

ICAO/IATA Cross Border ATFM Workshop #3 - Bangkok 17/18 November 2015

Safe, Successful, Sustainable



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Airways New Zealand ATFM Implementation



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About Airways New Zealand

Airways is New Zealand's sole air navigation service provider and was amongst the world's first commercial ANSP's

Airways provides all civil and military air navigation services in New Zealand's domestic Flight Information Region and the Auckland Oceanic FIR

Airways is a State Owned Enterprise – a fully owned subsidiary of the New Zealand Government operating as a commercial business



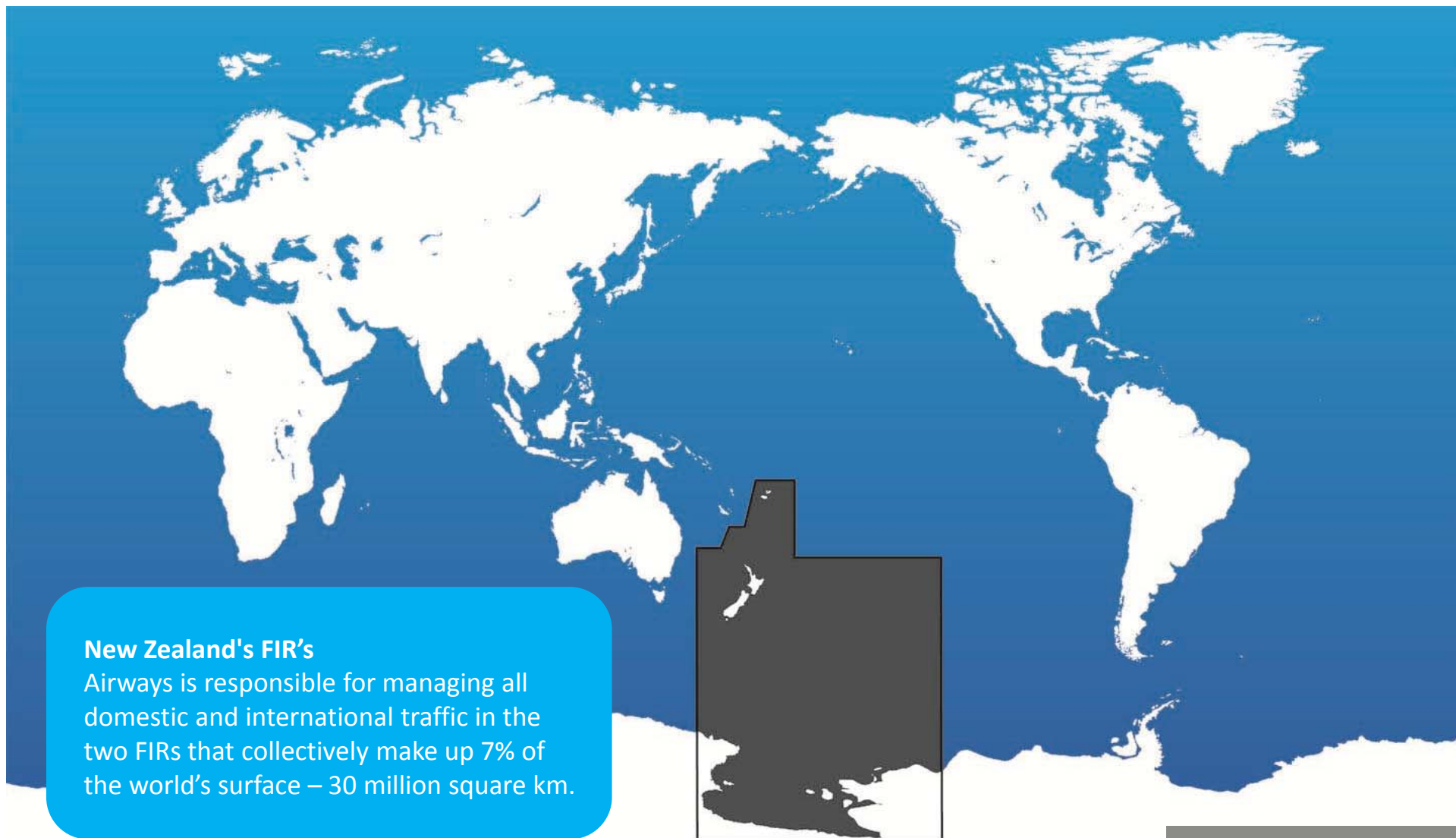
Airways profile



- Approx. 1.1 million annual aircraft movements
- 15 million passengers annually
- 2 Radar Control Centres (Christchurch and Auckland), and 17 control towers
- 6 international airports
- Controls 30 million sq.km of airspace and two flight information regions – New Zealand and Auckland Oceanic
- 770 staff (400 ATS)



Airways profile



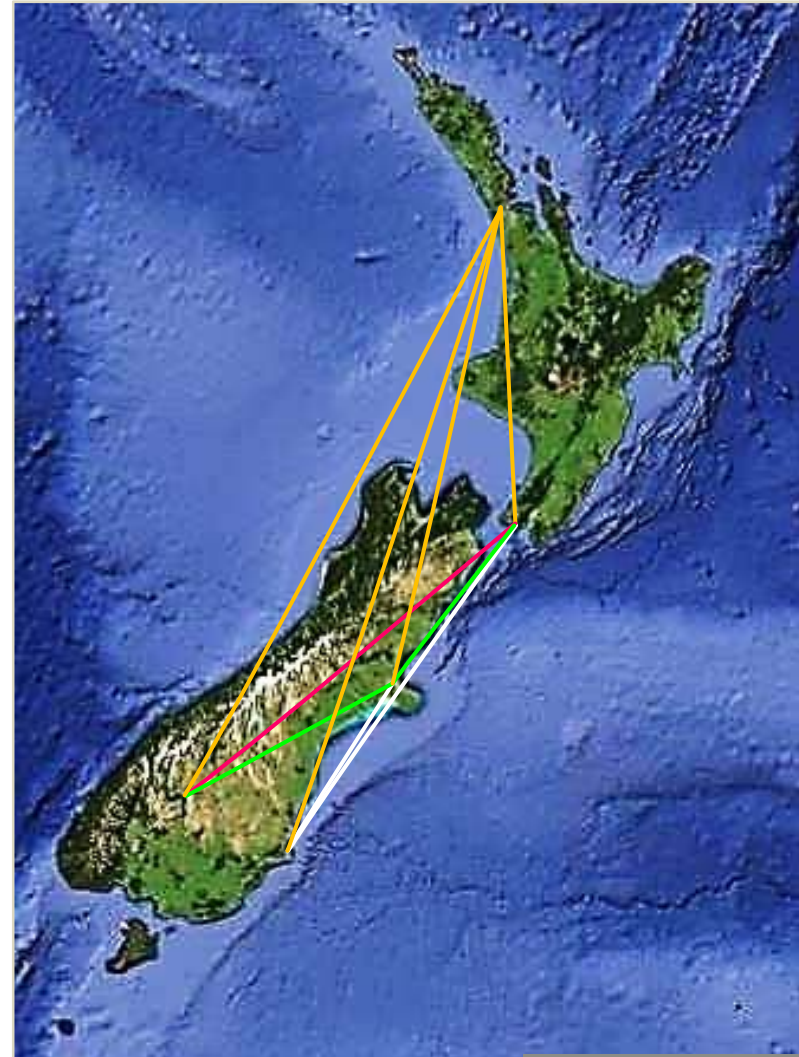
New Zealand's FIR's

Airways is responsible for managing all domestic and international traffic in the two FIRs that collectively make up 7% of the world's surface – 30 million square km.

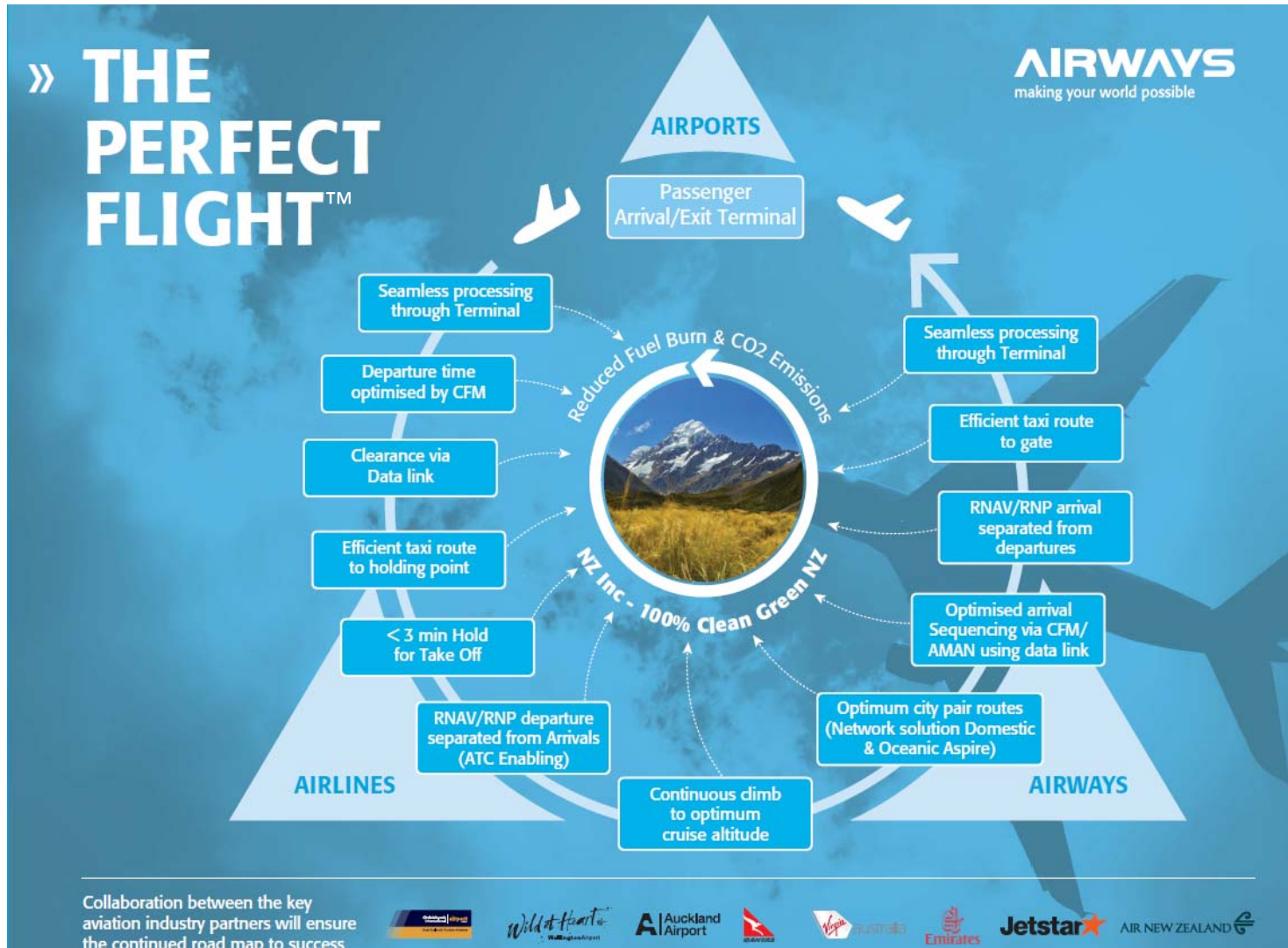


Why have ATFM?

- NZ has five main RPT jet serviced airports
- Four of these have capacity demand balancing in use (CFM)
- Traffic levels are classed as medium to low
- Turboprops make up 60%+ of traffic numbers
- Significant opportunity to use network ATFM with CDO in normal operations



ATFM – Getting started – having a vision



ATFM – Creating the environment

When traffic demand is not the main driver

- Airlines want:
 - ✓ Reduced fuel burn/carbon footprint
 - ✓ Consistency
 - ✓ Predictability
 - ✓ Value for \$\$ spent on ATM and ATFM
- Airports want:
 - ✓ Capacity utilised or maximised
 - ✓ Growth potential identified
 - ✓ Assets worked harder
- ANSP's want:
 - ✓ Industry health
 - ✓ Coordinated growth
 - ✓ System efficiency



ATFM – Building the platform

- Clearly identify your efficiency or capacity ‘drivers’ or pain points
- Collaborate with airlines and airports – speak in their language
- Ensure Regulatory framework supports your aim (GANP alignment helps)
- Ensure alignment with your own ANSP strategy
- ATFM is a package of integrated parts (CDO/CCO, CFM, PBN, routes, approach)
- Create a simple plan that matches your aim - then follow it!

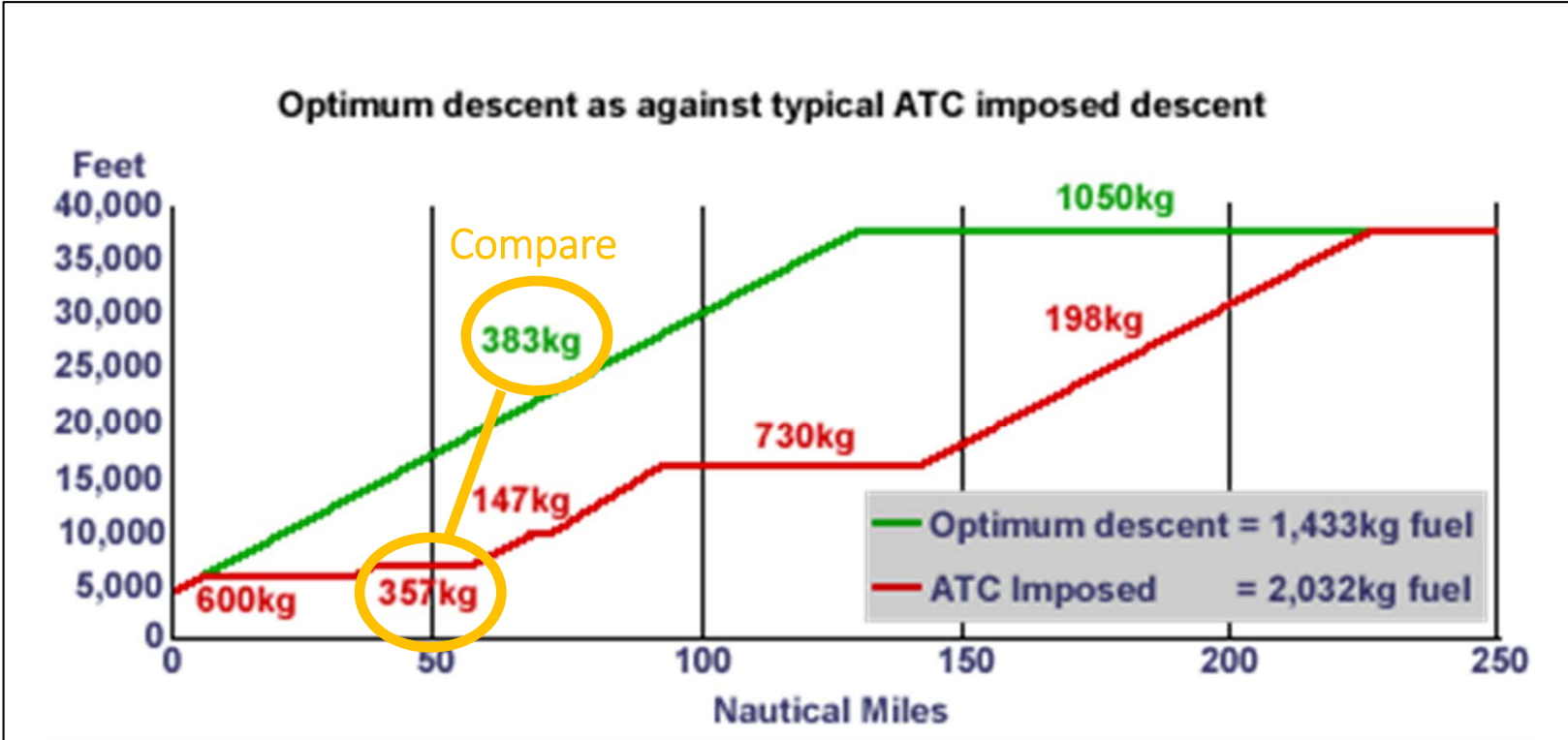


ATFM – Involving the airports

- Airport focus is not directed at ATC or airline efficiency aims
- They do want to maximise capacity, but their aims don't always align with ATC or airlines (political influences can be a factor)
- They need a time to learn and understand what an airline or ANSP is trying to achieve
- In New Zealand, airports hold approval authority for creation and implementation of all IFR approach procedures (Part 139)



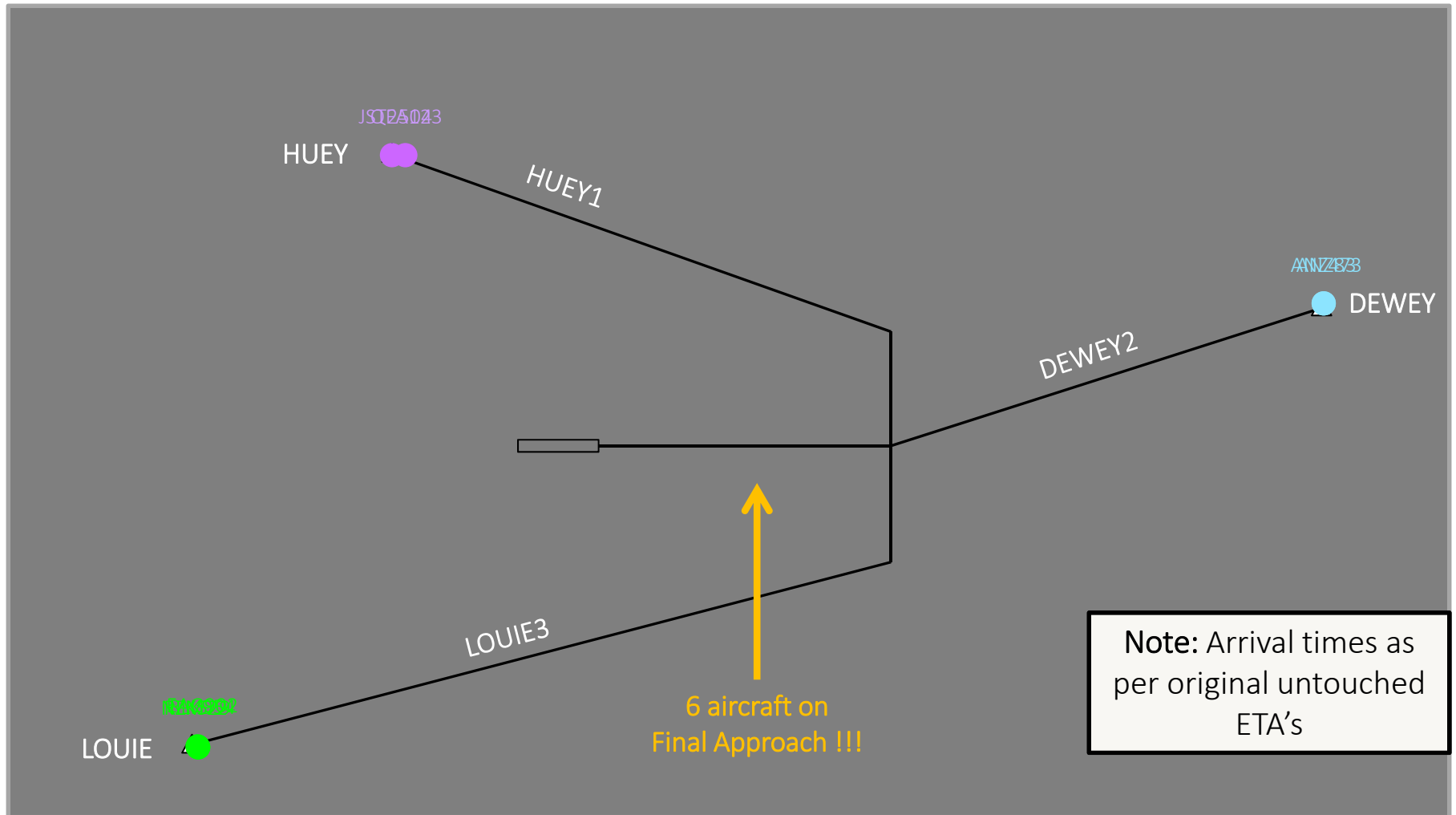
ATFM – with CDO – involving our airlines



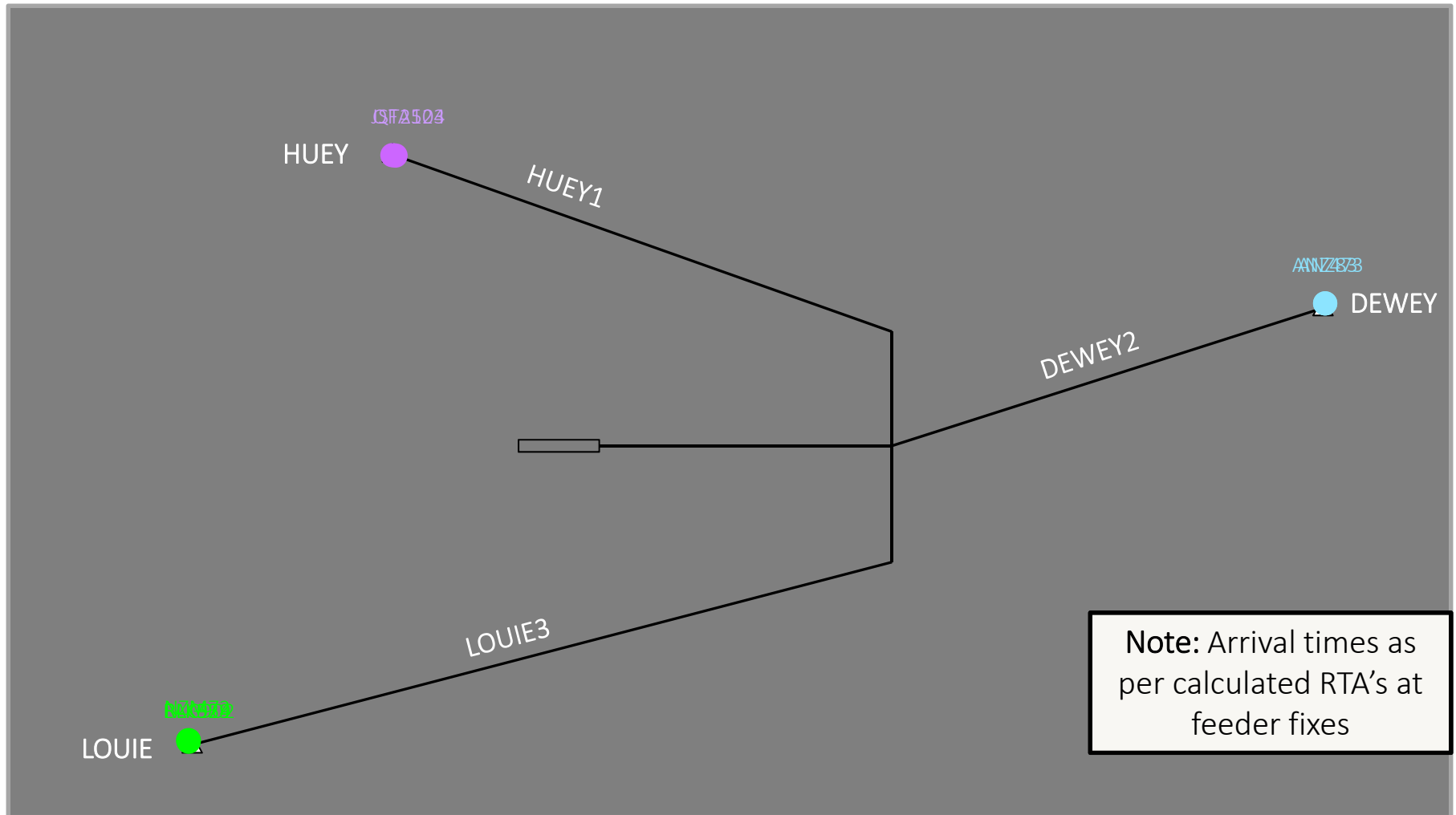
Airlines want efficient, low power, descent profiles – they show us why!

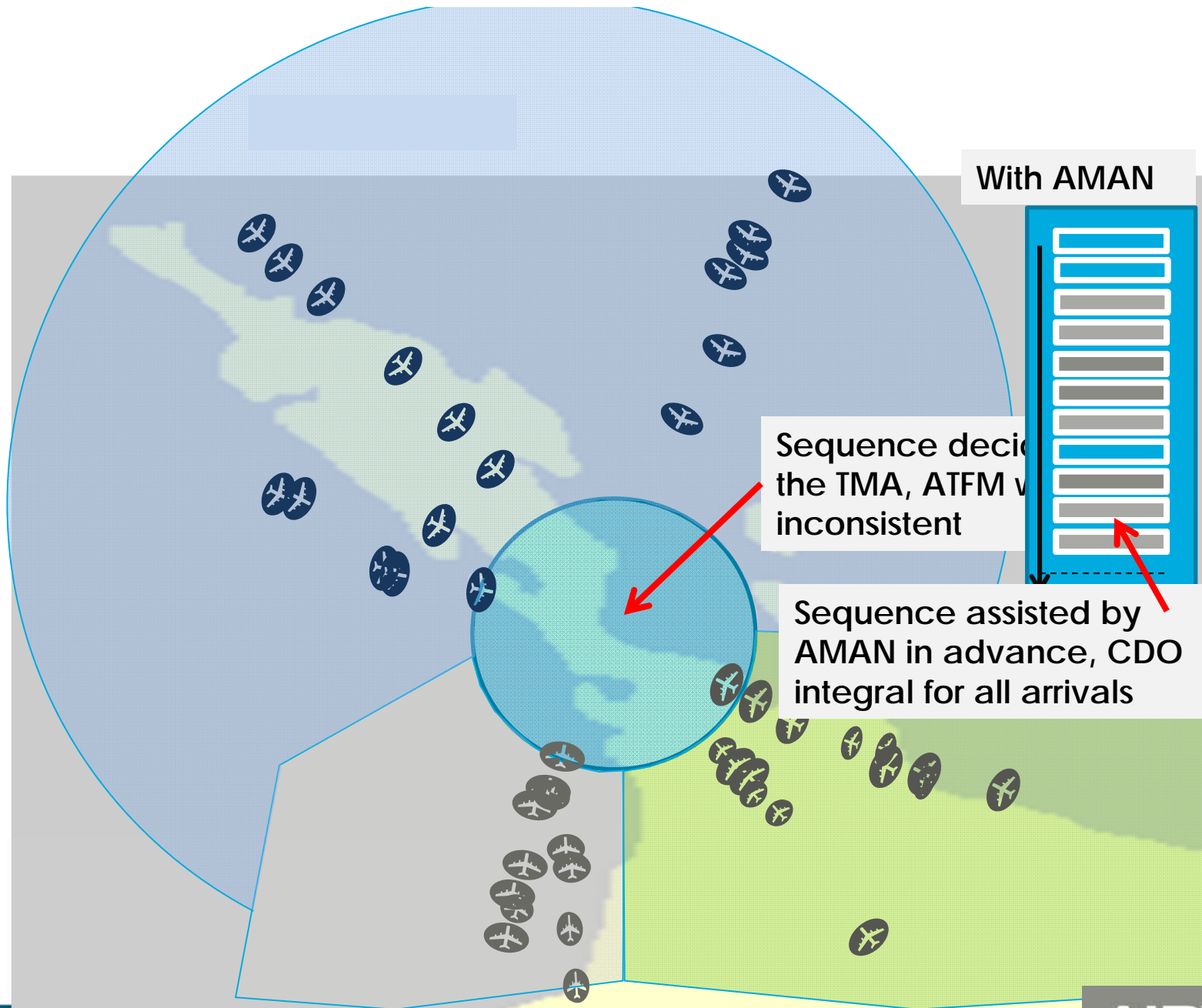


ATFM – Tactically Managed Sequence - “old” Sector based ATM

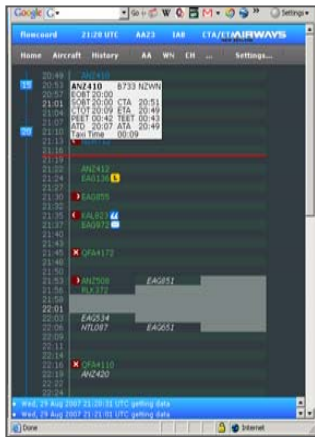


ATFM – Strategic Sequence - (ATFM used with CDO)



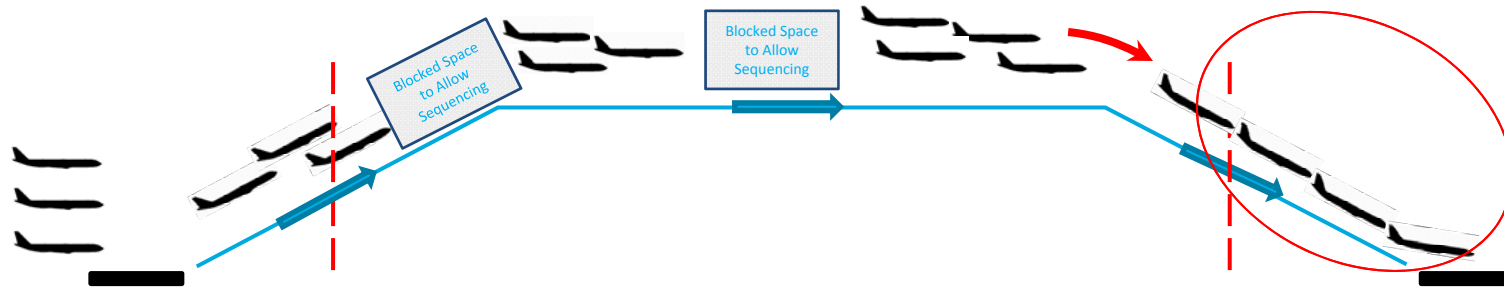


ATFM – In action – the CAM/AMAN effect (with CDO included)



CAM + AMAN = ATFM NZ style

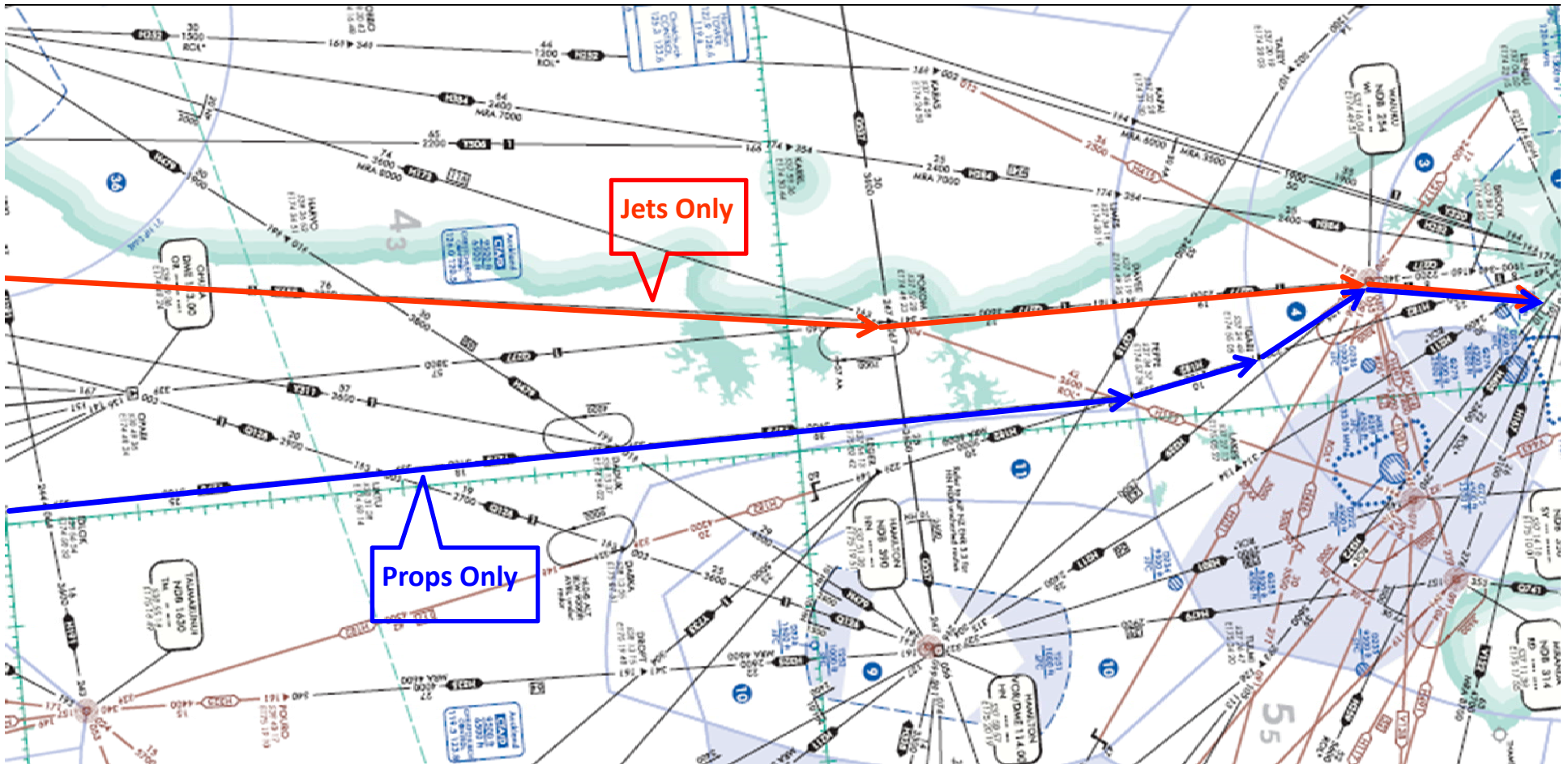
Aircraft enter the TMA in sequence on CDO



But Wait There's More

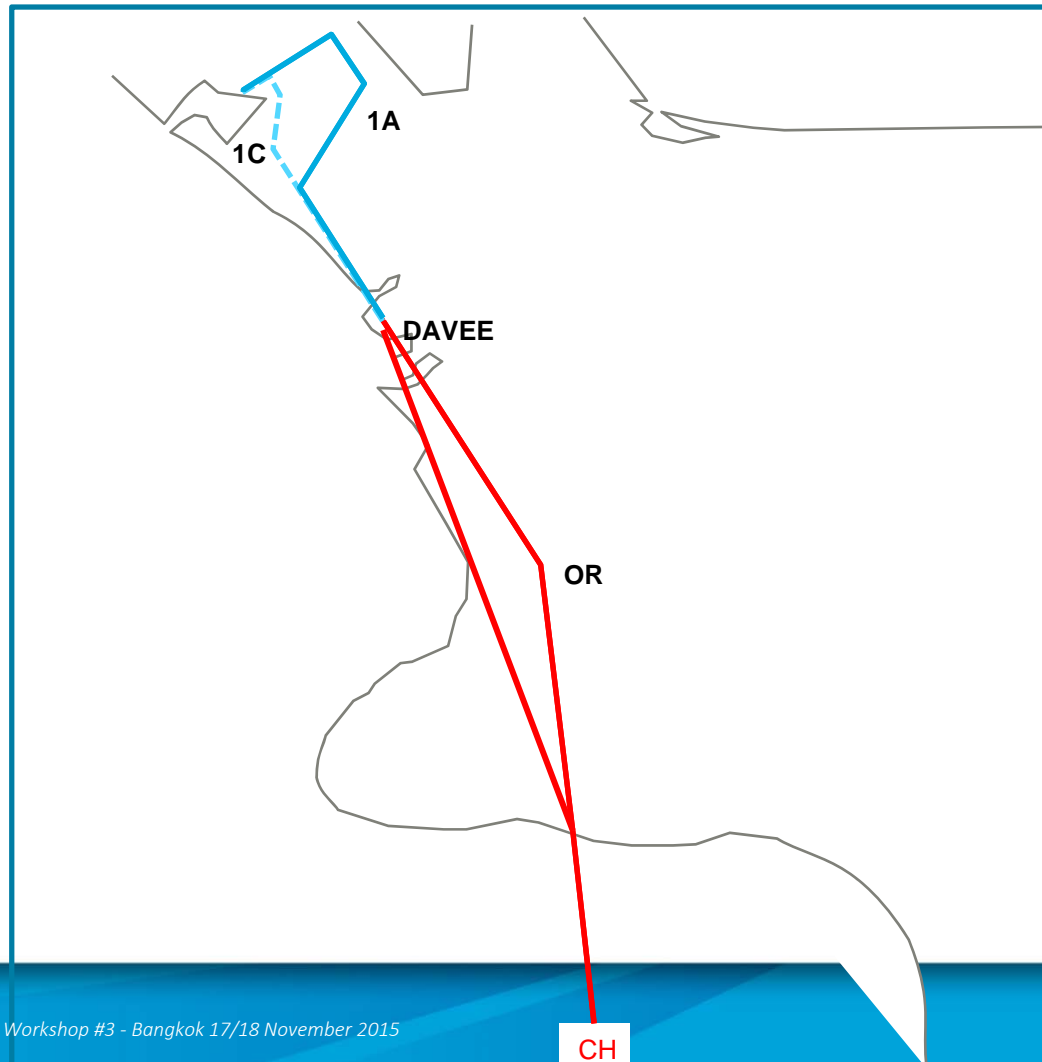


ATFM – In action with ATM system - reality



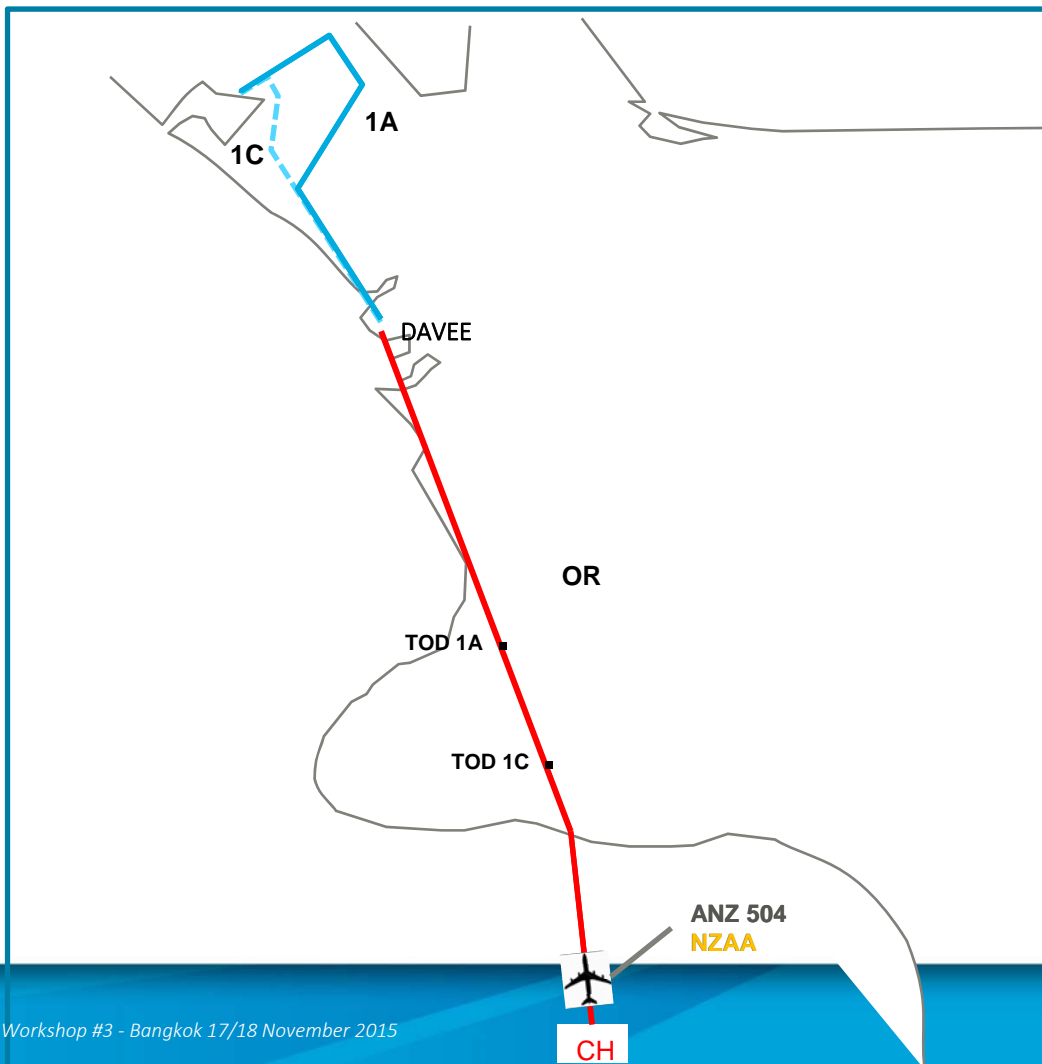
ATFM – In action with ATM system

- Optimise the route using RNAV – jet only
- Connect RNAV route to STAR (1A) that joins with the instrument approach
- Create a shorter path (1C) that mimics a VISUAL approach
- Determine best option and integrate CDO to RWY (closed path)
- Decision assistance tool is crucial for consistent ATFM with CDO



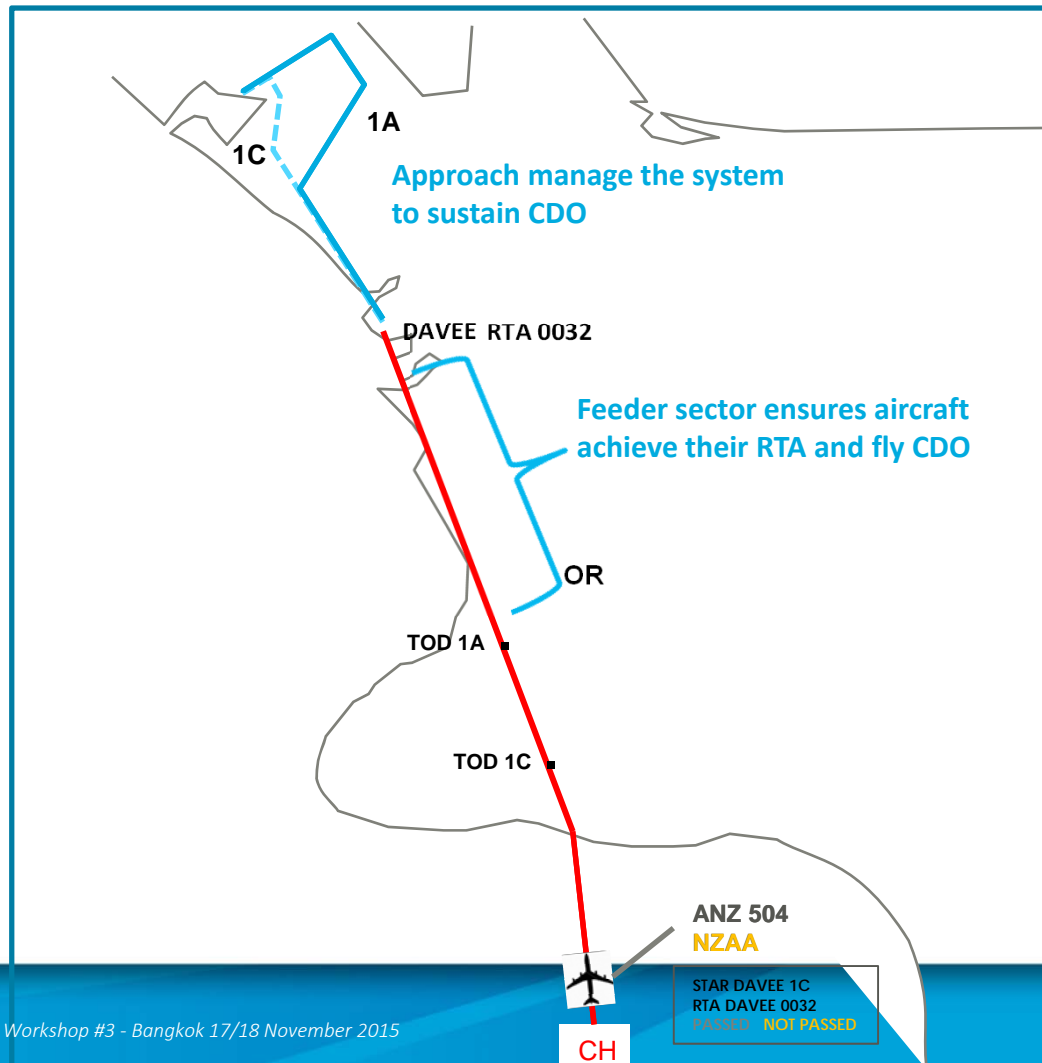
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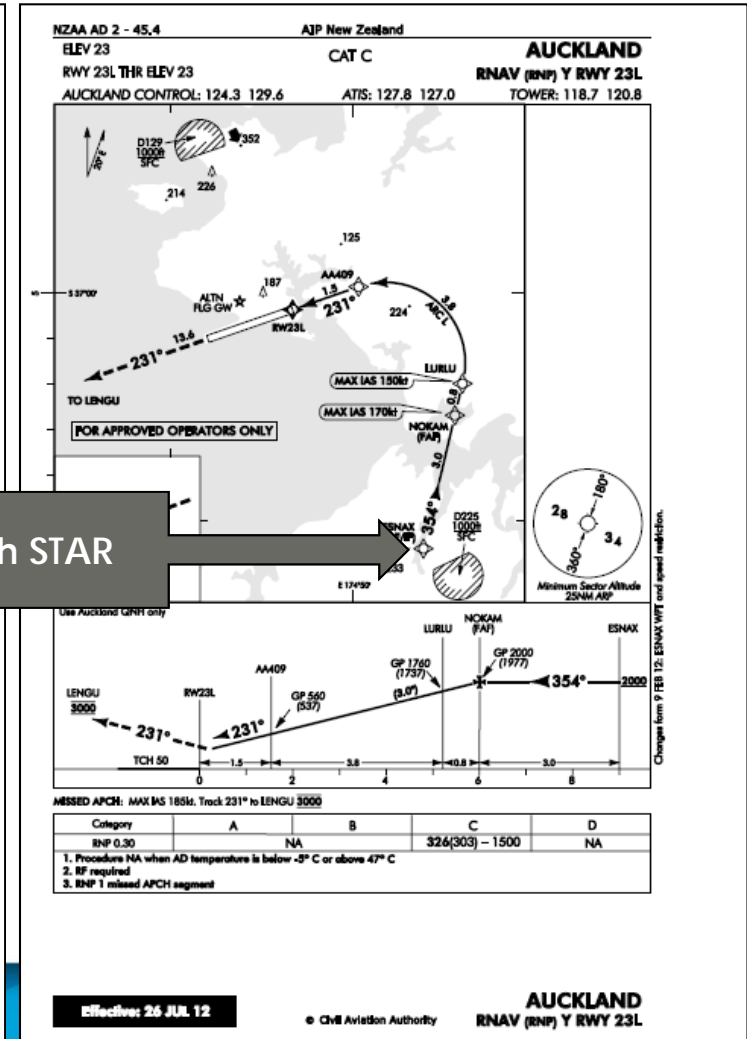
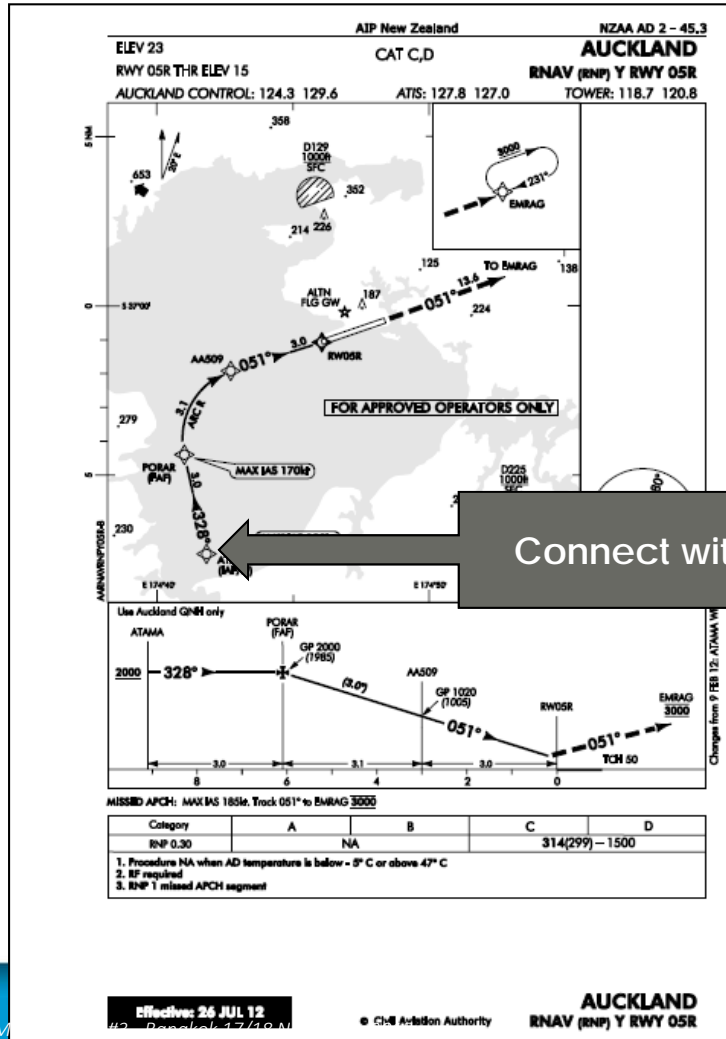
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ATFM – In action with RNAV RNP Y at Auckland

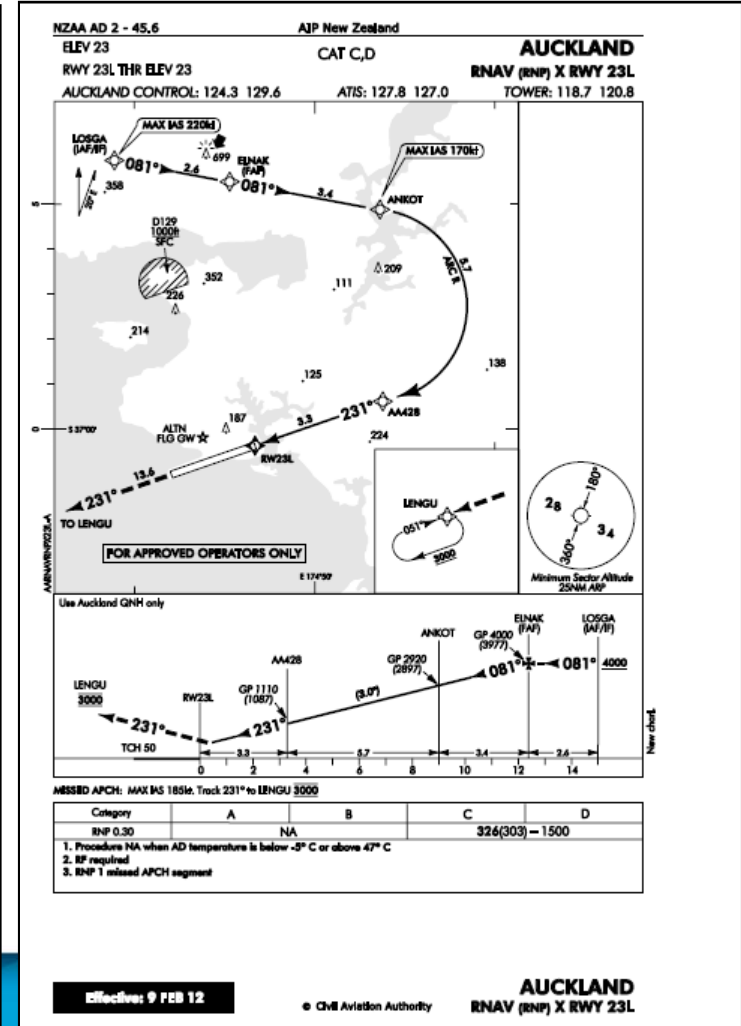
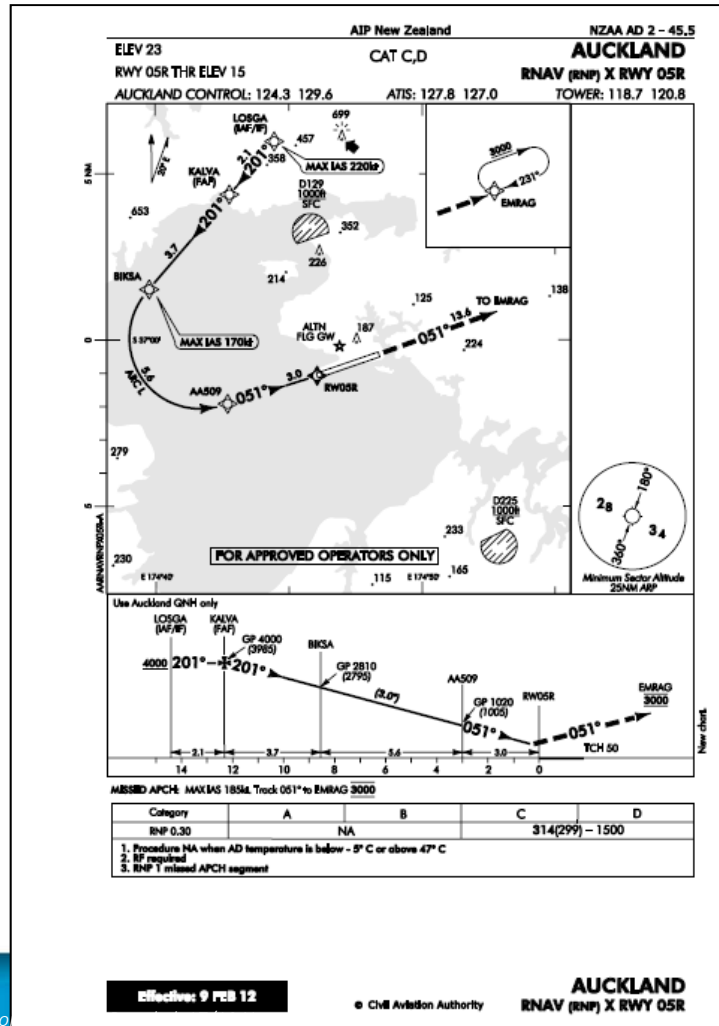
- RNAV RNP Y - in use since JULY 2011
- Flown by ANZ A320, JST A320
- Mimic VISUAL approach in all weather
- Emanate from custom “short” C/D STAR’s;
- Speeds critical to success of RWY operations

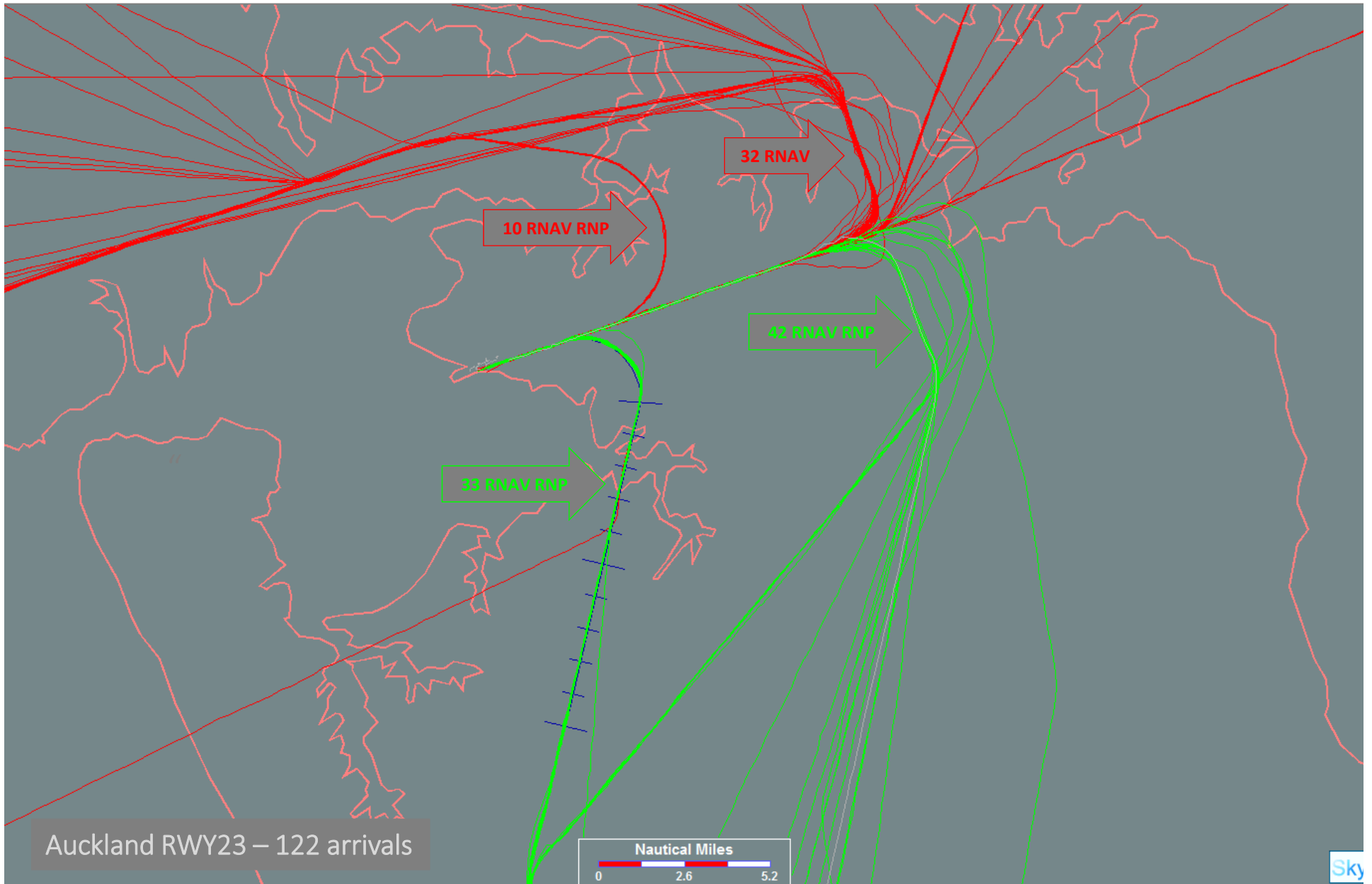


Connect with STAR

ATFM – In action with RNAV RNP X at Auckland

- RNAV RNP X – trialled for 12mths, now in use
- Flown by A320 & B777, B787 (ANZ), A320 (JST), B738 (QFA/VOZ)
- New noise areas under flight paths
- 50% shorter than long STAR to ILS
- Emanate from custom “short” C/D STAR’s





ATFM – Who benefits at Auckland

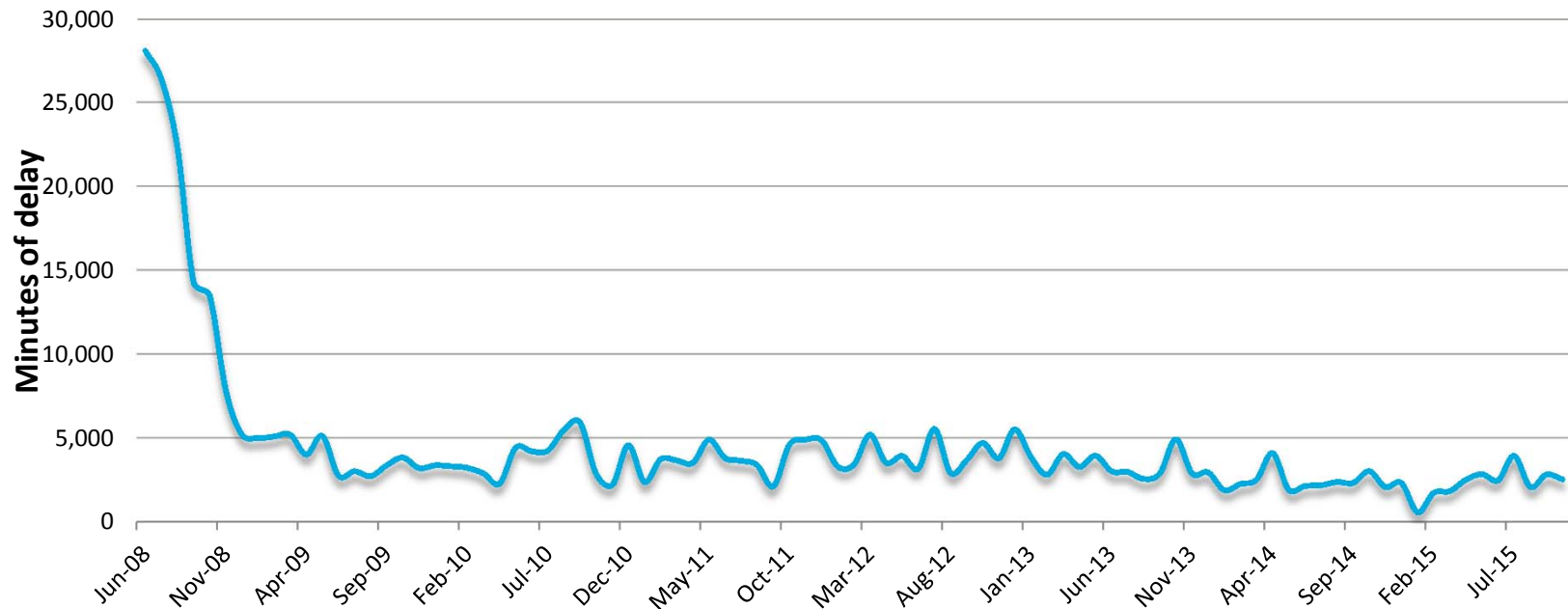
- 15-20% of arriving aircraft international jets
 - 5% of those are heavy (B763 to A388)
 - Jets receive ATFM priority with CDO to RWY – 80% fly CDO, target 90%+
 - Turboprops receive CDO options to RWY – 80% fly CDO, target 90%+
 - Terminal airspace more efficient, reduces ground holding
 - Airline OTP is more assured, better insight
- 70%↓ in airborne delay



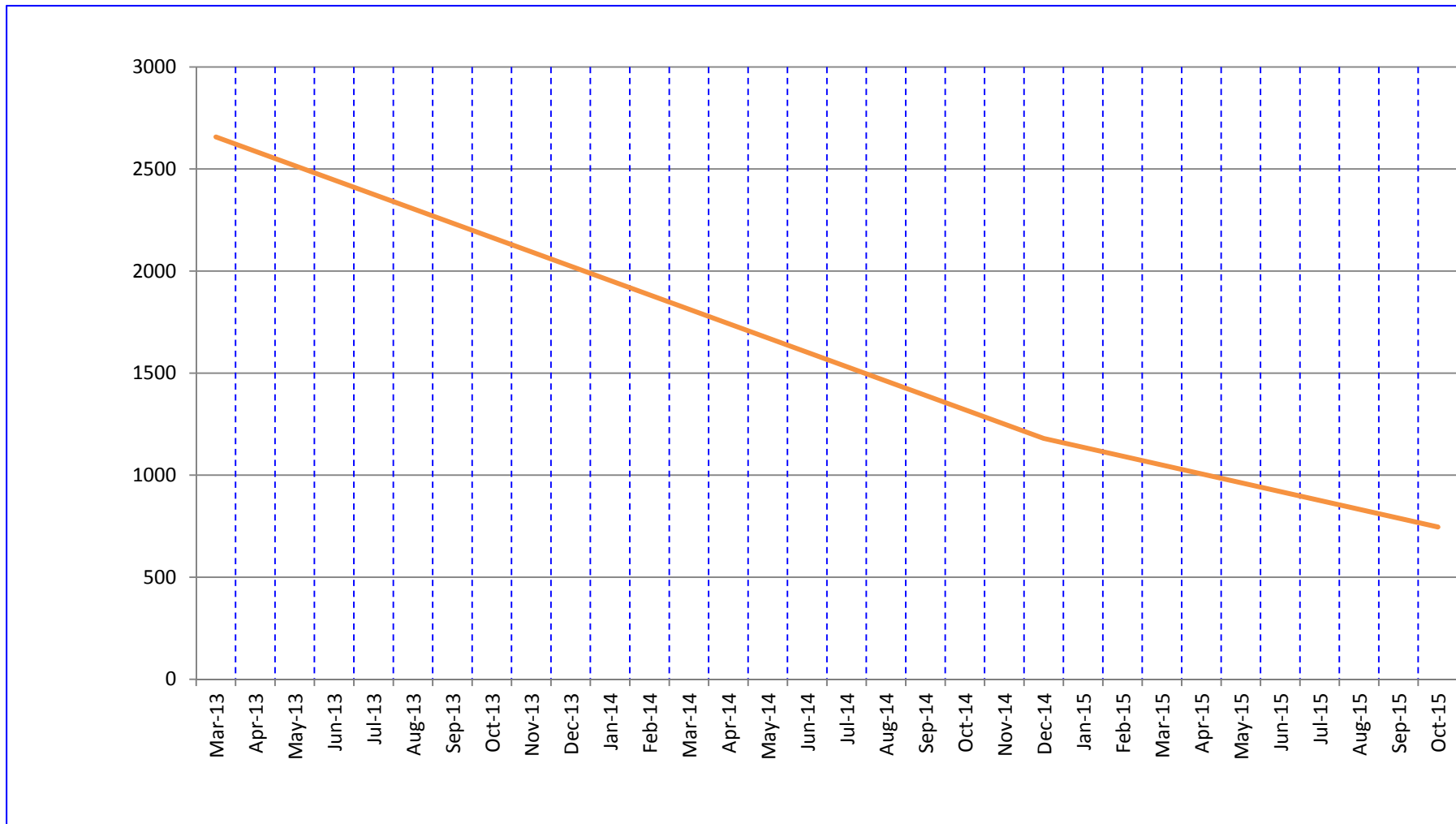
ATFM – The CAM effect Auckland with Wellington

Before CAM was activated combined delays into Auckland and Wellington city pair averaged **28,000 mins pm**. From JAN09 delay avg. fell below **5,000 mins pm**, and from MAY13 the delay avg. fell below **2,600 mins pm**. For 2015 to date we are achieving a delay avg. below **2,300 mins pm**.

In-flight delay per month (Auckland and Wellington combined)



ATFM – Minutes of delay at Auckland since April 2013 with AMAN/CAM introduction



ATFM – Outcomes – New Zealand savings

Since Collaborative Arrivals Manager (CAM) was introduced in New Zealand, (NOV08) our airline partners using ATFM (with CDO) have saved:

- \approx 90 million kgs of fuel
- 285 million kgs of CO2 emissions
- **\$USD75 million in fuel costs**
- Savings equate to \approx 6% for most airlines



ATFM – What our airline customers have to say

“With the high level of airline collaboration and compliance, CAM/AMAN has delivered a dramatic reduction in airborne delays. The ATFM system, combined with the use of CDO and track shortening RNP AR arrivals, means Airways New Zealand is well on the journey to creating a truly optimum terminal arrival experience”

Capt. David Morgan,
Chief Pilot - Air New Zealand

AIR NEW ZEALAND 



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ATFM – What we learnt in New Zealand

Consistent and repeatable ATFM is the end product of:

- Properly researched drivers for efficiency (ANSP, airlines, airports)
- Common aims with a high degree of collaboration and trust
- An agreed ATFM plan designed to achieve objectives
- Connected infrastructure (airspace, routes, STAR, approach, airport)
- A collaborative demand management tool (if possible)
- Flexibility and choice for the airlines using the ATFM system
- An honest, transparent reporting system for all users
- Measureable value for users efforts



ATFM – Problems we encountered in New Zealand

Some of the problems we encountered:

- ATC - acceptance of decision making tools sequences
- ATC - buy-in to new “hands off” procedures
- ATC - integration of curved RNP AR approach with straight-in ILS
- ATC – resourcing of time and people to integrate routes, STAR’s and approaches to fit AIRAC cycles
- Pilot - CTOT conformance; speed profiles; STAR profiles
- ATC/Pilot - a lack of ICAO phraseologies that impart unambiguous intent, especially when profiles can be “relaxed”
- ATC/Pilots – true understanding of the capability of aircraft FMGS



ATFM – Future growth in New Zealand

Just some of our near term future plans:

- Increasing % of CDO flown to RWY (Jets & Props – target 90%+)
- Developing cooperative elements (DMAN)
- Fine tuning of decision support tools (AMAN/CFM)
- Fine tuning of RNAV STAR profiles and RNAV RNP approaches
- Fine tuning of aircraft systems (FMGS and auto-throttle)
- Developing a cross-border network ATFM solution trans-Pacific
- Creating a total domestic network ATFM solution across NZ
- **Increased** automation of ATM system (ACDM/DMAN/CFM/AMAN/ACDM....)



Thank you



Andy Boyd
Manager Terminals
Airways New Zealand Ltd



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