrations must have Mode S Flight ID, and all Mode S DARPS must be in accord with ICAO SARPs (no bad data transmitted), * WEF 6/2/14 Forward Fit specified: ADS-B in all IFR aircraft; and new aircraft (or new/replacement transponders) must be Mode S plus ADS-B capability (The Final Rule imminent at Jul 12), * WEF 6/1/16 All IFR flights within 500NM North and East of Perth shall have ADS-B OUT, * WEF 8/12/16 Forward Fit requirement for SA Aware GPS for ADS-B, and * WEF 6/1/17 All IFR aircraft in Australia must have ADS-B OUT (The Final Rule imminent at Jul 12),   Greg handed out some CASA booklets on ADS-B (a later version is available online at: <http://www.casa.gov.au/wcmswr/_assets/main/pilots/download/ads-b.pdf>  Which is supplemented by very detailed information from the AirServices Australia link: <http://www.airservicesaustralia.com/projects/ads-b/>  Questions to Greg included clarification about the Australian implementation and the effects on GA/VFR. |
| Airways has been involved in ADS-B research and analysis since 2004.  In 2005 an ADS-B trial was conducted in Christchurch which compared the performance of ADS-B with radars. While ADS-B technology looked good, the low fitment of avionics in New Zealand at that time meant it was impractical to consider it as a replacement for radars in 2006 - when the radars were due to be replaced. Consequently the radars were upgraded by changing the electronics systems with Mode S.  That upgrade meant the radar life was extended to 2021, which has become a focus for Airways as a critical motivating event. Airways 2006 upgrade has given sufficient time to plan and implement the alternative ADS-B sufficiently in advance of 2021 to allow for a system operations settling in period.  To enable a sufficient period for the critical avionics fitment, it has been widely considered that a four-year period from 2014 to 2018 would allow for this.  So by 2014 industry must have a clear picture of what types & standards of avionics systems are required, and when. The steps taken by Australia are an excellent indicator of how to implement, regulate etc., so our CAANZ colleagues have been learning from CASA and have included ADS-B in the National Airspace and Air Navigation Plan.  It will be essential to have a clear picture of timeframes, regulation by CAA, by late 2014. Any later and there will be significant push on the 2018 and 2021 dates, which could lead to New Zealand being forced to add the cost of a radar network replacement to industry, or resulting in New Zealand being decades behind the rest of the aviation world.  Initial thoughts for a National ADS-B network are to use existing SSR sites, with a redundant site that would duplicate the coverage. This would ensure existing surveillance but greater availability and continuity.  In addition, the ADS-B being received by the Queenstown Multilateration system (high sites) will be available, and seven new sites are to be added to that system which will give Multilateration coverage to low levels over Dunedin and Invercargill, with extensive ADS-B coverage beyond MLAT.  From the radars/MLAT-ADS-B base, several additional pairings are possible - that will improve coverage for various reasons: e.g. Kaitaia & Kerikeri could extend this surveillance an additional 100NM for the Asia, Pacific routes out of Auckland, and enabling close separations for flights to achieve optimum levels etc.; Gisborne and Napier would pair to give lower coverage on the East Coast; Hokitika and Westport an additional 100NM cover for Trans-Tasman flights from Wellington and Christchurch. Tasman Bay by the Egmont and Mt. Campbell sites.  Predicted coverage diagrams have been prepared for these individual sites for 3000ft, 10,000ft, and 30,000ft. |
| Greg Dunstone presented an International update. As Chair of the Asia Pacific SITF, he was able to show especially the current deployments and plans for Asian & Pacific - and Bay of Bengal States, and also status of the U.S., Canada and Europe.  ADS-B is not new. Use in the Gulf of Mexico in 1994, Alaska in 2001, and Australia Trials 2001-04, and operations since 2006.  ICAO documented the standards for ADS-B in 2006.  In the Asia Pacific region, agreement has been reached on several ADS-B aspects including 1090ES datalink, the standards and GNS requirements. APANPIRG has accepted that all States should adopt ADS-B in the near term., and have produced other statements such as recommending data sharing between states as appropriate.    So that States do not need to ‘reinvent the wheel’, APANPIRG has produced templates to assist States to proceed quickly with the necessary regulation and legislation.  The Australian Ground Stations and ATM system require ADS-B transmitted data to be in known formats. RTCA DO260, DO260A and DO260B formats are all acceptable. DO260A and B were established to add other useful data in the ADS-B messages, mainly driven by the EU and the U.S. C129 with SA awareness plus a Horizontal Position Limitation (accuracy output - HPL) is sufficient for the interim.  Greg identified a range of technologies available, including an FAA proposal for low cost, low power transponders for aircraft like gliders and balloons.  A small GPS chip is expected to be manufactured into a single GPS/ADS-B transponder box, reducing costs. |
| The coming requirements for aircraft that will be used for IFR in New Zealand in an RNAV/ RNP environment (2015+) will require certified GPS. C129 conditional acceptance, future goal C145/146, which is a suitable fit to be used in ADS-B.  Owners and operators are encouraged to start dialogue with their avionics suppliers as to the best fit for their operation.  GNSS planning and ADS-B planning each need to pay close attention to the other.  One item for future consideration is multi-constellation processing in GNSS. Galileo, Compass, and others are yet to reach operational status. No GNS / Flight Management systems have been produced, standards are yet to emerge, but the 2015 Boeing 737 Max is expected to have a capability.  Comment on claims of major sunspot activity (Scintillation) forecast for 2013. A rational paper on this is included in the handout material.  A note regarding the U.S. company ‘LightSquared’ which had broadcast plans that would have seriously jeopardized the GPS network. While not completely out of the picture, this threat has been largely thwarted.  Rules are required early to make it illegal to transmit bad or erroneous ADS-B data.  ICAO requires states to mandate Mode S. In New Zealand that may be tied into a Mode S / ADS-B OUT requirement at defined stages.  Early upper airspace implementation is possible once the Australian Upper airspace mandate is effective (2013) - as most NZ jet operators will have that fitment.  An appropriate level for New Zealand could vary from the FL290 set in Continental Australia to perhaps FL180 or FL150.  For ADS-B to be implemented, the ATM automation system(s) must be modified to accept and process the data. Because of Airways needs to accommodate ADS-B and Multilateration in the 2013 expanded Queenstown area system, this work has already been done by Airways Software Engineering. Other states are not so lucky and have to buy upgrades from ATM System vendors.  Serious consideration of the NZ Avionics industry capability is appropriate. The New Zealand Aviation Federation are a link to Avionics groups so they will be the priority pathway to get dialogue going. Particularly, information on New Zealand status and plans needs to be spread, and we need feedback. Having enough LAMEs qualified, supplier issues, products, standards, fitment and certification issues.  **Next Meeting:**  The next meeting will be Wednesday 3 October 2012, Venue TBA. |
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Attendance

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| Meeting #1; 26/07/2012 | |
| Aviation Industry Association | Irene King; Chief Executive; |
| Aviation Industry Association | Quilton Beale; |
| Air Freight NZ Ltd | Peter Thomas |
| Air New Zealand | Phil Hickman; |
| Air New Zealand EAG/NZM/AirNS | Mark Sutherland; Fleet Mgr ATR72; |
| Air New Zealand | Kelvin Sissons; ATR 72-600 intro Mgr; MtCook Airline |
| Airports Assn NZ | Evan Pearce; Director/Auditor; |
| Air Services Australia | Greg Dunstone; Surveillance Team, |
| Airways ADS-B Projects | Howard Anderson; ANS Specialist; Strategy & Development; |
| Airways Strategy Mgmt | Geoff Hounsell; Manager Strategy & Development ; |
| Airways Requirements | Andy Alford; ANS Requirements Team Leader; |
| Airways ATM SW | Brett Nicolls; ATM Software Engineer; |
| Airways Surveillance | Rex Wilson; Surveillance and Comms; |
| Airways Surveillance | Alistair Falconer; Com & Surveillance Team Leader; |
| Airwork | Steve Stanaway; Projects Manager; |
| CAANZ | Ray Harvey; Civil Aviation Authority; |
| CTC Aviation | Rex Stentiford; Snr Grnd Instr; |
| Jetstar | Richard Falkner; (Acting) Manager Flying Operations (NZ); |
| NZ Aviation Federation | Barry Lennox; |
| NZGA | Max Stevens; Executive; NZGA; |
| RNZAF | Sqn Ldr Simon Eichelbaum; NZDF |
| Sport Aircraft Assn of NZ | Tony Schischka; |
| Virgin Australia | Kurt.Frauenstein |
| Airways Executive | Lew Jenkins; Acting Systems Operator GM |

Apologies:

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| MOT#1 | Nigel Mouat; Principal Advisor; |
| MOT#2 | Richard Cross; Advisor; |
| Aviation Community Advisory Grp | Mike Groome; General Manager; Taupo Airport & ACAG; |
| Flying NZ | John Brunskill; President; |
| NZGA#1 | Trevor Mollard; |
| NZGA #2 | CJ McCaw; |
| Airways Networks | Vaughan Hickford; Network Team Leader; |
| Airways Technical Services | Kevin Thorpe; Tech & Maint Services; |
| Airways Finance | Mark Loveard; Airways CFO; |
| RNZAF | Wing Cdr Stuart Mackenzie; |
| RNZAF | Flight Lt Clare Flanagan; |
| Airways Policy & Stds | Mark Stretch; Manager Policy and Standards; |
| Airways Surveillance | Herman Wezenberg; Surveillance engineer; |
| Air New Zealand | Phil Kirk; |
| AOPA | [Stuart Clumpas; Chairman;](mailto:[mailto:stuart@clumpas.co.nz]) |