

PACDEFF 2018

Optimising Aircraft Efficiency in Auckland Oceanic Airspace.

Bill Appleby

7-9 November 2018

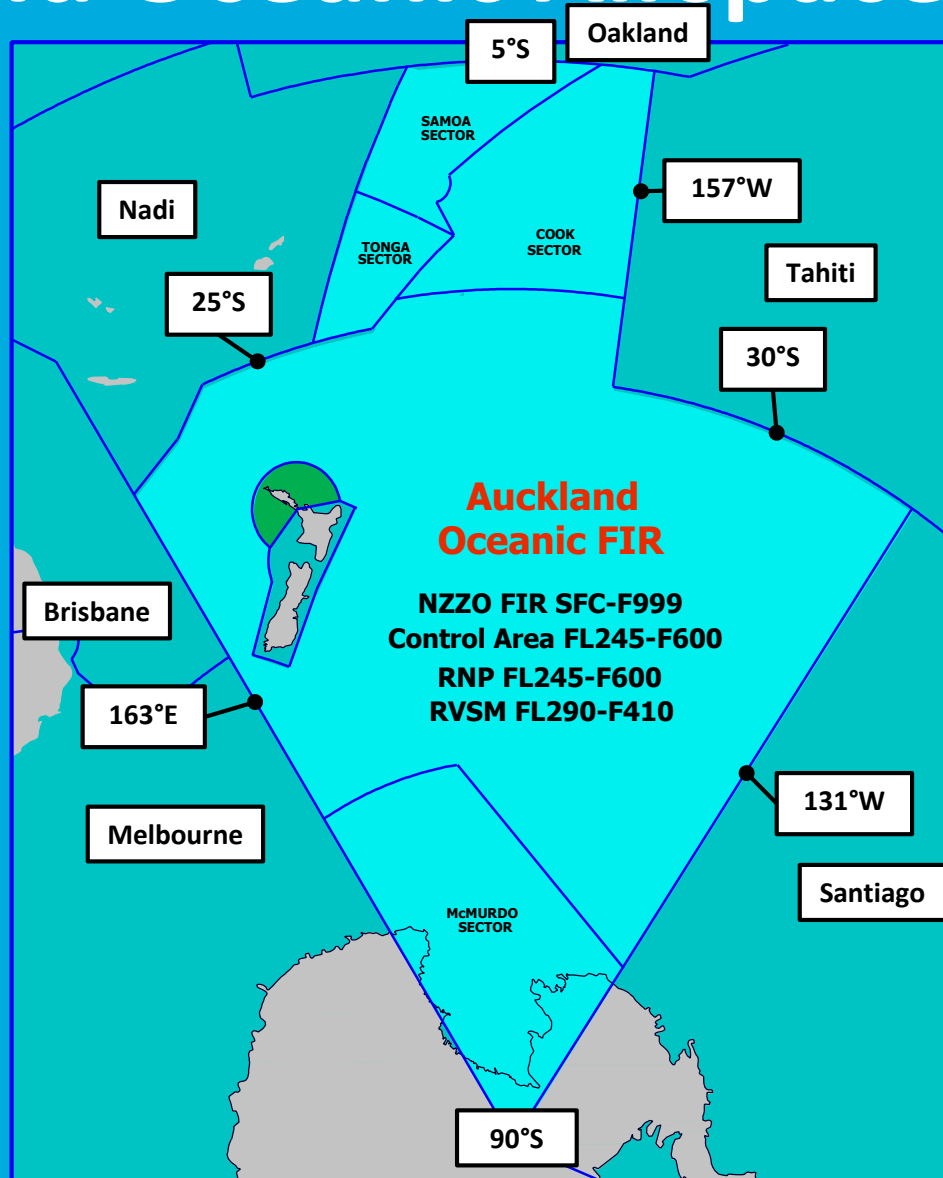


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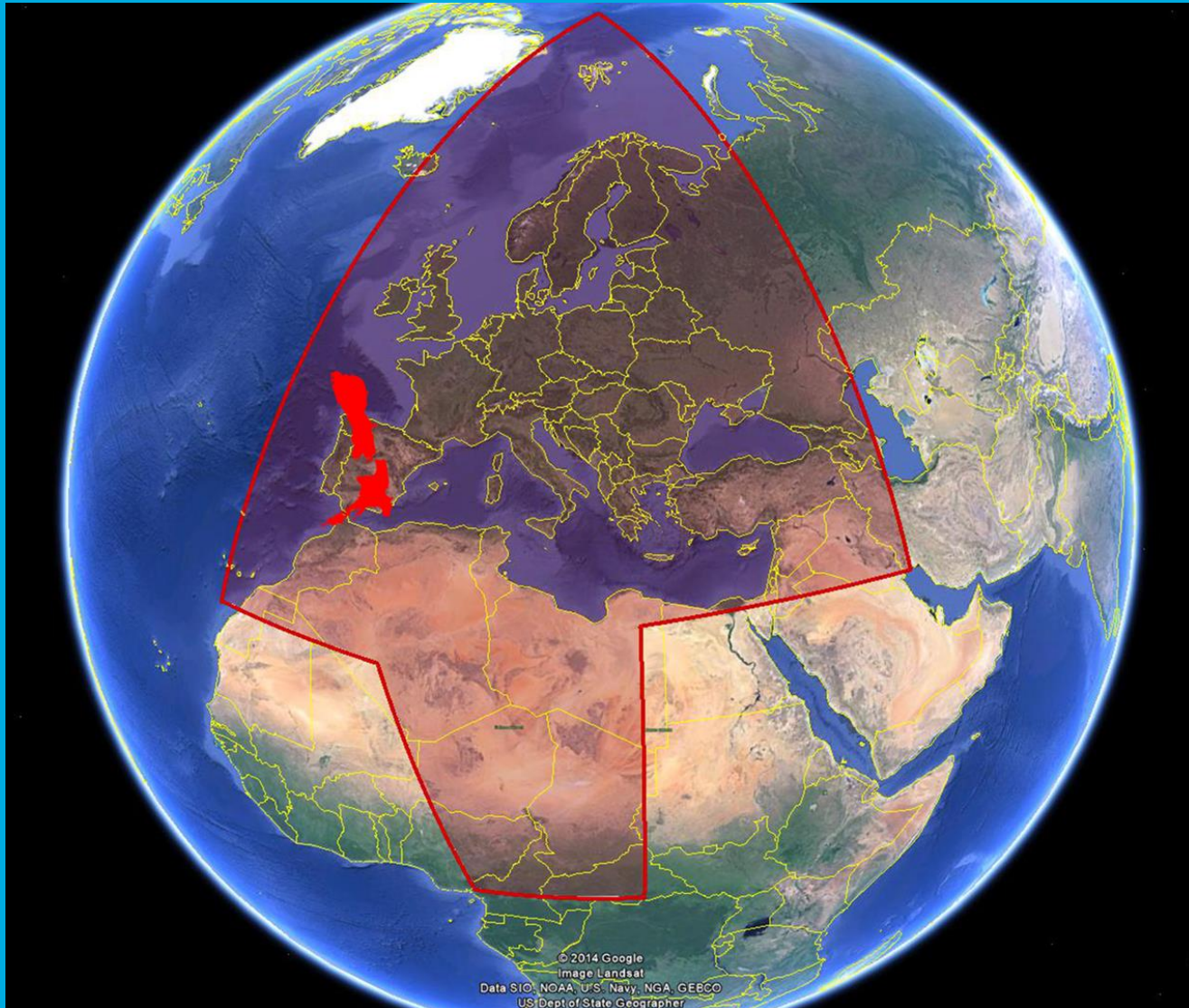


- Auckland Oceanic Sector and Airspace Overview
- Adjacent Airspace
- New Zealand's Oceanic Air Traffic Management System Functionality
- Optimising Aircraft Efficiency in Auckland Oceanic
 - ✓ When flight planning
 - ✓ When enroute
- Working Better Together - Questions

Auckland Oceanic Airspace Overview



Airspace Comparison



Air Traffic Control System



OCS Separation Standards

Vertical

2000ft Non RVSM, 1000ft RVSM

Longitudinal

15 minutes, 10 minutes RNP/MNT, 5 -9 minutes MNT Rule of 11,
50 nm CPDLC/ADS-C, 30 miles RNP4.

Lateral

100nm, 50nm RNP10, 30 miles RNP4.



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* Requires CPDLC connection and receipt of ADS-C position reports in accordance with specified schedules in the reporting contracts.





HOW?

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Reduced Separation Switches

	B744		TESAS	SARAP	IGLET	MUGEN	NI SET	MALNI	YSSY	T
QFA11	* MRD3	330							KLAX	
AC CTR	M086		0718	0737	0800	0822	0856	0918		

- M: Allows the application of 10 minute longitudinal – RNP10 or MNT
- R: Allows the application of 5 to 9 minute longitudinal – MNT Rule of 11
- D: Allows the application of 50nm longitudinal
- 3: Allows the application of 30nm longitudinal and lateral – RNP4

	B744		NZAA	SELKA	MOMTA	REPOL	TBU	OGELA	NZAA	O
ANZ10	* MR	330							KLAX	
AC CTR	M086		0807	0831	0905	0946	1016	1057		
			TUT	DARMA	SAPIX	PASSA	QUIGG			
			1114	1126	1212	1248	1348			

B744			OGELA	TUT	DARMA	SAPIX	PASSA	QUIGG	NZAA KLAX	O
ANZ10	*	MRD3	330							
AC CTR		M086		0945	1003	1016	1101	1137	1237	
B744			NZAA	SELKA	MOMTA	REPOL	TBU	OGELA	NZAA KLAX 2	O
ANZ7	*	MRD3	330							
AC CTR		M086	320	0702	0725	0800	0840	0910	0951	
			TUT	DARMA	SAPIX	PASSA	QUIGG			
			1008	1020	1105	1141	1241			

Optimising Aircraft Efficiency

Flight Planning

- PBCS : Brief overview and effect of introduction in NZZO

- Choosing the “Best” Route :

- Flight planned level :

Enroute in Oceanic Airspace NZZO

- Weather Deviations :

 - Lateral extent

 - “Request Direct to .. next filed waypoint”

 - Reporting “Back on route”

 - Example of creative navigation

- Clearance Requests:

 - Non Standard and Block Level requests.

 - Multiple CPDLC or HF requests.



The suggestions that follow are based on my experiences as a current Air Traffic Controller working traffic in the Auckland Oceanic CTA/FIR.

My suggestions may also apply in the Oceanic Airspace controlled from Nadi, Oakland, New York and Anchorage since their control systems are similar to the Auckland OCS system and also have a fully integrated conflict probe.

Actual operation and procedure design may vary due to local system application differences, their use of unique separation standards and a differing programme for integrating system and industry enhancements.

B744		ATOPO	ASHLO	APPLD	APORO	ALANO	AJAYO	ARADO	KIMO	OCI
AFR2770	HRDHF	290	0927	0950	1016	1041	1106	1131	1157	0000
NO	M085		APABO	OCO						F A
			1216	1231						R



PBCS

Performance Based Communication and Surveillance

The PBCS concept is aligned with that of performance based navigation (PBN).

PBN applies required navigation performance (RNP) and area navigation (RNAV) specifications to the navigation element.

- PBN allocates criteria only to the aircraft capability and aircraft operator.

PBCS applies required communication performance (RCP) and required surveillance performance (RSP) to communication and surveillance elements.

- PBCS allocates criteria to ATS provision including communication services as well as to the aircraft capability and aircraft operator.

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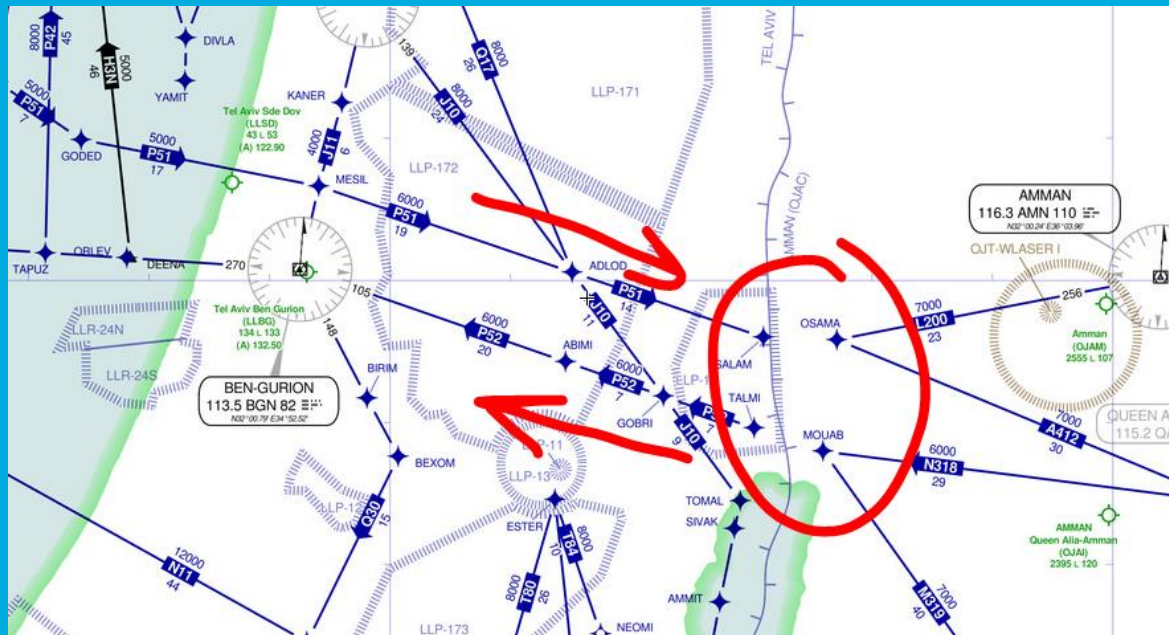
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RMK/TCAS EQUIPPED)

Choosing The “Best” Route

Flight plan via one way routes.

Increases chances of clearance at a non-standard cruising level as opposite direction traffic will be on laterally separated routes.



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Flight plan via one way routes.

Increases chances of clearance at a non-standard cruising level as opposite direction traffic will be on laterally separated routes.

If allowed by ATS and aircraft capability, file user preferred routes (UPR).

Opposite direction aircraft are probably on a UPR on the ‘other’ side of the weather pattern.

Chances of the allocation of block flight levels or non-standard flight levels are enhanced.

Flight Planned Level

Departing trans-tasman aircraft often request an amended, lower flight level when contacting the domestic area control sector.

Investigations reveal this is most probably due to the flight crew loading extra fuel on top of the load the flight planners determined.

Whatever the reason, the result of this is that they regularly receive clearance at a much lower level than is really necessary.

Aircraft A FPL filed with F360 as the requested level.

Aircraft A departs showing F360, the Oceanic controller assesses traffic and 'reserves' F360 for the flight.

Aircraft B departs, showing F340 which is assigned.

Aircraft C departs, showing F340 also, but has F320 assigned to solve the conflict with Aircraft B.

Aircraft A contacts Area ATC, requests non-standard F350 as they are too heavy for F360.

Non-standard levels are not available. F340 and F320 are already assigned, so Aircraft A is assigned the next standard level of F300.



When requesting departure clearance, flight crew should ask the tower to amend the requested level to the highest standard level that can be reached.

Aircraft A would have had F340 'reserved' when the Oceanic controller saw F340 on the data tag when the flight departed.

Enroute



Weather Deviations

Append 'Due to weather' to the offset request if applicable.

Avoid large lateral requests if possible.

More than 128nm – request reroute.

Avoid either side requests if possible.

If both sides are required, release one side as soon as the 'best' side becomes evident.



Avoid lateral requests when operating within block levels.

A 2000ft block with 100nm either side denies entry to **143** other aircraft.



When D50 or D30 RNP4 separation is being applied:

KZOA will not accept the leading aircraft on a weather deviation.

Vertical separation will be established prior to 5 South and may require one aircraft to descend.



Requesting deviation on the other side of track:

Rejoin route, then

Report 'Back on Route'

Make a request for the desired deviation

Still off track and need a new clearance before regaining track

Request current extent on either side of track

After crossing track, request current side only



When clear of weather:

Rejoin route

Report 'Back on route'

Use CPDLC standard message if possible

Retaining deviation approval just in case

This practise may deny a level change or weather deviation to several other aircraft.

Please report 'Back on route' and make another request later.

Continued retention may require a descent.

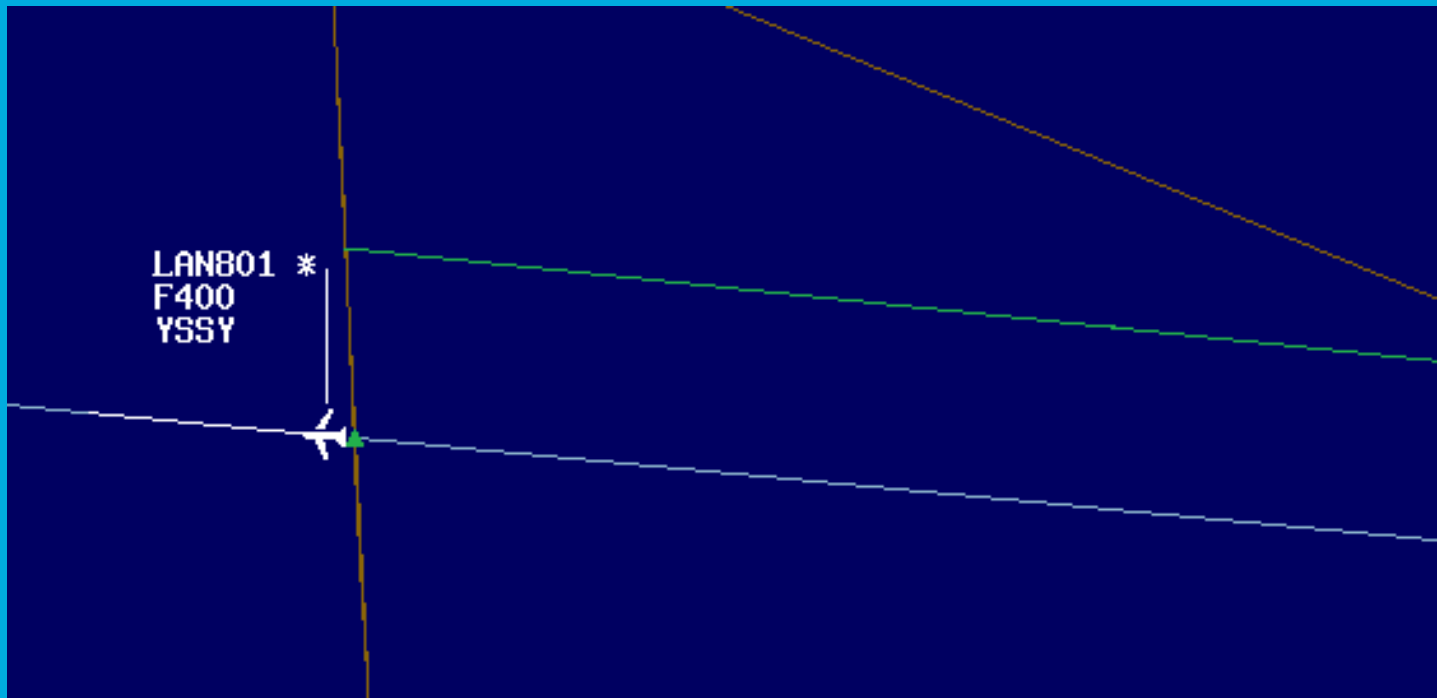
Rejoining route at the next on track waypoint:

No need to 'Request direct to *waypoint*'

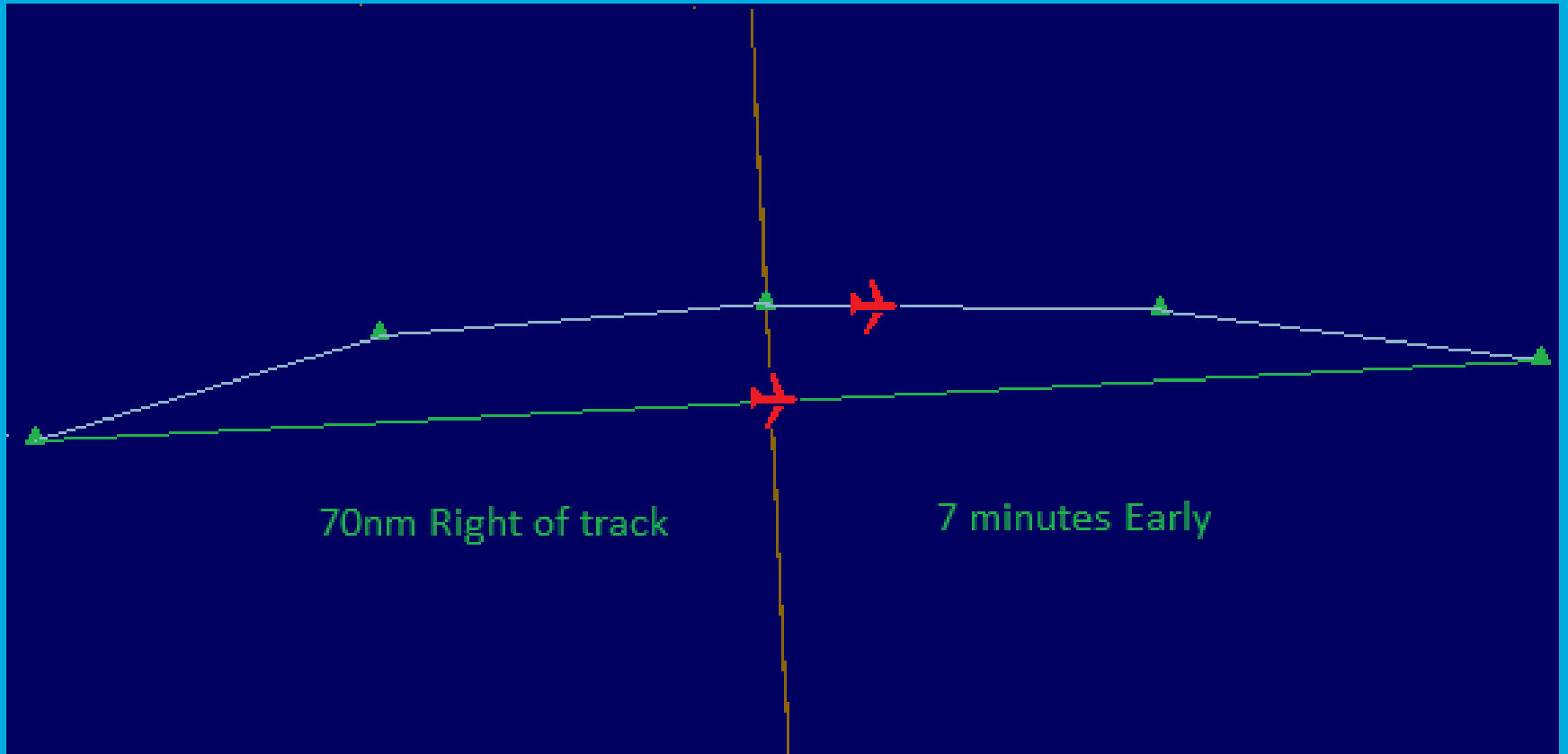
Track direct to the waypoint

Revise ETA at the waypoint

After crossing, report 'Back on route'



When is a weather deviation not a weather deviation?



Requests



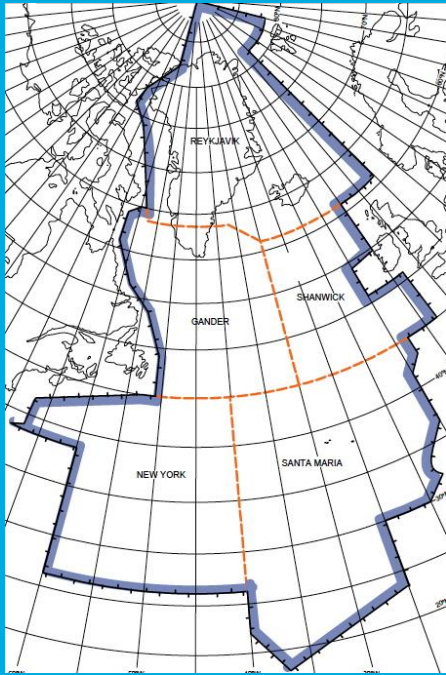
Non-standard levels and Block levels

Less chance between YBBN and NZCH or NZQN

Expect cancellations when standard for another aircraft

Severe turbulence or other emergency will increase priority





Requests within 10 mins of a BDY

Require Coordination with
Previous ATSU
Adjacent ATSU

} 5 mins

May be 'parked' until 10 mins past BDY during busy periods

Requests made 10 minutes after crossing a boundary

Should get an almost immediate response

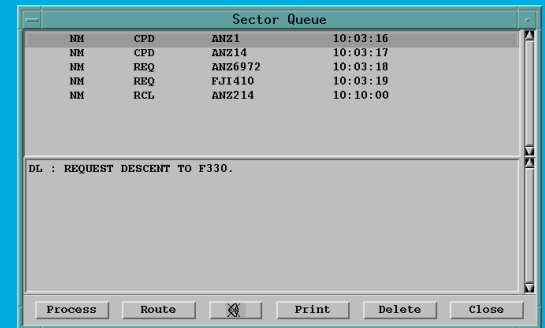
May allow controllers time to better explore alternatives

All requests go into a message queue

Actioned according to their priority

Contains other messages also

May contain 30 messages during busy periods



Sector Queue			
NM	CPD	ANZ1	10:03:16
NM	CPD	ANZ14	10:03:17
NM	REQ	ANZ6972	10:03:18
NM	REQ	FJI410	10:03:19
NM	RCL	ANZ214	10:10:00

DL : REQUEST DESCENT TO F330.

Process Route [X] Print Delete Close

If you think your request has not been received

If the HF operator acknowledged it, it has been 😊

If you did not get a CPDLC send error, it has been 😊

Please be patient and wait 10 minutes

Query how your original request is going



Please do not make another duplicate request

These further increase controller workload

May cause confusion about what is being requested

WILL further delay approval or otherwise of the request

If the request relates to an emergency or severe turbulence encounter

Follow the AIP instructions for such an event





General questions about Auckland Oceanic?

If I can't answer you today, I will email the answer to you.

Email me if you think of something in the future.

bill.appleby@airways.co.nz

THANK YOU!

