

Recent ATM achievements

SkyLine ATM system implemented

- Increased system capacity
- Short Term Conflict Alert
- Minimum Safe Altitude Alert
- Restricted area infringement alert

Hamilton tower replaced

GNSS (Global Navigation Satellite System)

- NPA GS, RO, TG, KT, KK, WR (Non Precision Approaches)
VNAV AA, WN

Oceanic 30/30 separation

- Airspace capacity
- Efficiency
- HF radio (Oceanic communications)
- Life cycle

Under action

VHF Radio replacement

- Life cycle

RADAR modernisation

- Life cycle
- Mode S capability
- Enhanced performance and integrity

CDM (Collaborative Decision Making)

- Pilot project with Air NZ
- Real time data exchange
- Long term extension to air ground via ATN

Flow Management

- Balance peak traffic demand at AA and WN
- Efficiency, reducing airborne delays
- Further development will lead in to CDM.

Aerodrome Control Simulator

- Reduce on the job training

GNSS (Global Navigation Satellite System)

- NPA (Non Precision Approaches) for KT, KK, WR, OH, RU
- CAD (Constant Angle Descent) all NPA
- Baro VNAV approaches. ILS like
- approaches AA, WN and CH

Ohakea (OH) services from Christchurch Centre

- Cost efficiency

Future technology overview



Satellite-based CNS Systems

In the next fifteen years, satellite based Communication, Navigation, and Surveillance (CNS) systems will be introduced. Ground-based systems will be retained where they are cost-effective and where it is necessary to provide independent backup.

Communications

Voice communications will be replaced by data communication for those applications where safety will be enhanced, and when supported by cost-benefit analysis. HF voice radios have recently been replaced and a VHF voice radio replacement project is under way to ensure the ongoing integrity of voice communications.

AMHS (Aeronautical Message Handling Switch) will replace the current AFTN system as an essential step toward eventual implementation of ATN (Aeronautical Telecommunication Network). Advanced communications technology will enable a whole new range of systems including CDM (Collaborative Decision-Making). ATN will enable integration of Communications, Navigation and Surveillance systems and enable sharing of information between air traffic services, aircraft and airport operators.

Navigation

The programme to implement Global Navigation Satellite System non-precision approaches continues and will enable the withdrawal of some ground-based navigation aids.

Augmentation developments are being monitored, and it is expected that augmentation will be adopted initially to provide backup for ILS at the main international airports, and to provide precision approaches for regional international airports.

An RNP programme (Required Navigation Performance) has commenced which will provide for the implementation of RNP and RNAV procedures, allowing improved route structures and fuel efficiency.

Surveillance

The radar network is being upgraded to incorporate Mode S capability, to ensure the continuity of reliable surveillance as well as providing a low-risk, cost-effective foundation for integration and potential replacement with ADS-B or MDS. ADS B trial complete 2006; MDS trial scheduled 2006.

ATM: Domestic operations

The SkyLine ATM system remains the backbone of New Zealand's domestic air traffic management system. MTCD (Medium Term Conflict Detection) will be implemented during 2006 and, together with RNP, will enable implementation of User Preferred Routing (UPR), initially in the upper airspace. Pre-departure clearances using data communications will be implemented during 2006.

Capacity Management will be integrated into the SkyLine ATM system together with CDM (Collaborative Decision Making) which is currently being scoped with core customers and will be implemented during 2007.

ATM: Oceanic Control

OCS (Oceanic Control System) is the foundation for air traffic management in the Auckland Oceanic FIR. RNP 4 (30/30 separation) has recently been implemented, and the OCS conflict probe tool has enabled User Preferred Routes to be implemented. As more neighbouring ATSU implement AIDC (Automatic Inter Facility Data Communications), DARP (Dynamic Air Route Planning) will be extended.

Integration of ATN CPDLC and ADS into the FANS 1/A system is being evaluated, and a cost-benefit study of ADS-B implementation in the Pacific region will be completed by the end of 2005.

Airways New Zealand also uses OCS to manage the upper airspace for the Cook Islands, Samoa and Tonga. Airways is currently working with its Pacific and Australian neighbours with a view to the possibility of further rationalising and harmonising airspace management.

AIRWAYS WELCOMES YOUR COMMENT

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AIRWAYS
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Airways'

Air Navigation Plan for New Zealand.

Airways' Air Navigation Plan describes the present air navigation system and the evolution of the future air navigation system for the period to 2018. It forms the basis for consultation on a broad scale with Airways customers, the Civil Aviation Authority and other interested parties. Airways will initiate consultation including needs and cost benefit analysis with affected parties on specific issues and planning and implementation projects.

Air Navigation Plan Summary

This summary of Airways' New Zealand's Air Navigation Plan provides the New Zealand aviation community with an outline of the recent achievements, current activity and planned enhancements to New Zealand's air navigation infrastructure. Recent achievements and current activity are outlined to provide context and continuity. Maintenance and replacement projects are only identified where they provide significantly enhanced capability or functionality.

The Air Navigation Plan

Airways' Air Navigation Plan contains comprehensive and detailed plans for air navigation services. In addition to new developments and enhancements it covers life cycle replacement and maintenance of existing systems.

The Plan draws on the ICAO Global ATM Operational Concept, the ICAO Regional Air Navigation Plan, and various other plans, with the objective of implementing those concepts and systems which will be cost beneficial in the New Zealand environment and which will harmonise with global systems.



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Planned activities

Pre Departure Clearances (PDC)

- Data link using ACARS system
- Efficiency, and safety

Required Navigation Performance (RNP) domestic

- Upper airspace initially
- Efficiency and capacity
- (Oceanic airspace is RNP)

Domestic free routing

- Upper airspace initially
- Efficiency

Medium Term Conflict Alert (MTCA)

- Safety net feature; prerequisite to free routing

User Preferred Trajectories (oceanic airspace)

- Efficiency
- Development of current User Preferred Routes
- Dynamic rerouting
- "Trajectory" - route, vertical profile & speed

Flight Deck Separation

- Transfer of responsibility to pilots for specific manoeuvres
- Efficiency and capacity

SkyLine midlife upgrade

- Lifecycle upgrade of hardware and operating system

AIS Automation (Aeronautical Information Services)

- ATN will enable dynamic processing
- Targeted delivery to ground or air borne addresses
- Graphics capable

AMHS (Aeronautical message handling service)

- Ground element of ATN (aeronautical telecommunication network)
- Speed, capacity and integrity of data transmission
- Ultimate extension to air ground ATN

D VOR (Doppler VOR)

- Lifecycle replacement of selected navigation aids
- Sole means GNSS navigation is outside the 2015 time frame

GBAS (Ground based augmentation of GNSS)

- Category 1 approaches to back up or replace ILS

Weather radar

- Safety and service enhancement

AA SMR (Surface movement radar)

- Efficiency and safety
- Essential for second runway commissioning

ADS B (Automatic Dependant Surveillance – Broadcast)

- Cost effective alternative to radar
- Endorsed by ICAO and IATA

QN Surveillance review

- Evaluation of service needs

Tower replacements driven by airport developments

Integration of airport with airborne ATM

- End to end services from gate to

