ASIA-PACIFIC

19 November 2009

Airways New Zealand First SkyLine Operator in the World to Use a Fully Integrated Fused Track System

Airways New Zealand is currently implementing world-class surveillance technology that will make it one of the first nationwide ATM systems in the world to use fully fused radar/Multilateration/ADS-B tracks for controlling traffic. This means it will combine ADS-B, Mlat and radar data for en route and terminal separation, as well as improving aircraft tracking precision, which will help to deliver further improvements in fuel usage and emissions to Airways customers.

Airways New Zealand's SkyLine software and requirements teams are integrating Multilateration and ADS-B data into SkyLine, to be available to be fused with radars into the normal System Track per aircraft, or to provide Single Sensor or Emergency Bypass tracks. In addition the additional data available from Mode-S radars is being integrated into SkyLine.

In phase 1 of the project the data feed from the radars was changed from the old 'Aircat 500' format into a Eurocontrol ASTERIX 48 format, which supports the new Mode –S data (like TCAS resolutions, pilot Selected Altitude, and many other aircraft parameters) as well as providing greater precision.

The first half of phase 2 saw the entire surveillance infrastructure within SkyLine changed from an older Eurocontrol standard format – ASTERIX Cat.30, to a new standard ASTERIX Cat.62. This standard supports the new Mode-S data, Multilateration and ADS-B data from the new ERA-supplied systems, which are operational in Auckland and also being installed in Queenstown. This upgrade is the biggest single change to the SkyLine system since 'going live' in 2003. "It's like changing the bogies on a train, whilst the train is rolling, without anyone noticing" said project manager, Andy Alford. "Within the SkyLine laboratory we have Multilateration and ADS-B data fused with radar, providing a single system track per aircraft, as well as providing single sensor and emergency bypass tracks. Currently we're working on carefully optimizing this fusion, plus ancillary activities like system monitoring and control."

ATAC Plotting and Reporting

As part of new surveillance data, SkyLine now feeds tracks and flight plan data to a new plotting and reporting system developed by ATAC in America. The system allows advanced operational analysis reporting and track and flight plan plotting, and means the possibilities for performance reporting and data analysis are now almost limitless.

"Prior to this upgrade, the data analysis provided by existing tools was static; there was a limit to what it could tell us and the parameters around it were set. This new system is completely dynamic. Its ability to generate specifics –runway usage, trajectory modeling, number of aircraft in a sector at any given time - allows us to compare significant changes in traffic flow as well as giving a 'whole of service' overview of how we operate. The potential for this system to add significant value to our business is huge."

'BirdWatch' is the new reporting tool and ''GRADE' provides the graphical representation. Both have been developed for NZ airspace by a US Company, ATAC. Airways is the first user outside the FAA. The upgraded systems allow for dynamic use and specific interpretation of track, flightplans and other operational data. For example, when technical coordinators are providing Search and Rescue (SAR) information or investigating an incident, they can drill down to find out the last known position of an aircraft; what altitude they were flying at any given point; they can access picture or digital terrain maps and download what they need in a matter of seconds. The upgrades also have wide implications for the delivery of value-added services to our customers.

Airways TC Dave Griffiths says the new ATAC SAR tool has proved its worth already. "ATAC can load and display data over much longer time periods, which is perfect for tracking missing aircraft. The last known position functions helps the TCs identify the lat/long of missing aircraft and this tool has proved invaluable in two recent aircraft accidents."

The success of this new technology is testament to 'Airways' collaborative relationship with ATAC,

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which has allowed ATAC to customize and enhance the 'BirdWatch' capabilities to meet the specific needs of the NZ market.

"The successful deployment of BirdWatch is testament to a great product and a great sense of teamwork and collaboration between Airways and ATAC" said Scott Simcox (President ATAC Corporation). "We look forward to continuing and expanding our relationship with Airways as they implement their Vision 2015 work programme."

"The new system has delivered a level of versatility that allows us to access a range of information and delve into a greater level of detail than ever before. We can look at a particular area of airspace and how traffic is flowing within it in order to determine if we need to make changes. We can also be very specific about what data is shown on screen: we can chose location; aircraft type; aircraft ID; specific navigation aids; and we can compare the aircrafts filed flight plan to actual route flown. We can then use that data to ensure pilots are flying the best route available, which in turns means we can contribute to our customers' fuel and emissions savings."