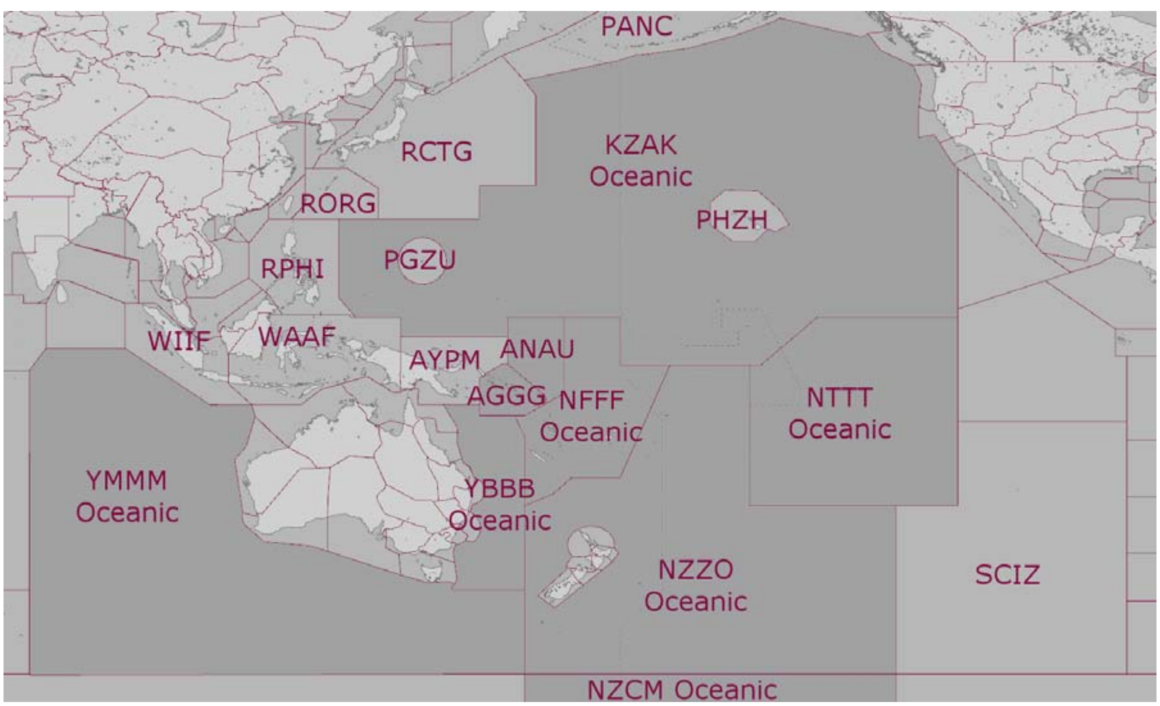
Pacific Oceanic Group – Oceanic Endorsement Syllabus
Version 0.9.6 VATNZ/VATPAC/VATUSA 14 Mar 10

Introduction

On 16 March 2006, the VATNZ-VATUSA-VATPAC *Oceanic Partnership Agreement* (*'the Agreement'*) was enacted, providing the foundation on which to standardise VATSIM Air Traffic Services in VATNZ, VATPAC and VATUSA's Pacific oceanic airspace. This document provides an elaboration of the Agreement, and is specifically designed as a study guide for those controllers seeking the Oceanic Endorsement. It assumes a level of knowledge commensurate with the minimum experience requirements set out in the Agreement, thus avoiding unnecessary duplication. This document needs to be read in conjunction with the applicable VATNZ, VATUSA, VATPAC and VATSIM policy and procedures.

The real world oceanic ATS environment is complex and dynamic - indeed the Flight Information Regions (FIRs) of the oceanic Pacific find themselves at the global forefront of technological and procedural development. Whilst all such FIRs are broadly compliant with ICAO recommendations, small variations exist among these FIRs from time to time. In selecting the most appropriate set of procedures for this airspace on the VATSIM network, and given the environmental constraints thereof, some such variations have been 'smoothed' – or removed altogether - in order to maximise standardisation, clarity and usability.

Participating FIRs



The following oceanic FIRs (belonging to VATNZ, VATUSA and VATPAC) are covered by these Standard Operating Procedures:

- KZAK – Oakland Oceanic
- YBBB – Brisbane Oceanic
- YMMM – Melbourne Oceanic
- NZZO – Auckland Oceanic
- NZCM – McMurdo Oceanic
- NFFF – Nadi Oceanic
- NTTT – Tahiti Oceanic
- AGGG – Honiara FIR
- ANAU Nauru FIR

Honiara and Nauru are controlled by Brisbane and are not opened separately. It is expected that when operating the YBBB Oceanic sector (BN-TSN_FSS) that AGGG and ANAU are also covered.

Anchorage, Tokyo, Naha, Port Moresby, Santiago are yet to be implemented.

Controller Qualification, Endorsement and Knowledge Criteria

Any user occupying an Oceanic control position in one of the above FIRs must hold an *Oceanic Endorsement* issued by an approved delegate of either VATNZ, VATPAC or VATUSA.

The knowledge syllabus and endorsement criteria for the issue of an Oceanic Endorsement are set out below:

Endorsement Criteria

- *The controller must hold an ATC rating of C1 or higher*
- *The controller must have logged no less than 50 hours at an ATC position*
- *The controller must have logged no less than 25 hours at an Enroute Centre position*
- *The controller shall take and pass any written exam or online OTS evaluation as required by the Facility Advisory Board.*

Knowledge Syllabus

Controllers should know:

- *Procedural ATC, and how it differs from radar control.*
- *Basic procedural separation standards:*
    - *Time (15 minutes)*
        - *How to determine time difference for aircraft operating on the same track*
        - *How to determine time of crossing/passing*
        - *Fundamental principles of "Time of Passing"*
        - *Where, when and why TOP is used*
        - *How to give time separation instructions to aircraft*
    - *Distance (30NM – DME, RNAV and other derived means)*
        - *How to determine the distance between aircraft*
        - *How to give distance separation instructions to aircraft*
    - *Vertical:*
        - *1000ft RVSM*
        - *2000ft Non-RVSM (Above F290)*
        - *3000ft where one or both supersonic*
        - *How to determine the vertical difference between two aircraft*
        - *How to give vertical separation instructions to aircraft*
- *The visibility/network implications of logging in as FSS*
- *What is SELCAL*
- *What is a position report and what is its correct format*
- *Typical Oceanic airspace classification*

Skills

Controllers should be able to:

- *Initiate communication with an aircraft SELCAL*
- *Receive position reports and identify basic conflictions*
- *Use constraints and requirements to guarantee separation and maintain efficient sequencing*

Communications

Controllers should be able to:

- *Use voice and/or text in the application of all of the above skills using standard ICAO phraseology*
- *Coordinate with adjacent Oceanic and Enroute sectors to ensure efficient sequencing and separation*

When occupying an Oceanic control position, the endorsee must:

- Append '/O' after their name (eg. John Smith /O);
- Be registered on the Oceanic Controller roster; and
- Be duly authorised by an appropriate delegate in their CERT information.

Syllabus of Knowledge

This section provides some elaboration of the Knowledge Syllabus set out above. In addition to the information contained herein, a successful endorsement candidate will display a good operational knowledge of the relevant airspace data and procedures contained in the various Oceanic Partnership Divisions' websites. A common Pacific Oceanic reference website, containing such information as needed to 'stand alone' from the parent division sites is at http://pacificoceanic.vatsim.net

As stated in the Introduction, this syllabus assumes a level of knowledge commensurate with the above Minimum Experience requirements. As such, basic and generic air traffic control and service techniques are not additionally covered here – the focus remains on those elements unique to the Oceanic environment.

For clarity, the individual syllabus points are taken as subheadings, providing a study guide that is directly related to the above Syllabus.

1. Procedural vs. Radar ATC

Air Traffic Services provided in a radar environment directly utilise both primary and secondary radar returns to fix the position of an aircraft in time and space. This method is highly accurate – both aircraft and ground equipment is precisely calibrated, and the radar's rotation enables the aircraft's position to be re-assessed every few seconds. Knowing the precise location of the aircraft in his sector enables the controller to take advantage of relatively low, distance-based lateral separation minima, permitting higher traffic densities and improved flow. Aircraft within radar coverage are likely to also be within the rated coverage of a ground navaid (eg. VOR, DME or NDB), and so themselves conforming to a higher standard of navigational accuracy.

ATS in a non-radar (or 'procedural') environment differs significantly in that rather than using radar to ascertain the position of aircraft under his control, the controller must receive regular 'position reports' from aircraft as they pass over known fixes (eg. waypoints, navaids or airfields). A great deal of the world's airspace is procedural – the practical and economic difficulties of providing radar coverage throughout such airspace need not be elaborated on. Position reports generally contain a time at which the aircraft was overhead a fix, as well as the estimated time overhead the next fix. The distance between these fixes is known to both controller and pilot – thus the aircraft's position along track can be calculated at any given time using simple mathematics (speed x time = distance).

Lateral separation in procedural airspace is generally time-based, although increasing sophistication of aircraft navigation systems (eg. IRS or GPS-based RNAV) permits distance-based separation to be used in some circumstances. Additionally, aircraft passing within the rated coverage of ground navaids may also take advantage of distance based separation.

Oceanic ATS is virtually entirely procedural, with position reports being the primary means available to the controller for following the progress of aircraft under his control. The real world has seen the recent development and uptake of Automated Dependent Surveillance (ADS) systems in oceanic areas, and particularly the Pacific. These systems, confined mainly to heavy airliners, send multiple position reports (every 30 seconds or so) by satellite to the relevant ATS unit, enabling a radar-like display of the aircraft's position at any one time. ADS is not currently part of the VATSIM environment, and so is not discussed further in this document.

2. Procedural Separation Standards

2.0.1 For clarity and accuracy, the explanation of separation standards herein conforms loosely to ICAO Document 4444 (Air Traffic Management), as amended by the Agreement, and VATSIM, VATNZ, VATPAC and VATUSA policy. Standards have generally been simplified to take into account the limitations of the simulated environment, and purpose of the Agreement.

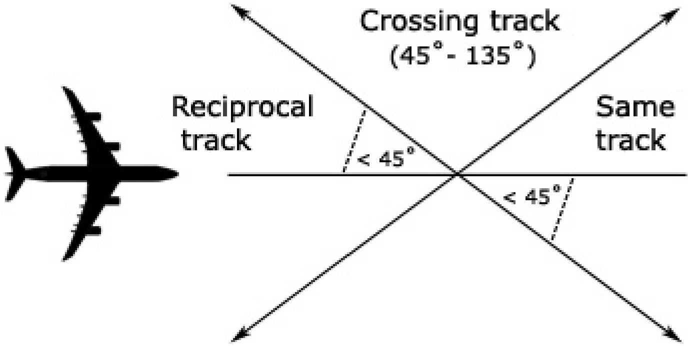
2.1 Longitudinal Separation

2.1.1 General

2.1.1.1 Longitudinal separation shall be applied only between aircraft on same or reciprocal tracks. The only variation to this rule is the 15 minute crossing track standard outlined in 2.1.2.2.

2.1.1.2 For the purpose of application of longitudinal separation, the terms *same track*, *reciprocal tracks* and *crossing tracks* shall have the following meanings:

a. **Same & reciprocal tracks** are those that intersect at less than 45 degrees.
b. **Crossing tracks** are those that intersect at or between 45 to 135 degrees



2.1.1.3 The two categories of longitudinal separation are time & distance

2.1.1.4 Longitudinal time separation must be established by using pilot estimates and ensuring that the time between two aircraft is equal or greater than the longitudinal time separation minimum. This may include requiring aircraft to depart at a specified time, to arrive over a fix at a specified time, or to hold over a fix until a specified time.

> Eg. "ABC, Cross ALPHA at time 1051 or later"
> "DEF, Hold at BRAVO to leave BRAVO at time 2215 or later"

2.1.1.4 Longitudinal separation between aircraft following on the same track may be maintained by application of speed control, including the Mach number technique.

> Eg. "United 863, maintain Mach 0.85 or less"

2.1.2 Time

2.1.2.1 Aircraft on the *same track* (including situations where one aircraft is climbing or descending through the level of another) are to be separated by **15 minutes**, except where the Mach Number Technique is used among *jet* aircraft (see 2.1.2.7).

2.1.2.2 Aircraft flying on *crossing tracks* (including climbs and descents, as above) are to be separated by **15 minutes** at the point of track intersection. Where 15 minutes does not exist at the crossing point, vertical separation shall be applied from when the *second* aircraft is 15 minutes from the crossing point, until the *first* aircraft is 15 minutes past the crossing point.

2.1.2.3 Aircraft flying on *reciprocal tracks* may only be separated **vertically**. Such separation must exist *at least 15 minutes* prior to, and after the estimated **time of passing/crossing**. Once it is positively determined that the aircraft have passed the 15 minutes buffer need not apply.

> Eg. "Qantas 11, report sighting and passing United 812, Boeing 747, FL340, estimated time of passing 1715

2.1.2.4 Time separation between aircraft is assessed and updated by routine position reports, or those initiated by the controller.

Eg. “Hawaiian 7443, request your estimate for BINNY”

2.1.2.5 *Time of crossing* is determined from pilot estimates for the intersecting fix.

2.1.2.6 *Time of passing* is determined by the controller from the respective pilot estimates.

2.1.2.7 Mach Number Technique may be used at the controller’s discretion for separating *jet* aircraft only, on the same or diverging tracks. It allows for a relaxation of the 15 minute longitudinal time standard under controlled conditions.

2.1.2.7.1 An aircraft assigned a Mach number shall maintain that speed unless otherwise approved or cancelled by ATC.

2.1.2.7.2 Minimum longitudinal separation between *jet* aircraft on the same track, whether in level, climbing or descending flight shall be **10 minutes**.

2.1.2.7.3 The following table may be used to ensure separation is maintained over a specified route sector/interval length:

	Distance to Fly and Separation (in minutes) required at Entry Point				
Difference in Mach	000–600nm	600 –1200nm	1201 –1800nm	1801 –2400nm	2401 –3000nm
0.01	11	12	13	14	15
0.02	12	14	16	18	20
0.03	13	16	19	22	25
0.04	14	18	22	26	30
0.05	15	20	25	30	35
0.06	16	22	28	34	40
0.07	17	24	31	38	45
0.08	18	26	34	42	50
0.09	19	28	37	46	55
0.10	20	30	40	50	60

Eg. If a*ircraft A and Aircraft B are on the same track for 700nm, with closing speed of M.04, then 18 minutes is required at the entry point to ensure that there will still be a minimum of 10 minutes at the exit point.*

2.1.2.8 Where an oceanic controller elects to use the ‘scope’ to *procedurally* separate traffic within visibility range, the Short Route Probe (SRP)/track vector may be used, at the controller’s discretion, to maintain a *time-based* separation standard.

2.1.2.8.1 The following procedure applies to aircraft on the *same track*:

a. the SRP track length must be equal to the applicable time separation standard (when separating multiple traffic pairs, the controller must ensure that the SRP length is set to the applicable value for each individual separation instance prior to use)
b. the SRP of the following aircraft must not touch any part of the leading aircraft's SRP
c. for aircraft on converging or diverging tracks, the SRP of the following aircraft must not overlap the relative position of the leading track symbol
d. the SRP must not be used to establish an *opposite direction* separation standard

2.1.2.8.2 The following procedure applies to aircraft on *crossing tracks*:

a. the SRP track length must be equal to the applicable time separation standard, for each separation instance the SRP is used
b. the SRP track of the second aircraft to cross the intersection must not be allowed to touch the SRP of the first aircraft

2.1.2.8.3 Separation predicated on the use of the SRP must be frequently re-checked by the controller, ensuring that the correct SRP length is set for each separation instance.

2.1.3 <u>Distance</u>

2.1.3.1 All distance-based separation standards must be measured by reference to the SAME point for both aircraft. In other words, you CANNOT have one aircraft report their distance from VOR 'A', and the other report their distance from NDB 'B'.

2.1.3.2 When running a distance standard with no closing between aircraft, distance checks must be made no later than every 30mins.

Eg. "Air Canada 522 and Qantas 127, in turn, report your DME distance LHI"

2.1.3.3 When running a distance standard with closing between aircraft, distance checks must be made no later than every 15mins.

2.1.3.4 The maximum closing permitted between two aircraft when running a distance standard is M.06.

2.1.3.5 Distance reports using 'Off-Track' navigation aids or waypoints may be used provided that the position of *both* aircraft is such that the DME readings are increasing or decreasing.

2.1.3.6 Using DME

2.1.3.6.1 For aircraft on the *same track*, the minimum standard is **20nm**.

2.1.3.6.2 A DME-based standard is not available to aircraft on *crossing tracks*.

2.1.3.6.3 For aircraft climbing or descending on the *same track*, **15nm** may be used while vertical separation does not exist, provided:

a. one aircraft maintains a level while vertical separation does not exist; and
b. separation is established by obtaining simultaneous DME readings from the aircraft.

2.1.3.6.5 For aircraft on *reciprocal tracks*: aircraft utilising on-track DME may be cleared to climb or descend to or through the levels occupied by other aircraft utilising on-track DME, provided that it has been positively established that the aircraft have passed each other and are at least **10nm** apart.

2.1.3.7 Using RNAV

2.1.3.7.1 RNAV distance-based separation may be applied *between RNAV-equipped aircraft* when operating on designated RNAV routes or on ATS routes defined by a VOR.

2.1.3.7.2 RNAV-equipped aircraft operating within airspace covered by the Agreement are assumed to conform to RNP-10 (10nm Required Navigation Performance) standard, unless otherwise indicated in the flight plan. ADS is assumed to be unavailable in VATSIM airspace, and airspace covered by the Agreement is assumed to be RNP10 (rather than the real world RNP4).

2.1.3.7.3 RNAV RNP10 aircraft climbing, cruising or descending on the *same track* must be separated by at least **50nm** in conjunction with the Mach Number Technique, provided that:

a. each aircraft reports its distance to or from the same waypoint;
b. separation between aircraft at the same level is checked by obtaining simultaneous RNAV distance readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed;
c. separation between aircraft climbing or descending is established by obtaining simultaneous RNAV distance readings from the aircraft;
d. in the case of aircraft climbing or descending, one aircraft maintains a level while vertical separation does not exist; and
e. when the 50nm longitudinal separation minimum is applied, the leading aircraft shall maintain a Mach number equal to or greater than that maintained by the following aircraft.

2.1.3.7.3.1 For aircraft on diverging or converging tracks, the following table may be used to ascertain the minimum distance from the intersecting/common waypoint at which **50nm** separation will exist (diverging tracks) or cease (converging tracks):

Angle	Distance	Angle	Distance	Angle	Distance	Angle	Distance
20	287	**38**	147	**56**	96	**74**	68
21	273	**39**	143	**57**	94	**75**	67
22	261	**40**	139	**58**	92	**76**	66
23	249	**41**	136	**59**	90	**77**	64
24	238	**42**	132	**60**	88	**78**	63
25	229	**43**	129	**61**	87	**79**	62
26	220	**44**	126	**62**	85	**80**	61
27	211	**45**	123	**63**	83	**81**	60
28	203	**46**	120	**64**	82	**82**	59
29	196	**47**	117	**65**	80	**83**	58
30	189	**48**	114	**66**	79	**84**	57
31	183	**49**	112	**67**	77	**85**	56
32	177	**50**	109	**68**	76	**86**	55
33	171	**51**	107	**69**	74	**87**	54
34	166	**52**	104	**70**	73	**88**	53
35	161	**53**	102	**71**	72	**89**	52
36	156	**54**	100	**72**	70	**90**	51
37	152	**55**	98	**73**	69		

The number in the *Angle* column represents the angular difference (in degrees) between tracks, while the number in the adjacent *Distance* column represents the distance (in nm) from the track intersection at which separation exists.

Eg. *For tracks intersecting by 35 degrees, aircraft flying on the respective tracks at the same time and speed will not be separated by 50nm until 161nm from the intersecting fix*.

2.1.3.7.4 For aircraft on *reciprocal tracks*: aircraft may be cleared to climb or descend to or through the levels occupied by the other provided that it has been positively established that the aircraft have passed each other and are at least **50nm** apart.

2.1.3.7.5 During the application of the 50nm separation minimum, if an aircraft fails to report its position, the controller shall take action within 3 minutes to establish communication. If communication has not been established within 8 minutes of the time the report should have been received, the controller shall take action to apply an alternative form of separation.

2.1.3.7.6 Separation can be adjusted by use of Mach number technique, time crossing requirements and holding.

2.2 Vertical Separation

2.2.1 Aircraft being separated by solely vertical means shall have the following separation minima applied:

a. 1000ft in RVSM airspace, between RVSM capable aircraft
b. 2000ft in RVSM airspace, where one or both aircraft not RVSM capable
c. 2000ft in non-RVSM airspace, at and above FL290
d. 1000ft in non-RVSM airspace, below FL290
e. 3000ft where one or both aircraft are supersonic

2.2.2 Pilots in direct communication with each other may, with their concurrence, be cleared to maintain a specified vertical separation between their aircraft during climb or descent.

2.2.3 The primary source of aircraft altitudes and levels shall be pilot reports.

> Eg. “Virgin 878 maintaining FL370”
> “United 474 climbing FL290”

3. Network implications of FSS facility type

When logging on as a Flight Service Station (FSS), radar clients generally default to maximum range/visibility (1500nm). Controllers should be mindful that excessive range consumes significant network bandwidth and resources, and should only be used when required.

4. HF Radiotelephony and SELCAL

4.1 HF Radio

The enormous size and expanse of worldwide oceanic airspace sees most of it out of VHF radio range. HF radio, with its ability to refract and reflect from the ionosphere, is therefore used as the primary long-range radio communications medium.

The nature of HF radio makes it highly vulnerable to atmospheric distortion and noise, and so radiotelephony (R/T) procedures on HF tend to be more formal in order to maximise clarity. Eg:

> UAL873: San Francisco, San Francisco, United 873 on 122.5
> KZAK_W_FSS: United 873, San Francisco, go ahead
> UAL873: San Francisco, United 873 request climb FL390

When in oceanic airspace on the VATSIM network, voice communications are assumed to be on [simulated] HF unless otherwise advised.

4.2 SELCAL

4.2.1 Given the background noise level experienced on HF radio frequencies, flight crews usually prefer to turn down the audio level of their HF receiver. Real world SELCAL uses a unique 4-letter code for each aircraft (eg. QR-AC) transmitted over the communications frequency to sound an alert for the flight crew.

On VATSIM, when ATC wishes to communicate with an aircraft, they will send a single SELCAL message by text to the aircraft. All aircraft monitoring that frequency receive the SELCAL broadcast, but only the intended recipient will hear the "Ding Dong" of an incoming message. When alerted by SELCAL, the crew then turn up their HF radio to communicate with ATC. The crew must then ensure that the message is intended for them, responding using ICAO recommended radio procedures.

Eg. Initial SELCAL check by Oceanic:

> [BN-TSN_FSS] “Qantas 43 good afternoon, Brisbane accepts Primary guard this frequency, secondary 122.1, standby SELCAL check."

The aircraft awaits the SELCAL check before replying...

> {SELCAL -> QFA43}
> [PILOT] “SELCAL check OK, secondary 122.1, Qantas 43"
> [BN-TSN_FSS] “Qantas 43, request your estimate VIROG"

From now on ATC will preface communications with a Text SELCAL:

> {SELCAL -> QFA43}
> [PILOT] "Auckland Radio, Qantas 43 on 128.6 answering SELCAL"
> [NZZO_FSS] "Qantas 43, from control: Climb to and maintain FL380 non-standard, report reaching."
> [PILOT] "Auckland, Qantas 43 leaving FL370 for FL380, wilco."

4.2.2 Controllers must check each aircraft’s flight strip for a discrete SELCAL code. If aircraft have nominated a discrete code (for example “QR-AC”), then a SELCAL should be sent on the controller’s text frequency in the following format:

> *SELCAL QRAC <enter>*

4.2.3 Where a flight strip contains no discrete code, the controller should select the aircraft and transmit the generic term ‘SELCAL’. For example:

> *QFA43 SELCAL <enter>*

5. Position Reports

5.1 Voice position reports in airspace covered by the Agreement shall contain the following elements:

1. Aircraft identification
2. Position
3. Time
4. Flight level or altitude, including passing level and cleared level if not maintaining the cleared level
5. Next position and time over
6. Ensuing significant point

5.2 When assigned a speed (including Mach numbers) to maintain, the flight crew shall include this speed in their position reports.

> Eg. "United 873 position LHI time 1853, Flight Level 360, estimate PANDA at 1953, SANDO next. Maintaining Mach 0.84"

5.3 If the fix is designated as requiring the reporting of certain meteorological elements, these shall be included.

> Eg. "United 873 position LHI time 1853, Flight Level 360, estimate PANDA at 1953, SANDO next, temperature minus 57, wind 160 diagonal 35"

5.4 When crossing the boundary between East and West sectors in the Oakland FIR (KZAK), a report shall be passed to ATC containing the following elements:

a. Aircraft Identification
b. Aircraft type
c. Origin
d. Destination

A new SELCAL check shall be requested at this time.

> Eg. "San Francisco, Air Canada 392, Airbus A340, Sydney to Vancouver, request SELCAL check."

5.5 Should a pilot find that an estimate has subsequently varied by more than 2 minutes since making a position report, the new estimate shall be passed to ATC.

5.6 If an aircraft fails to report its position with 3 minutes of its estimated time, controllers must attempt to establish contact with that aircraft and obtain a position report.

7. Time Compression

7.1 To facilitate increased interest by pilots in airspace covered by the Agreement, special procedures for time compression flight shall be available to pilots.

7.2.1 Time compression shall be available only for RVSM-capable aircraft at the following altitudes:

a. Westbound at 2x - FL380
b. Westbound at 4x - FL400
c. Eastbound at 2x - FL390
d. Eastbound at 4x - FL410

7.2.2 Aircraft using time compression at the above levels shall have priority over real time aircraft.

7.2.3 From time to time, parties to the Agreement may authorise time compression at other levels and for other aircraft during special events and the like.

7.3 Pilots shall indicate time-compression in the flight plan comments (e.g.: "2x R464"), as well as indicating the proper cruise altitude.

7.4 ATC may decline clearance to climb to the time-compression altitude, and change simulation rate due to congestion on the route.

7.5 Aircraft entering oceanic airspace shall not commence time compression until at least **20 minutes** after passing the oceanic entry waypoint. Aircraft leaving oceanic airspace shall cancel time compression at least **20 minutes** prior to the applicable oceanic exit waypoint. These 1x segments allow ATC to facilitate sequencing.

7.6 Aircraft shall be separated by at least **20 minutes** when passing the time compression start point (see 7.5 above). In addition, aircraft will be speed restricted to the slowest Mach number being used on the route.

7.7 Pilots shall not submit position reports while in time-compressed simulation rates, but must maintain a continuous network connection.

7.8 ATC shall not authorise a pilot request for step climb/step descent to other time-compression altitudes, unless the requested routes/levels are vacant.

7.8.1 Block levels/altitudes shall not be assigned or requested during time compression.

7.9 Upon resuming 1x simulation rate, pilots must set the simulator clock to actual time to ensure accurate position reports.

7.10 Simulation rates must be 1x on oceanic routes when not using the procedures outlined above.

7.11 Controllers may approve faster simulation rates for VFR operations conducted off the route system and at valid oceanic VFR altitudes.

8. Coordination with Adjacent Sectors

8.1 Coordination between Oceanic control units

For aircraft passing from one Oceanic sector to the next, controllers must provide an estimate and level to the next sector no less than **30 minutes** prior to the aircraft's estimate for the sector boundary. Eg:

> Nadi: "Estimate Air New Zealand 425, EGATO 0243, FL370"
> Auckland: " Air New Zealand 425, FL370"

Once coordination has been completed, the controller must advise the next sector of any change in estimate greater than **two minutes**. Additionally, no changes to level or tracking are allowed without first checking with the next controller. Eg:

> Nadi: " Air New Zealand 425 requesting FL390"
> Auckland: "Concur FL390, Air New Zealand 425"

8.2 Coordination between Oceanic and Continental/Domestic control units

Oceanic sectors must provide coordination to continental/domestic sectors in accordance with published policies of the respective Agreement parties.

In situations where a policy does not specify coordination requirements, coordination for aircraft passing from an oceanic sector to a continental/domestic sector shall entail provision of an estimate and level to the continental/domestic sector, no less than **15 minutes** prior to the aircraft's estimate for the sector boundary.

9. Pacific Airspace Classification, Routes and Sectors

9.1 Airspace Designation

Oceanic airspace (not part of domestic CTA, control zones or terminal areas) in participating FIRs is designated:

Class A (CTA) at and above FL245; and
Class G (Uncontrolled/OCTA) below FL240.

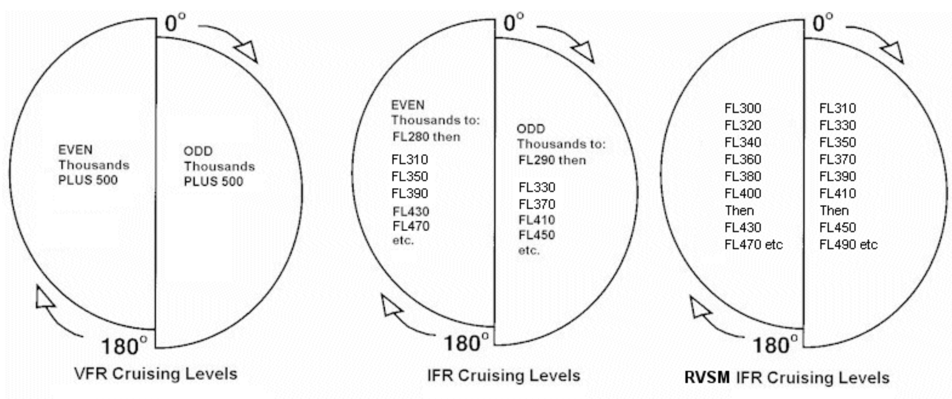
Class A oceanic airspace is designated **RVSM** (Reduced Vertical Separation Minima) airspace. Aircraft RVSM capability should be noted in the flight plan.

9.2 Altimetry

The following Transition Levels and Altitudes apply to Oceanic airspace in the respective FIRs:

FIR	Transition Alt	Transition Level
KZAK – Oakland Oceanic	18,000ft	FL180
YBBB – Brisbane Oceanic	10,000ft	FL110
YMMM – Melbourne Oceanic	10,000ft	FL110
NZZO – Auckland Oceanic	13,000ft	FL150
NZCM – McMurdo Oceanic	19,500ft	FL200
Note: Standard Altimeter setting (29.92 In Hg/1013 hPa should be used when more than 100 nm from McMurdo		
NFFF – Nadi Oceanic	11,000ft	FL130
NTTT – Tahiti Oceanic	9,000ft	By ATC
AGGG – Honiara FIR	11,000ft	FL120
ANAU – Nauru FIR	11,000ft	FL120

9.3 Cruising Levels



Note: VFR operations are prohibited in Class A oceanic airspace.

Requests for non-standard levels, block altitudes and deferred climbs may be made, and are subject to controller approval.

9.4 Transponder Operation

All aircraft in the Oceanic FIRs shall squawk code **2000** (Mode C).

Domestic FIR/CTA/TMA controllers handing off to an Oceanic controller shall instruct aircraft to do so prior to reaching the oceanic airspace boundary.

9.5 Oceanic and Random Routes

The following routes are approved for use within the Pacific oceanic FIRs:

- Published airways
- ‘Random’ and User Preferred Routes (UPRs) – eg. PACOTS, IORRA etc

There is typically an intersection at or close to the boundary between the FIR and the adjacent Centre. This fix will be designated as the Transfer-of-Control-Point or TCP, and is where Hand-Offs will occur.

9.6 Communications, Callsigns and Frequencies

All aircraft must *either* maintain a continuous listening watch on the appropriate frequency, *or* maintain a SELCAL watch (described in section 4).

Aircraft must establish communications with the relevant Oceanic controller prior to entering oceanic airspace, or on hand-off (whichever is applicable).

The following table outlines the various control positions. Control boundaries are as per the relevant Sector File.

Control Position	Callsign	Voice Callsign	Freq
KZAK – Oakland Oceanic (East)	KZAK_E_FSS	San Francisco	131.95
KZAK – Oakland Oceanic (West)	KZAK_W_FSS	San Francisco	122.50
YBBB – Brisbane Oceanic (Tasman)	BN-TSN_FSS	Brisbane	128.60
AGGG – Honiara FIR	BN-TSN_FSS	Brisbane	128.60
ANAU – Nauru FIR	BN-TSN_FSS	Brisbane	128.60
YMMM – Melbourne Oceanic (Indian Ocean)	ML-IND_FSS	Brisbane	122.40
NZZO – Auckland Oceanic	NZZO_FSS	Auckland	128.90
NZCM – McMurdo Oceanic	NZCM_FSS	McMurdo	128.70
NFFF – Nadi Oceanic	NFFF_FSS	Nadi	123.60
NTTT – Tahiti Oceanic	NTTT_FSS	Tahiti	125.50

Note 1: KZAK oceanic positions may be further subdivided by the shift supervisor, in which case the subsector shall add a numeral to the text callsign E/W element. For example: ZAK_W1_FSS. Frequencies to be utilised, in order, are 122.60, 122.55, 122.65 and 131.90.

Note 2: Honiara (AGGG) and Nauru (ANAU) FIR ATS are provided by Brisbane Oceanic (Tasman).

Note 3: The word 'radio' is appended to the applicable voice callsign, eg. 'San Francisco Radio'.

Standard ICAO RRP English phraseology should be used in the applicable FIRs.

9.7 Classes of Operation

Instrument Flight Rules aircraft may operate at any level, in accordance with the applicable class of airspace. *Visual Flight Rules* aircraft may operate at any altitude not above 10,000ft.

10. Voice Communications

10.1 All voice communications within the oceanic airspace covered by this Agreement shall take place in the voice room "**server/callsign**" where the server is the most appropriate voice server for the controller and the callsign is the one listed in the table at section 9.6 for each oceanic position *e.g Brisbane (Tasman) would use rw1.vatpac.org/bn-tsn_fss.*

11. Document Effectivity

11.1 The Agreement parties will make every effort to synchronise administrative and operational policy with respect to airspace covered in the Agreement. It is accepted that some significant operational differences exist in the real world operation, structure and use of oceanic airspace covered in this Agreement, however wherever possible these differences shall be 'smoothed', or compromises reached, to facilitate greater online use of this airspace.

11.2 In achieving the aims of 11.1 above, where there is a conflict between a policy contained in this document and one promulgated separately by a party to the Agreement, this document shall prevail *unless explicitly stated otherwise in the policy concerned*.

> Eg. "This policy shall take precedence over the *Oceanic Partnership Agreement*, its policies, letters and documents."

11.3 All matters pertaining to the issue, maintenance, administration and operation of Oceanic Endorsements for controllers shall be dealt with in accordance with the Agreement.

12. <u>Links to Agreement Parties' websites</u>

12.1 Main Site

Pacific Oceanic Partnership http://pacificoceanicvatsim.net

12.2 Participants' websites

VATUSA http://www.vatusa.net
    Oakland Oceanic FIR http://zak.vatusa.net/
VATPAC http://www.vatpac.org/ (includes links to Oceanic airspace pages)
    South Pacific vACC http://www.spvacc.org
VATNZ http://www.vatnz.net/