

THE OTHER POND

ETOPS AND OCEANIC PROCEDURES
PACIFIC FLIGHT #1: PACOTS



Based on PFPX and the PMDG 777LR

RJAA-KSFO

TOKYO NARITA - SAN FRANCISCO

FOR FLIGHT SIMULATOR USE ONLY

Welcome to the Pacific!

The other pond, the big pond, the less flown over one. If you are a long haul addict like myself it offers challenges and a very nice change from the usual routes. Besides that, the 77L was not built for short haul so if you put down your 90\$ for it, then it makes sense putting it to good use considering its capabilities.

We fly today from Tokyo's Narita airport to San Francisco International. Our real world counterpart was delayed quite a bit (2-3hrs), but we do not have the real world headaches to deal with so we depart with just a 5 minute delay.

The North Pacific, which we will be flying today, is typically operated under ETOPS 207, an extension of ETOPS 180. Today we fly as All Nippon 8 (ANA8) scheduled flight, which is in fact a 77W flight, but our 77L will be just awesome for it as well.

Before going through the flight, let's get to know the area a little bit, shall we?

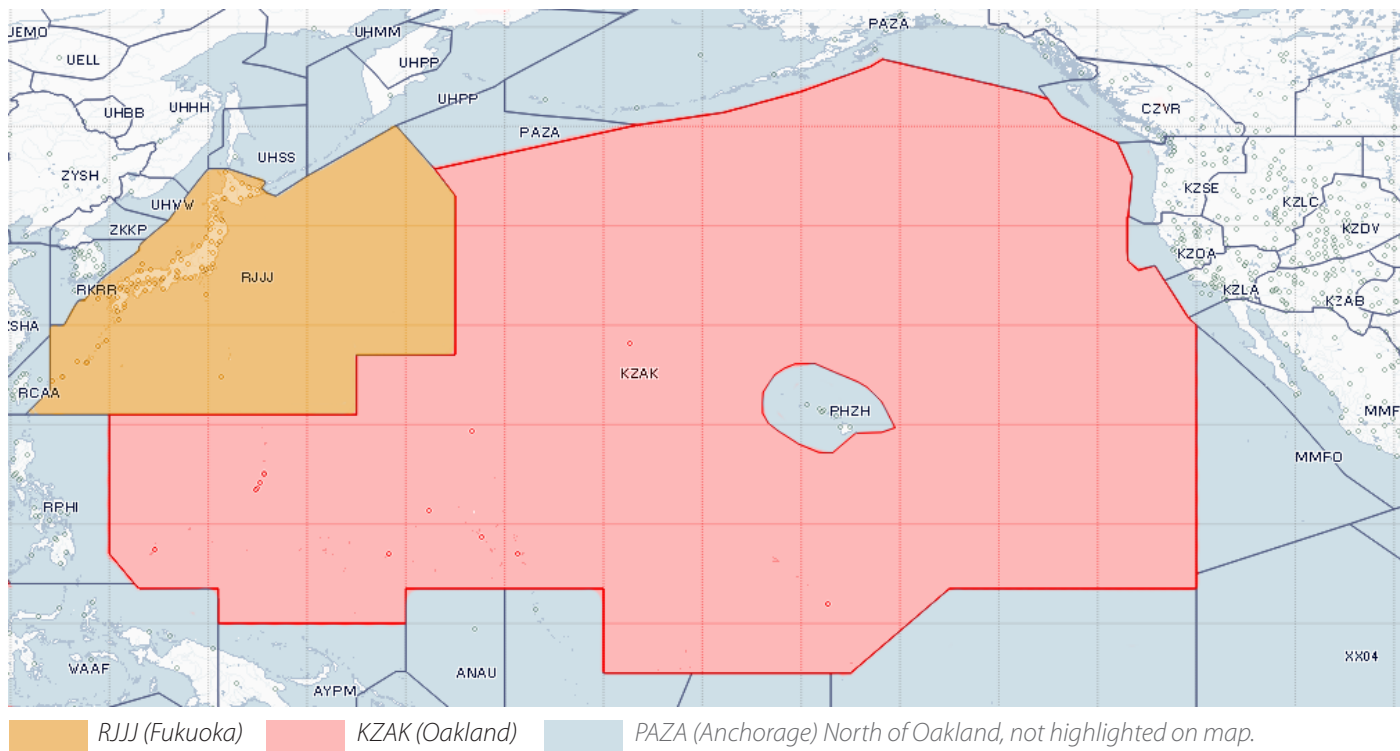
The Pacific Organized Track System (PACOTS) is very similar to the North Atlantic Tracks (NAT) in terms of why it exists at all (they are really good with acronyms in aviation huh?). They are there to regulate traffic taking into consideration winds and all the funny stuff the respective oceanic centers have to deal with. They connect Japan and South East Asia to US and Canada, especially airports located on the west coast. The track message is similar to the NAT message, with some very handy differences. If we go past the tracks naming (letters for tracks going west and numbers for tracks going east), the most neat thing about the PACOTS is in the message itself. So yes, the area is vast, it is an ocean, the biggest around this planet, it has some funny weather around, a bunch of volcanoes and it makes you look at the ETOPS alternates list with an eyebrow raised. The best way to get to know this part of Pacific operations, is in the NOTAMs containing the current tracks.

As you know (or can remember) planning a route from Heathrow to Boston, required getting the NAT, the route from Heathrow to the track entry point (from the UK&Ireland standard route document (SRD)) and the track from the track exit point to Boston. Put the three together and we had a realistic flight plan to fiddle with. The PACOTS message is an all inclusive package compared to that. It gives you the way out, the track and the way in. Did I also mention that you don't request a clearance to enter the track and the departure clearance you get while you are comfortable on your chair, greeting the AES/GSX guy who is waiting for your push back command, is enough?

Too much talk? Agreed. **Let's get down to business.**

Who runs the show around here?

To cut this short, that would be generally Fukuoka in Japan and Oakland (and Anchorage) on the other side.



Tracks	Origin / Destination Combo
1, 2, 3	Japan to North American West Coast
4	<i>Japan to North American West Coast</i>
8	Japan to Texas
11	Japan to Hawaii
12	<i>Japan to Hawaii</i>
14	Asia to North American West Coast
15	Asia to North American West Coast

Greyed tracks are optional

Tracks	Origin / Destination Combo
A	Hawaii to Japan
B	<i>Hawaii to Japan</i>
C	North American West Coast to Japan
D	<i>North American West Coast to Japan</i>
E, F, G	North American West Coast to Japan
H, I	<i>North American West Coast to Asia</i>
J, K	Asia to North American West Coast
L	North American West Coast to Manila
M	Texas to Japan

Greyed tracks are optional

The ladies and gents over at **Fukuoka** publish the Eastbound tracks (Japan/South East Asia-North America) daily at around 2200Z. Each track is designated with a number, starting with number 1 and increasing from North to South. Generally speaking they are preset to the origin-destination combo on the left. There might be additional tracks issued depending on the conditions on the day.

On the other side, the ladies and gents over of Oakland Oceanic publish the Westbound tracks (North America->Japan/South East Asia) daily: by 11:00Z for tracks C, D, E, F, G, H, and by 00:00Z for tracks J and K. Each track is designated with a letter. They are preset to the origin-destination combo on the right. As with the Fukuoka, there might be additional tracks issued depending on the conditions on the day (*they like their options these guys, don't they?*). Now just before we dwell further into this, **did you know** that Oakland FIR/OCA makes up 10% of Earth's surface?

If you are a North Atlantic pilot, think of Fukuoka and Oakland as of Gander and Shanwick. Just like the North Atlantic the area doesn't shine in radar coverage so we have to make use of a very basic skill: communication. That's what you got to do around here as well: position reports at every "checkpoint", which will enable the air traffic controllers to give you ample room around you and insure flight safety.

The message

The message is issued as a NOTAM by the FIR depending on the direction of the tracks. Let's take a look at sample NOTAM:

🌐 Sample track message as issued by [KZAK - OAKLAND FIR/OCA](#)

```
-----  
A0573/14 - (TDM TRK C 140213190001  
1402131900 1402140800  
JOWEN LOHNE ARCAL PORGE OGGOE OFORD ONEIL OPAKE OLCOT OPHET OGDEN  
OMOTO  
RTS/CYVR V317 QQ YZT JOWEN  
KSEA TOU FINGS JOWEN  
KPDX TOU FINGS JOWEN  
KSFO TOU FINGS JOWEN  
KLAX TOU FINGS JOWEN  
OMOTO R580 OATIS  
RMK/TRK ADVISORY IN EFFECT FOR TRK C  
13 FEB 19:00 2014 UNTIL 14 FEB 08:00 2014. CREATED: 13 FEB 01:52 2014  
-----
```

The first and second rows above just identify the track and its validity times, which are also repeated at the end. This one is "C", a westbound track issued by KZAK and it is valid from 13/02/2014 19:00z to 14/02/2014 08:00z.

The track is:

```
JOWEN LOHNE ARCAL PORGE OGGOE OFORD ONEIL OPAKE OLCOT OPHET OGDEN OMOTO
```

RTS/ indicates routes to join and leave the track. Each of the airports in the lists has a route which you fly from the airport to join the track.

The last of the routes, OMOTO R580 OATIS, is the route by which you leave the track. Often it is an "OTRxx" route, but this time it is R580. OTR stands for Oceanic Transition Routes, which is how you transition to and from the Pacific in Japan.

RMK/ Here you are presented again with a more verbose track identification and its validity times.

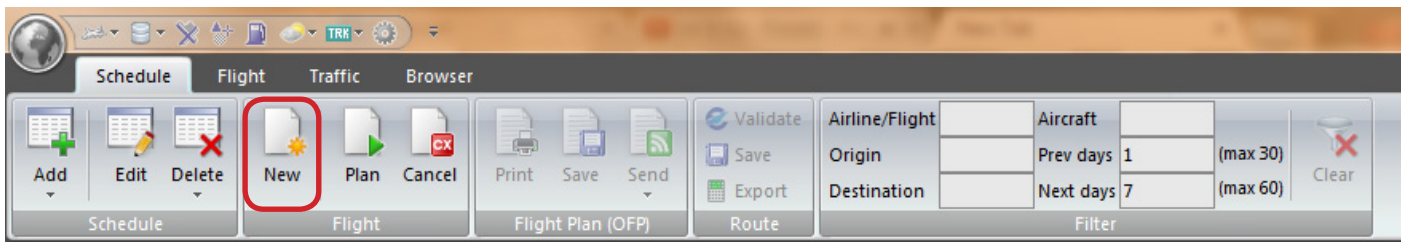
🌐 Sample track message as issued by [RJJJ - FUKUOKA/JCAB AIR TRAFFIC FLOW MANAGEMENT CENTRE](#)

```
-----  
J0488/14 - EASTBOUND PACOTS TRACKS BETWEEN SOUTHEAST ASIA AND NORTH AMERICA,  
REQUIRED FOR ACFT CROSSING 160E  
BETWEEN 02130900UTC AND 02131200UTC,  
TRACK 14.  
FLEX ROUTE : EMRON 42N160E 45N170E 46N180E 45N170W 43N160W  
41N150W 40N140W 38N130W ALLBE  
RCTP/VHHH ROUTE : BORDO R583 BISIS G581 ONC V73 TAMAK Y57 BUNGU Y81  
SYOYU Y809 KAGIS OTR11 AVBET OTR9 EMRON  
NAR ROUTE : ACFT LDG KSFO--ALLBE PIRAT OSI KSFO  
ACFT LDG KLAX--ALLBE PIRAT AVE FIM KLAX  
RMK : TRK 15 NOT AVAILABLE  
ATM CENTER TEL:81-92-608-8870. 13 FEB 07:00 2014 UNTIL 13  
FEB 21:00 2014. CREATED: 12 FEB 19:45 2014  
-----
```

The message as issued by Fukuoka is a little more verbose. No need to go over each part. FLEX ROUTE is the actual track. This track concerns departures from South East Asia (VHHH and RCTP) to North America (KSFO and KLAX). You have routes from VHHH and RCTP and the ones to KSFO and KLAX after leaving the track.

You, the dispatcher.

(because all of us who take flightsim at a certain level suffer from an imposed dissociative identity disorder and this is one of our unavoidable personalities)*



The screenshot shows the 'General' tab of the flight simulator software. The 'Flight' section contains the following data:

Airline	Flight Number	From	To	Take-Off Rwy	Landing Rwy	Taxi Out	Taxi In
ANA	8	RJAA	KSFO	34R	19L	10 min	10 min

Commercial Flt Nr	Type of flight	Type of operation	Date of flight	STD	ETD	STA	EET
ANA008	Int'l	N	16/Feb 2014	08:30		19:05	10:35

The 'Aircraft' section contains the following data:

Aircraft	Type	Configuration	Weight adjust	Empty Weight	Max Take-Off	Max Landing
JA700A	B777-2LR GE	Standard		145,150	347,500	223,168

Climb	Cruise/Cost Index	Descent	Cruise Altitude/FL	Step Climb	Altitude Cap	Service Ceiling
250/310/84	CI 90	84/320/250	OPT	2,000 ft	FL431	FL431

The 'Payload' section contains the following data:

Adults	Children	Infants	Max Pax	Baggage	Cargo	Payload	Zero Fuel	Max Zero Fuel
207	13		301	2,860	43,615	62,662	207,812	209,106

The 'Fuel' section contains the following data:

Policy	Extra Time	Extra Fuel	Hold Time	Taxi Fuel	Release Fuel	Capacity
EU-OPS			00:30	260	MIN	145,026

MEL/CDL %	MEL/CDL Fuel	Ballast Fuel	Contingency Fuel	Tankering Fuel	Remaining Fuel	APU Inflight
						No

The 'Route' section shows: None | Distance: 4450.5 nm

The 'Alternates' section contains the following data:

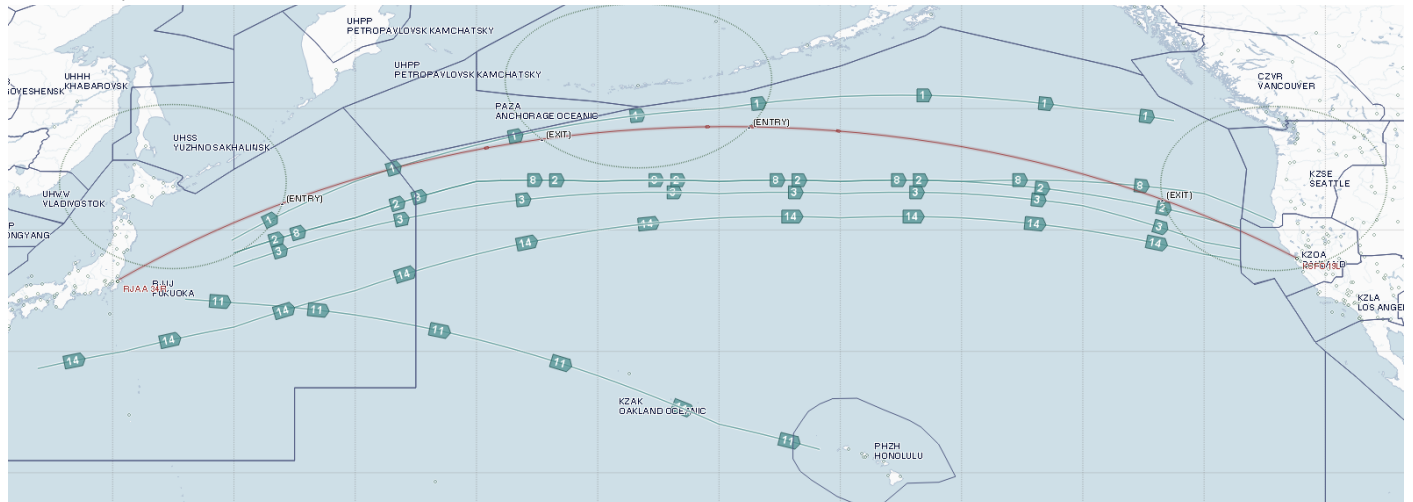
Altns required	Priority	1st Alternate	2nd Alternate	Take-Off Altn	Enroute Altn
1	Min Fuel	(Auto)			

Destination Altn	Runway	Route	Circuit Dist	Hold Time	Altitude/FL	FP Distance
KSMF	16R	GAPP5 OSI V25 SFO DCT CCR CCR2			OPT	125.6 nm

Just click New on the ribbon and get the data needed for the flight in. We will go through the route in the next pages as well sort out our ETOPS.

*Please don't call the shrink thinking there is something wrong with you.

FPFX map overview with **Eastbound PACOTS** drawn



Fukuoka's message and helping hand for our route is in the following NOTAM:

J0523/14 - EASTBOUND PACOTS TRACKS BETWEEN SOUTHEAST ASIA AND NORTH AMERICA, REQUIRED FOR ACFT CROSSING 160E BETWEEN 02160900UTC AND 02161200UTC, TRACK 14.

FLEX ROUTE : DOVAG UKATA 32N150E 35N160E 38N170E 40N180E
41N170W 41N160W 41N150W 40N140W 38N130W ALLBE

RCTP/VHHH ROUTE : BORDO R583 BISIS G581 ONC V73 DOVAG

NAR ROUTE : ACFT LDG KSFO--ALLBE PIRAT OSI KSFO
ACFT LDG KLAX--ALLBE PIRAT AVE FIM KLAX

RMK : TRK 15 NOT AVAILABLE

ATM CENTER TEL:81-92-608-8870. 16 FEB 07:00 2014 UNTIL 16 FEB 21:00 2014. CREATED: 15 FEB 18:15 2014

J0522/14 - EASTBOUND PACOTS TRACKS BETWEEN JAPAN AND HAWAII, REQUIRED FOR ACFT CROSSING 160E BETWEEN 02161200UTC AND 02161600UTC, TRACK 11.

FLEX ROUTE : MORAY 34N150E 33N160E 31N170E 28N180E 24N170W PUPPI

JAPAN ROUTE : SMOLT OTR15 MORAY

PHNL ROUTE : PUPPI BOOKE PHNL

RMK : TRK 12 NOT AVAILABLE

ATM CENTER TEL:81-92-608-8870. 16 FEB 10:00 2014 UNTIL 16 FEB 21:00 2014. CREATED: 15 FEB 18:15 2014

J0521/14 - EASTBOUND PACOTS TRACKS BETWEEN JAPAN AND NORTH AMERICA, TRACK 1.

FLEX ROUTE : KALNA 44N160E 47N170E 49N180E 50N170W 51N160W 51N150W
50N140W PRETY

JAPAN ROUTE : ONION OTR5 KALNA

NAR ROUTE : ACFT LDG KSEA--PRETY TAMRU TOU MARNR KSEA

ACFT LDG KPDY--PRETY TAMRU TOU KEIKO KPDY

ACFT LDG CYVR--PRETY TAMRU YAZ FOCHE CYVR

RMK : ACFT LDG OTHER DEST--PRETY TAMRU SEFIX UPR TO DEST

TRACK 2.

FLEX ROUTE : EMRON 41N160E 44N170E 44N180E 44N170W 44N160W 44N150W
43N140W 41N130W TRYSH

JAPAN ROUTE : ONION OTR5 ADNAP OTR7 EMRON

NAR ROUTE : ACFT LDG KSFO--TRYSH ENI PYE KSFO

ACFT LDG KLAX--TRYSH ENI AVE FIM KLAX

TRACK 3.

FLEX ROUTE : LEPKI 40N160E 42N170E 43N180E 43N170W 43N160W 43N150W
42N140W 39N130W DACEM

JAPAN ROUTE : AVBET OTR11 LEPKI

NAR ROUTE : ACFT LDG KLAX--DACEM PAINT PIRAT AVE FIM KLAX

ACFT LDG KSFO--DACEM PAINT PIRAT OSI KSFO

RMK : ATM CENTER TEL:81-92-608-8870. 16 FEB 07:00 2014 UNTIL 16 FEB 21:00 2014. CREATED: 15 FEB 18:14 2014

Building our flight

Take a look at the Fukuoka's message. We are going from Narita to San Francisco (thus Japan to North America West Coast). I have highlighted the message that concerns us. NOTAM J0521/14, Tracks 2 and 3, are both available for our route.

Via Track 2, our route, made by just stitching together the parts of the message concerning Japan route, Flex route and KSFO route, would look like this:

```
CUPID1 CUPID Y808 ONION OTR5 ADNAP OTR7 EMRON DCT 41N160E 44N170E  
44N180E 44N170W 44N160W 44N150W 43N140W 41N130W DCT TRYSH DCT ENI GOLDN6
```

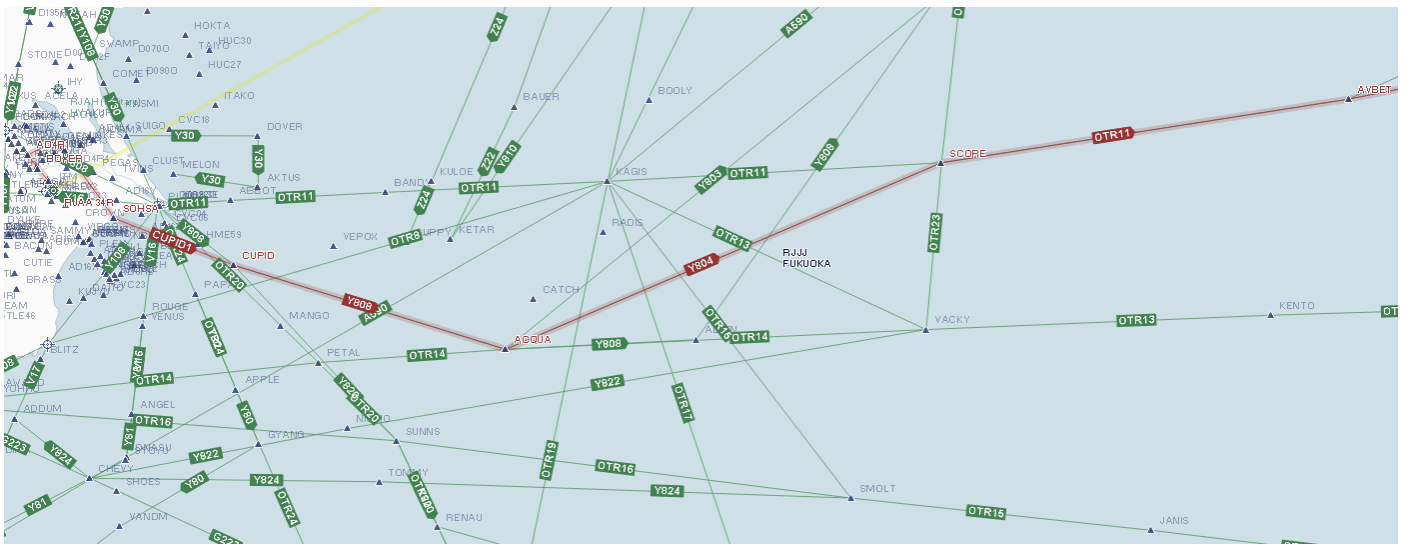
Distance increase from great circle distance: **4%**

Via Track 3, our route, again made by just stitching together the parts of the message concerning Japan route, Flex route and KSFO route, would look like this:

```
CUPID1 CUPID Y808 ACQUA Y804 SCORE OTR11 LEPKI DCT 40N160E 42N170E  
43N180E 43N170W 43N160W 43N150W 42N140W 39N130W DCT DACEM DCT PAINT DCT  
PIRAT DCT OSI
```

Distance increase from great circle distance: **3%**

OK, I will admit this was not just stitching. Departing from RJAA with an SID to take me up to the point where I could join the Japan route in the message required some manual intervention. See below:



The Japan route starts at AVBET, from which point I follow OTR11 to LEPKI. I still need to find a way out of the door from Narita. In this case my SID is via CUPID, which offer the shortest way available to the OTRs. CUPID1 takes me to, well, CUPID and by showing low altitude airways and fixes on the map I can create the route to join OTR11. Thus, CUPID1 to CUPID then I join Y808 to ACQUA intersection, where I join Y804 to SCORE. OTR11 takes me from SCORE to LEPKI and AVBET is on the way as well.

Now then, the winds are pretty much the same with the tracks being relatively close to each other, so I am going for my second option, just for that 1% of great circle distance. I have to choose after all. On my first flight for this guide, once in San Francisco I was given radar vectors from PIRAT, which is what I think the way around for this particular track because there is no arrival OSI (Woodside VOR).

Once again, here is our final flight plan for the day:

```
CUPID1 CUPID Y808 ACQUA Y804 SCORE OTR11 LEPKI DCT 40N160E 42N170E  
43N180E 43N170W 43N160W 43N150W 42N140W 39N130W DCT DACEM DCT PAINT DCT  
PIRAT DCT OSI
```

Now we can go through the other things we need to get done in PFPX in order to switch to our other personality at a click of a button and get to that flight deck. I am talking, obviously, of our ETOPS set up and getting everything ready for PFPX to compute the information we need to put into our FMC.

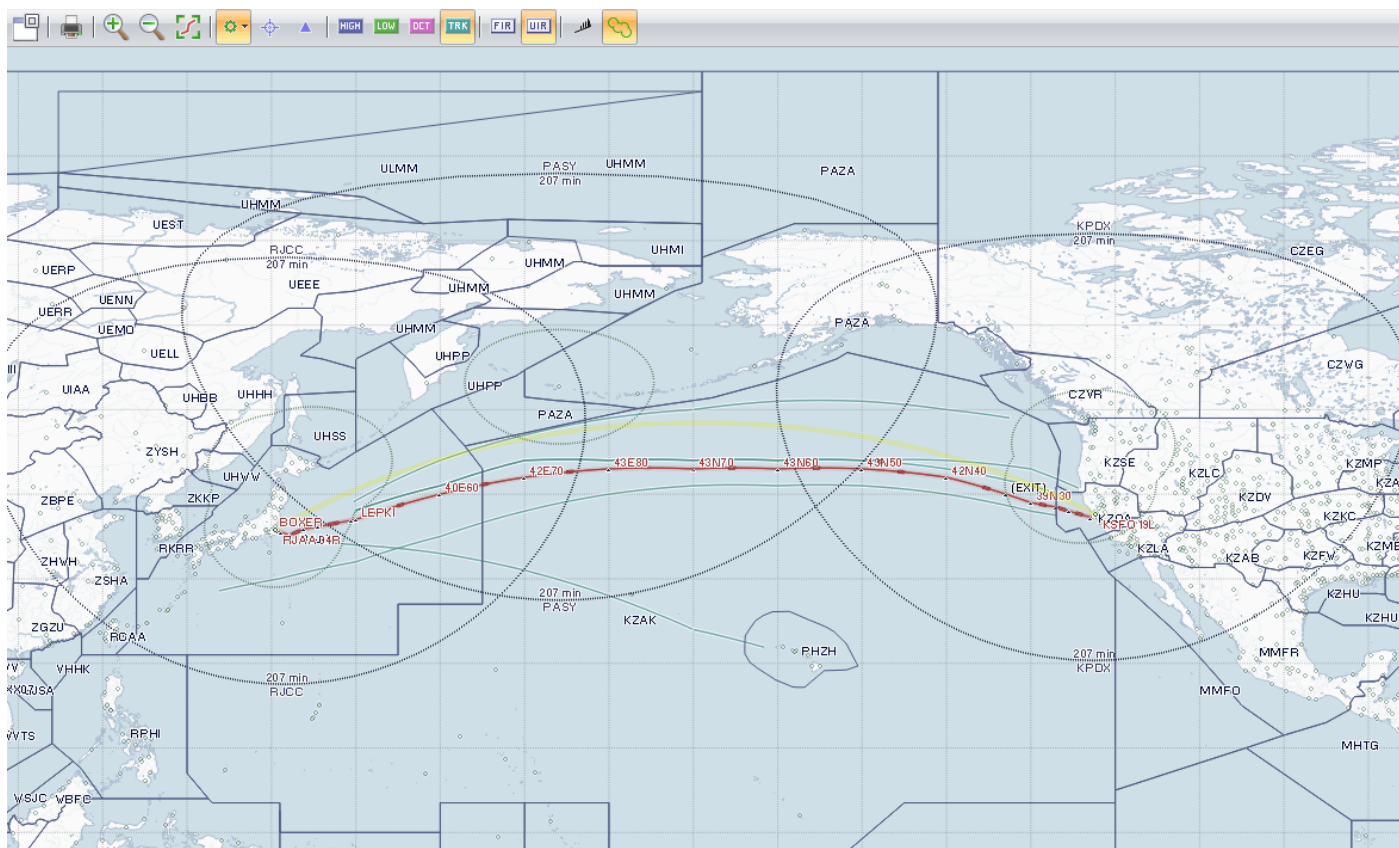
ETOPS Set up

The area doesn't offer much in terms of alternates. It is all well on the first and last one, because they will be probably based in Japan and North America West Coast, but the middle portion of it, is tricky.

ETOPS scenario	Max Diversion Time	Max Diversion Dist	ETOPS icing			
ETOPS 207	207 min	1516 nm	No			
ETP Airports 1	ETP Airports 2	ETP Airports 3	ETP Airports 4	ETP Airports 5	ETP Airports 6	ETP Airports 7
RJCC	PASY					
PASY	KPDX					

Adequate airports

RJAA RJST RJCK RJCN KACV



Every single airport I could come up with, had choppy weather today, and the best I could come up with was PASY (Shemya Island, Alaska), which speaks a lot about what the conditions were elsewhere. My ETOPS set up is shown above, but just to be a little more verbose, here is the deal:

- ✪ We will enter our ETOPS segment just out of the coast, 453nm from RJST (Matsushima Apt)
- ✪ Our first ETOPS alternate for the day is RJCC (Sapporo)
- ✪ Our second ETOPS alternate is PASY (Shemya)
- ✪ Our third and last ETOPS alternate is KPDX (Portland)

We are operating under ETOPS207 today, which means a 207 minute diversion time and 1516nm in distance in my book. Your set up of the 207 rule might be different if left to PFPX calculation, which is just fine as well. All alternates have some really strong gusts and visibility is not at it's best, but they meet the minima so it works, especially if coupled with prayers that you won't have to divert there.

So, ETOPS set up has a green light (which feels like orange with the weather) but we can compute the flight and let PFPX do some math and give us our operational flight plan.

You, the pilot.

(time has come for your other personality to kick in and get those papers from, well, your other personality)
First we need to load the 777 with pax, cargo and fuel. We use the data from our OFP and put them in it.

```

-----
CONFIG      DOW  PAX   CARGO  TOTAL  ULOAD LIM      ZFW      TOW      LDW
STANDARD 145150 220   43615  62662  1294 ZFW      MAX  209106 347500 223168
                                           PLN  207812 280337 220806
                                           ACT  .....  .....  .....

          FUEL   CORR   ENDUR
TRIP      59531  .....  08:22
CONT 5%   2977  .....  00:26
ALTN KSMF 3263  .....  00:27
FINAL RESV 3377  .....  00:30
HOLD      3377  .....  00:30
MIN T/O   72525 .....  10:15
EXTRA     0     .....  00:00
TAXI     260   .....  00:10
RELEASE  72785 .....  10:25

.....
CAPTAINS SIGNATURE (....)

I ACCEPT THIS OFP AND I AM FAMILIAR
WITH THE PLANNED ROUTE AND AERODROMES
  
```

```

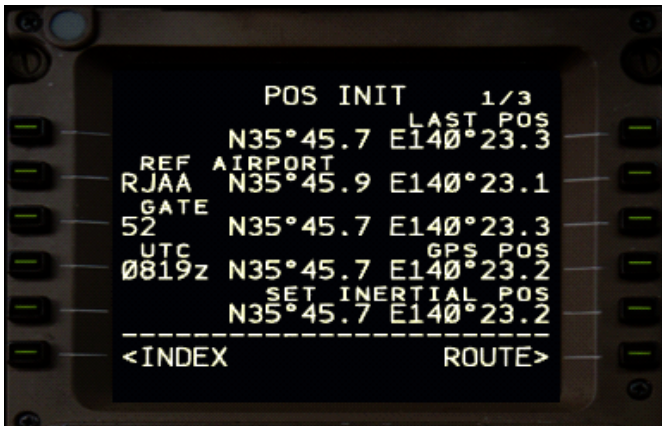
FUEL TANK CAP 145026 KG / MAX EXTRA FUEL 2362 KG LIM BY LDW
TRIP CORR FOR 3000 KG TOW INCR: +604 KG / 3000 KG TOW DECR: -569 KG
2000 FT LOWER: +3311 KG / EET 08:23 CLB: 250/310/84 DES: 84/320/250
  
```

```

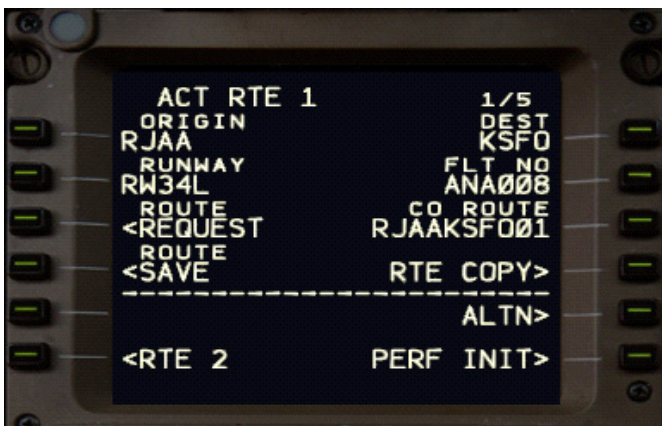
RJAA/NRT  STD 08:30  ETD 08:30  ACT OFBL .....  EST T/O 08:40  ACT T/O .....
KSFO/SFO  STA 19:05  ETA 17:12  ACT ONBL .....  EST LDG 17:02  ACT LDG .....
                                           TTL BLCK .....  TTL FLT .....
  
```



Get the zero fuel weight and fuel data from the OFP and load them in the FS Options section in the 777 FMC. The -200LR has quite the range so this 8-9 hour flight is more or less a walk in the park. Using the Export function on PFPX you should already have route and wind data available so you proceed with the usual set up, which we will briefly go over.



POS INIT: We are at Gate 52 in Narita. We go over our POS INIT page and check that we set the inertial position and crosscheck our calculated FMC position with the coordinates for Gate 52. You bring up your stand position coordinates chart for Narita and check that the position match. The FMC will also pull the coordinates from your AIRAC database if it has them and if you have a fancy scenery for Narita, they are also easily readable from the sign on wall in front of you. With this page nice, tidy and fully populated we can move on to fetching the route data exported from PFPX.



RTE1: Not much here, you have the usual stuff. We use CO ROUTE to fetch the route. PFPX naming convention defaults to RJAAKSFO01 (origin+destination+01), never change them since I do not save the routes and always make them on a need basis, so it is always that way on my end. If you changed the name on the Export tab in PFPX, you call your own route. Origin and destination fields are populated now. We enter the runway for Narita, which will be 34L and move on to the performance initialization page.



PERF INIT: Double clicking on ZFW, as you know, will populate the field with the actual zero fuel weight (as entered before). You input your initial cruise level from the OFP here (FL330 in this case), the cost index, step size. Reserves for today are set 6.6 (3263+3377=6640). The FMC RESERVES entry triggers the INSUFFICIENT FUEL warning. In fact, at this point I had one because I had not fetched the wind data yet and we have an average tailwind component of 76KT.



TAKE OFF: I skipped the THRUST LIM page because I left everything at the default setting with no derate. We are not about to get the take off speeds and the trim setting. Note the trim and speeds so you can configure properly the MCP as well as actually set the trim the calculated value for take off.



RTE DATA: It is a good time to fetch wind data now so that you have an actual estimate for the fuel remaining in SFO and make sure everything is OK. Wind data can be fetched from the LEGS / RTE DATA page. LSK6R (WIND DATA REQUEST) will load the data as exported by PFPX.

ETOPS data

Now we need to integrate the OFP information into the FMC. Here is our ETOPS section:

***** 207 MIN ETOPS CRITICAL FUEL SUMMARY *****

NON-ICING CONDITIONS - INCLUDING FUEL FOR ONE MISSED APPROACH

ETOPS ENTRY (RJCC) 22 NM BEFORE LEPKI N36 55.4 E149 32.7 EET 00:57
ETOPS EXIT (KPDX) 147 NM BEFORE 39N30 N39 59.1 W132 53.6 EET 07:14

EROPS ALTNS WX/NOTAM SUITABILITY PERIOD

RJCC (10:40-12:51)

PASY (12:19-17:29)

KPDX (16:19-17:29)

ONE ENGINE OUT ETP 1 FOR RJCC/PASY N40 22.3 E161 32.2 EET 02:01
1E084/320 DESC TO FL296 CRUISE AT 1E0320 395 NM BEFORE 42E70
PLN FUEL OVER ETP 54893 ETP FUEL REQ 17304 DIV TIME 01:48
ETP TO RJCC (N42 46.5 E141 41.6) DIST 860 NM WC HD011 TT 286
ETP TO PASY (N52 42.7 E174 06.8) DIST 941 NM WC TL035 TT 031
ANA8 RJAA-KSFO (16 Feb 0830 UTC)
*** FUEL DUMP REQUIRED ***

ONE ENGINE OUT DECOMP ETP 1 FOR RJCC/PASY N40 02.8 E160 11.1 EET 01:54
84/320/250 DESC TO FL100 CRUISE AT 1E0320 460 NM BEFORE 42E70
PLN FUEL OVER ETP 55226 ETP FUEL REQ 20804 DIV TIME 02:26
ETP TO RJCC (N42 46.5 E141 41.6) DIST 840 NM WC HD021 TT 287
ETP TO PASY (N52 42.7 E174 06.8) DIST 959 NM WC TL021 TT 032
*** FUEL DUMP REQUIRED ***

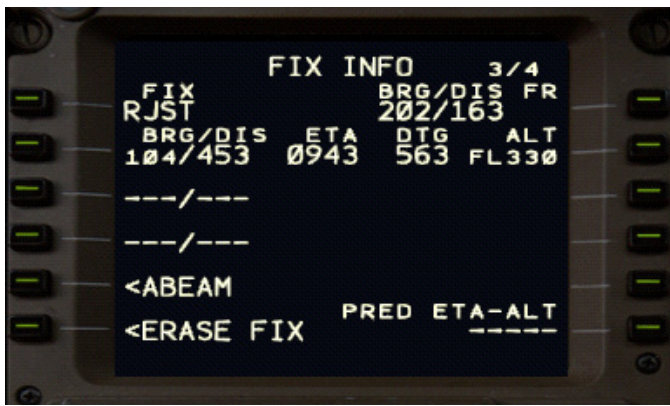
ALL ENGINE DECOMP ETP 1 FOR RJCC/PASY N40 02.8 E160 11.1 EET 01:54
84/320/250 DESC TO FL100 CRUISE AT AE320 460 NM BEFORE 42E70
PLN FUEL OVER ETP 55226 ETP FUEL REQ 19850 DIV TIME 02:26
ETP TO RJCC (N42 46.5 E141 41.6) DIST 840 NM WC HD021 TT 287
ETP TO PASY (N52 42.7 E174 06.8) DIST 959 NM WC TL021 TT 032
*** FUEL DUMP REQUIRED ***

ONE ENGINE OUT ETP 2 FOR PASY/KPDX N43 04.1 W161 56.3 EET 04:59
1E084/320 DESC TO FL296 CRUISE AT 1E0320 85 NM BEFORE 43N60
PLN FUEL OVER ETP 33453 ETP FUEL REQ 25871 DIV TIME 02:50
ETP TO PASY (N52 42.7 E174 06.8) DIST 1110 NM WC HD094 TT 310
ETP TO KPDX (N45 35.3 W122 35.8) DIST 1691 NM WC TL109 TT 071

ONE ENGINE OUT DECOMP ETP 2 FOR PASY/KPDX N43 01.3 W159 29.5 EET 05:10
84/320/250 DESC TO FL100 CRUISE AT 1E0320 417 NM BEFORE 43N50
PLN FUEL OVER ETP 32006 ETP FUEL REQ 31324 DIV TIME 03:49
ETP TO PASY (N52 42.7 E174 06.8) DIST 1201 NM WC HD042 TT 308
ETP TO KPDX (N45 35.3 W122 35.8) DIST 1583 NM WC TL051 TT 072

ALL ENGINE DECOMP ETP 2 FOR PASY/KPDX N43 01.3 W159 29.5 EET 05:10
84/320/250 DESC TO FL100 CRUISE AT AE320 417 NM BEFORE 43N50
PLN FUEL OVER ETP 32006 ETP FUEL REQ 29854 DIV TIME 03:49
ETP TO PASY (N52 42.7 E174 06.8) DIST 1201 NM WC HD042 TT 308
ETP TO KPDX (N45 35.3 W122 35.8) DIST 1583 NM WC TL051 TT 072

The process is pretty much identical to a North Atlantic flight. We set up the ETOPS entry and exit ranges in the FIX pages, load ETOPS data in RTE2, have the two closest ETOPS alternates in the ALTN page and we are good to push and start. Let's go quickly through them again.



Playing with circles and fixes

FIX PAGE SET UP

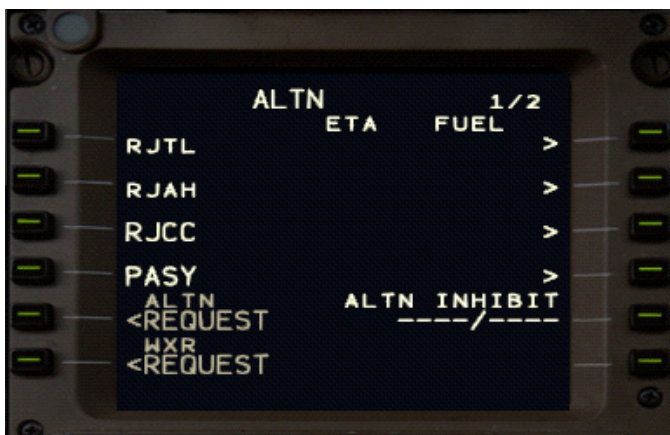
- ★ Go to FIX page 3
- ★ Type **RJST**; type & copy to LSK 1L
- ★ Type **/453**; type & copy to LSK 2L
- ★ Go to FIX page 4
- ★ Type **KACV**; type & copy to LSK 1L.
- ★ Type **/453**; type & copy to LSK 2L

This will effectively create 60 minute range rings around your last and first adequate airports in your non ETOPS area. In my case 60 minutes=453nm, but you might have it set up as 420nm. It is fine either way and SOP dependant, so take your pick. If we need to figure out something that might affect our ETOPS capability, we need to do so without entering ETOPS.



On the left the set up for the ETOPS Entry Point is shown, but it looks the same on the other side and we will eventually see that when we reach our ETOPS Exit Point in due time. The procedure is the same as followed on ETOPS & Oceanic Procedures: Part 2.

Keep in mind Adequate airports and ETOPS Alternate airports are two separate things. While in our previous flight the adequate airports we drew the range rings around were also our ETOPS alternates, this time this is not the case.

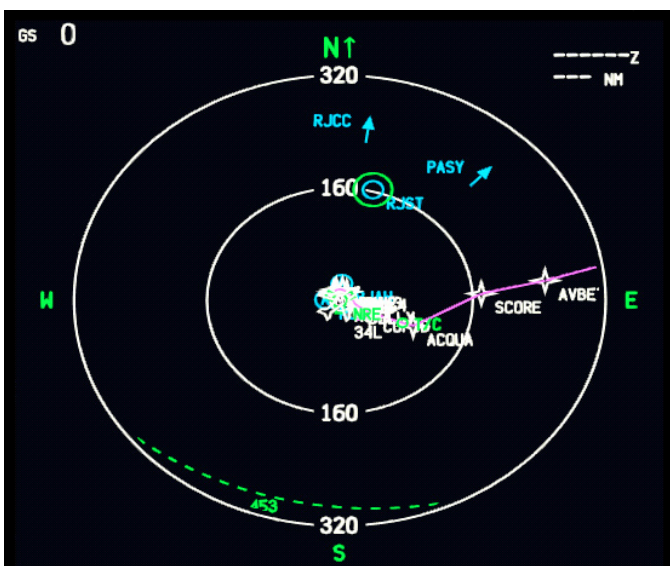


ALTN SET UP

The FMC keeps a list of the closest alternates for you in the alternate page. We are going to override two of them with our two closest ETOPS alternates. The other two will keep being the closest ones as calculated by the flight management computer. In our case they are RJCC and PASY.

- ★ Go to ALTN Page
- ★ Type **RJCC** in the scratch pad and copy it to the FIX entry (1L).
- ★ Type **PASY** in the scratch pad and copy it to the FIX entry (1L).

Why? Because it will offer us an overview of the estimated time of arrival and fuel information for the destination once we get this thing flying.



On the navigational display the airports in the alternate list show with blue arrows pointing to them. Much of what we do here is set up so that we have a good situational awareness en route.

We will change the set up of the page to show PASY and KPDX enroute.

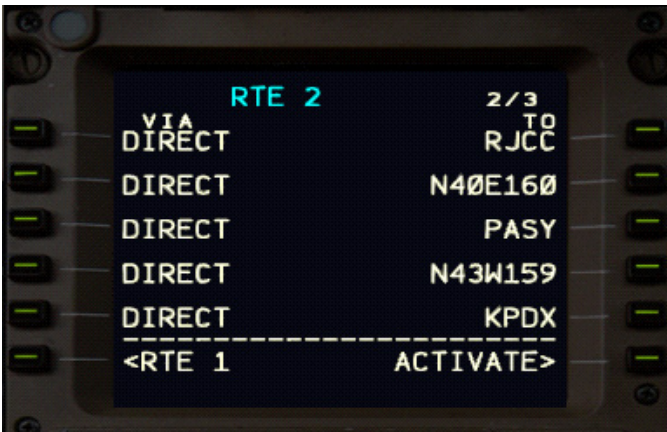
ETOPS CRITICAL FUEL DATA & RTE 2 SET UP

What we need to set up in the RTE 2 page is:

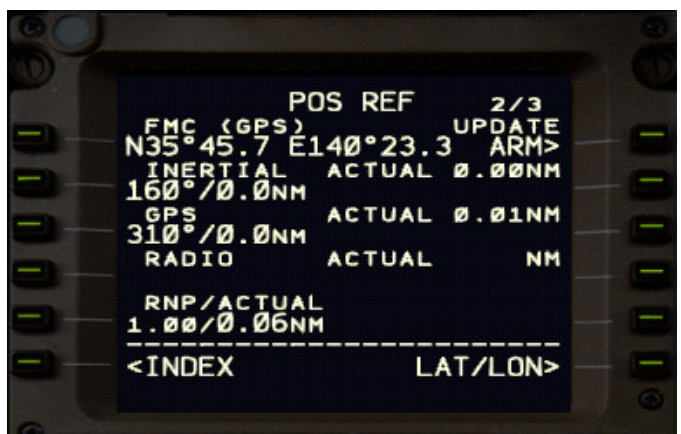
- ★ First ETOPS Alternate (RJCC)
- ★ Critical Point 1 (N40E160)
- ★ Second ETOPS Alternate (PASY)
- ★ Critical Point 2
- ★ Third ETOPS Alternate (KPDX)
- ★ ----- Discontinuity-----
- ★ Destination
- ★ Route to destination alternate
- ★ Destination alternate

Again, we do all this to have a better situational awareness enroute. We can check this information and have it presented in the ND by selecting RTE 2 Legs in the LEGS page. If we have to divert to KMSF, that portion of the flight will be there for easy access so we have less to worry about.

Be careful: Do not activate RTE 2 unless you have a reason to do so.



44	N35 45.5	E140 23.2
45	N35 45.6	E140 23.2
46	N35 45.6	E140 23.3
47	N35 45.6	E140 23.2
51	N35 45.8	E140 23.3
52 thru 54R	N35 45.7	E140 23.3
55	N35 45.8	E140 23.3
56, 57	N35 45.8	E140 23.4
58	N35 45.9	E140 23.4
61	N35 46.4	E140 23.4



PRE-DEPARTURE ACCURACY CHECK

We need to check if our current position is accurate and that our position sources are working properly (GPS/INERTIAL). So let's get this going:

- ★ Grab your charts for Narita and locate the chart with the stand coordinates. I am at stand 52 and the coordinates from the chart are N35° 45.7 E140° 23.3 compared to N35° 45.7 E140° 23.3 from my FMC, which is available on the POS REF page 2/3. They match perfectly.
- ★ Press 6R to switch to BRG/DIST so that compare the FMC position to our position sources.
- ★ We read inertial/GPS difference at 0.01. You are looking for figures less than 0.3-0.4 here.

TIME TO GO

Well, believe it or not, we have to go now. I know, I know... too many FMC images, but we're all done and it really takes much less to do these things than write or read about them. The important thing is we are about to leave the stand and get to that runway. Remember that your departure clearance on the ground is good enough for the oceanic crossing as well. No need for a separate oceanic crossing call. We will be back with the position reports, but before that, Narita being located in an island and all, we will pretty soon leave the area of ground based navigational aids and have to do our coast out checks.



COAST OUT CHECKS

Start by pressing STA on the EFIS so we can check the nearby VOR-s in the ND. Pick one which is 50nm or closer. I am going for OJC here.

- Go to your NAV/RAD page and tune in a nearby radio station. In my case I put in OJC and select the closest one from the list of pop ups. Take note of:

RADIAL (FMC) **035**

DME (ND) **36.1**

- Go to your FIX page 1. Type OJC in the scratch pad and put up to 1L. Note the BRG/DIS just to the right.

BEARING (FMC) **036** (1° difference from radio data)

DME (ND) **36** (0.1nm difference from radio data)

- The tolerances within 50nm of the station tuned are 8° on the bearing and 4nm on the distance. Our check results in a difference of 1.5nm, which is less than 4nm, so we are good to go ahead and fly into the night.



Position reporting in the oceanic airspace

We enter the OCA at LEPKI.



- ★ Confirm LNAV Engaged
- ★ Confirm VNAV Engaged
- ★ Confirm next waypoint with the one in your OFP, with its track and distance.

VERIFY POSITION ACCURACY AGAIN ON POS/REF PAGE 2

- ★ Press 6R to switch to BRG/DIST so that compare the FMC position to our position sources.
- ★ Check GPS is being used by the FMC for position updating FMC (GPS) is shown in line 1.
- ★ Check our inertial position doesn't differ by more than 4nm. In this case they do not differ at all (0.0nm).
- ★ Check that our actual navigational performance is better than our required navigational performance (RNP). In this case we have a RNP of 2 and an actual of 0.06. Our requirement is for our aircraft to calculate its position correctly within a radius of 2nm. It is actually calculating it correctly within 0.06nm. The think is working properly, let's move on.

We will not go over each point here, but the same procedures is followed up until we exit the oceanic airspace. We will go over the first position report. We will read the position report page in the FMC to the controller. The procedure is very similar to that we use on the North Atlantic. We would just add the ground speed (as per VATUSA regulations as well so it is good until you exit the OCA). Your report would look something like this:

ANA8 reports LEPKI at time 1004z, FL330. Estimate 40N 160E at time 1100z. Next 42N 170E.
Mach .83 Ground speed 546.

IMPORTANT NOTE: If you have to climb enroute, you would normally notify ATC in your position report of the time you are expected to step climb and call them back again when you do so. FL380, 390, 400, and 410 are reserved for "time compression" flight at 2x and 4x speed as per Oakland FIR VATUSA procedures. This doesn't make me happy but it is a rule you have to abide with.



The ND showing RTE 1 legs. We are approaching 43N 160W, which coincides with the ETOPS critical point for RJCC/PASY. It shows what the ETOPS set up does for us along the way in terms of situational awareness.

This also brings an end to this guide. The main objective of it was to present the PACOTS to an audience that is not familiar with them. I hope it was a good read and that you learned a thing or two reading it.

