



**THE THIRTY-SEVENTH MEETING OF THE
INFORMAL PACIFIC ATC CO-ORDINATING GROUP
(IPACG/37)**

(Tokyo, Japan, 29 October - 2 November 2012)

Agenda Item X: Air Traffic Management (ATM) Issues

**Alternative Route Structures and the Introduction of Pacific
Organized Track System (PACOTS) into NOPAC**

(Presented by Civil Aviation Bureau, Japan and ENRI)

SUMMARY

This working paper proposes different options for the use of the airspace bounded by the ATMC North Pacific Composite Route System (NOPAC). It examines possible alternative route structures and the introduction of PACOTS into parts of the NOPAC.

1. Introduction

1.1 The Pacific project which proposed by IATA potentially might deliver the great benefits by more flexible ATC operation on NOPAC area. However, ATMC have some problems to plan the realization. Previous consideration and careful examination are necessary.

1.2 ATMC continues to examine whether or not it would be possible to structure alternative route on NOPAC area within Fukuoka FIR. And ATMC considers how we can carry out aircraft operators' requests.

1.3 At the IPACG/35, ATMC announced to propose an alternative route structure with ENRI at IPACG/36. ENRI examined generated eastbound PACOTS by alternative route network. At this meeting, ATMC examined two models of ATC operation on NOPAC route area in cooperation with ENRI. It will be helpful in the case of examining the introduction of UPRs into NOPAC area over the common boundary between ATMC and Anchorage ARTCC.

2. DISCUSSION

2.1 Model 1 would eliminate the southern two tracks, R591 and G344 to create more optimal routing. East bound A590 would keep uni-directional. Diverging from A590 would be allowed. Model 2 would eliminate A590 in addition. About R220 and R580, both models would keep uni-directional to create efficient traffic flow at the optimum altitudes as current operation. And it is required to pass POXED/ADGOR/KALNA/EMRON as gate fixes to/from the domestic airways.

2.2 Model1 and Model2 are beneficial in comparison with published PACOTS. Particularly, it is beneficial for TRACK1 and TRACK2 when a diverging route from the point equivalent to A590 or R591 to the south is established.

It is certainly beneficial when TRACK1 is north of KALNA, and the point of 160E of TRACK2 is north of 43 degrees N. (See Attachment CASE1, 2 &3)

On the contrary, there is not any benefit when the spot of 160E of TRACK2 is situated to the south of 40 degrees N. (See Attachment CASE 3)

2.3 The difference between Model1 and Model2 is a little at each of TRACK1, 2, and 3. When almost the same route as A590 is established, Model2 is slightly worse in fuel efficiency. (See Attachment CASE 2&3)

In the case that the route to PANC diverges from original A590 in the south direction in Model2 may be beneficial. (See Attachment CASE 1&2) (A bound for PANC became A590 in Model1.)

2.4 ENRI made PACOTS Model which did not consider Anchorage, Oakland FIR this time. A beneficial case surely exists in simulation of ENRI, but there are problems to realize the advantage at the same time.

2.5 Thinking about an intersection with PACOTS routes and UPRs which are west-bound, operative time and a limit of the use altitude are necessary. In addition, traffic is concentrated to A590, and there is the case which comes to have difficult rise to hope altitude.

2.6 It is necessary to consider the air-route setting in Anchorage and Oakland to manage effective PACOTS which ENRI inspected this time.

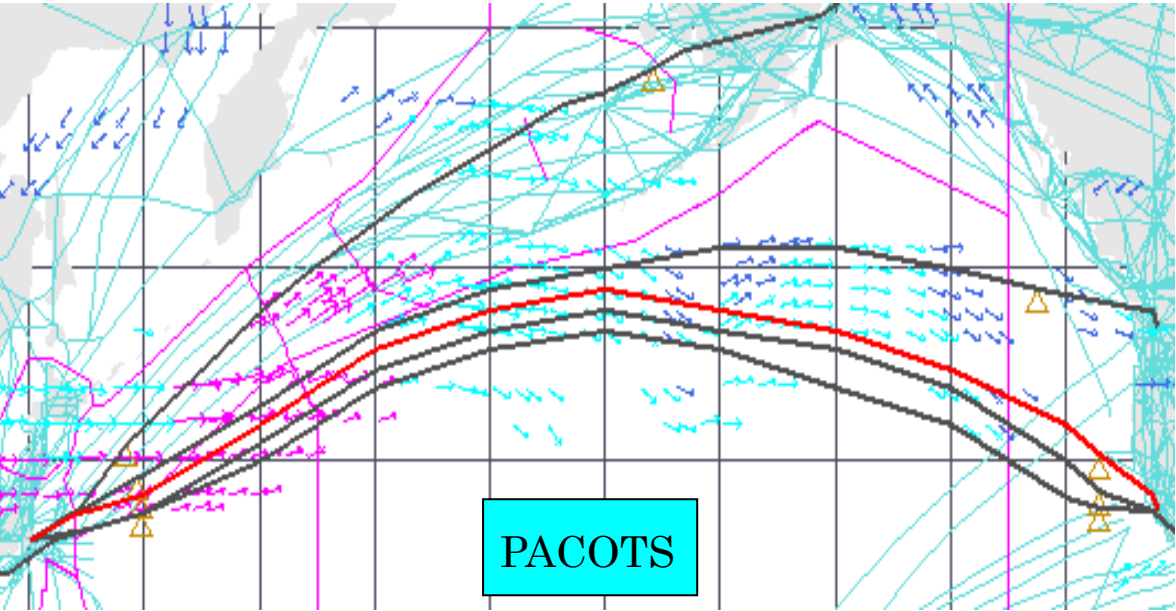
The wall which should exceed has much consideration of an aspect of practical use, renewal of apparatus, etc.

2.7 ATMC will intend to examine every possibility to create a more efficient NOPAC including the introduction of UPRs(User Preferred Routes) from now on in cooperation with ENRI.

3. ACTION BY THE MEETING

3.1




The meeting is requested to consider the information in this paper.

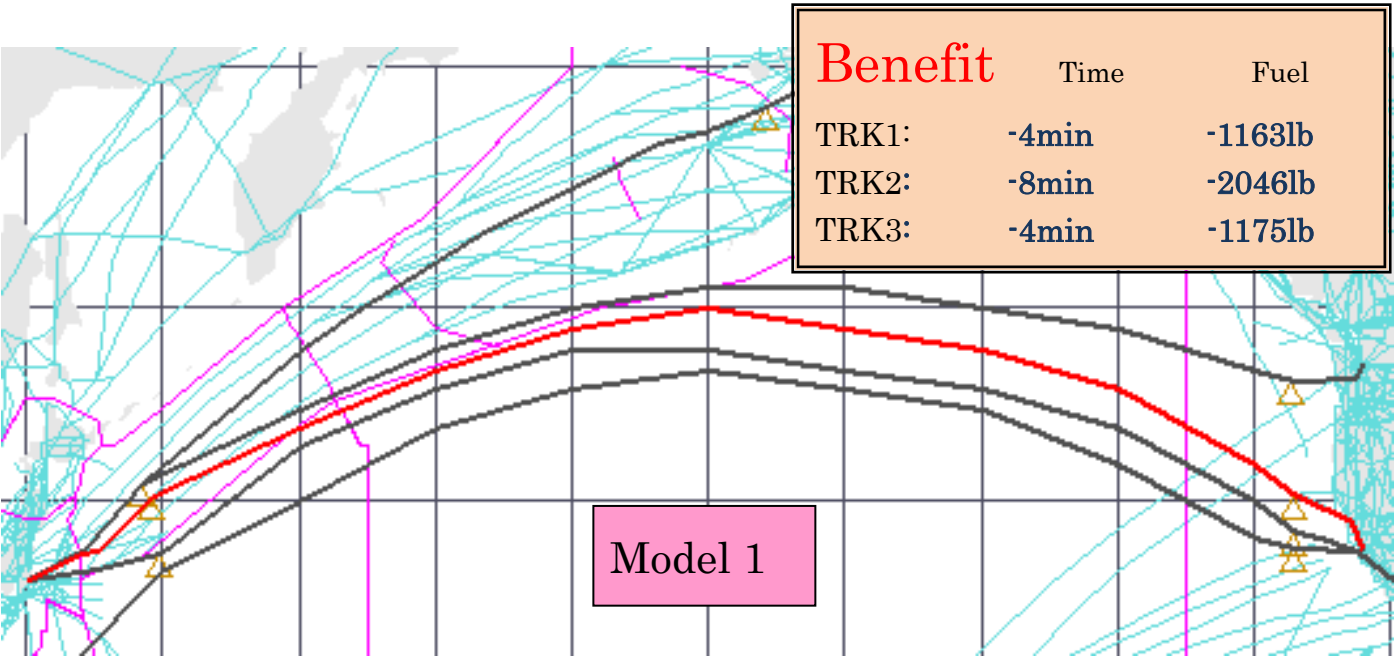


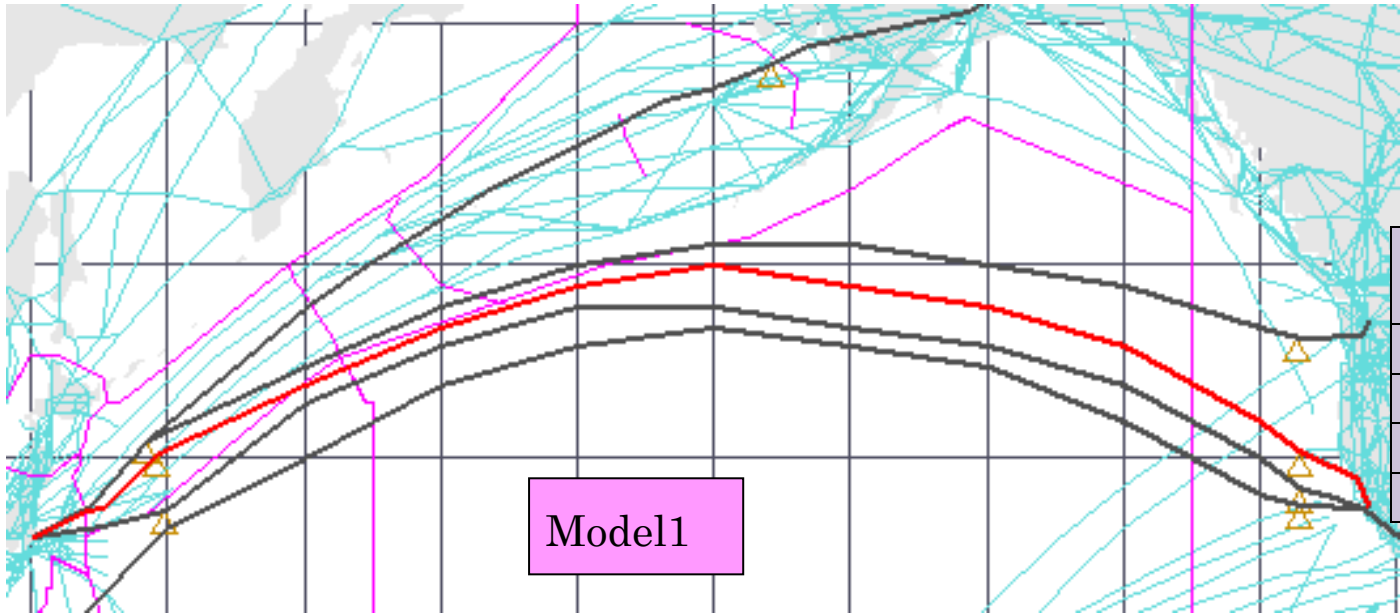
NOPAC
25 Jun 2011
Case 1

PACOTS		Time	Fuel
TRK1	KALNA	7:36	171027
TRK2	EMRON	8:11	181727
TRK3	LEPKI	8:52	194033
JAA-ANC	A590	5:44	134466

Model 1	Diverging point	Time	Fuel
TRK1	POXED	7:32	169864
TRK2	ADGOR	8:03	179321
TRK3	LEPKI	8:48	192858
JAA-ANC	A590	5:44	134466

-  It is superior to PACOTS.
-  It is superior to Model1.
-  It is worse than Model1.





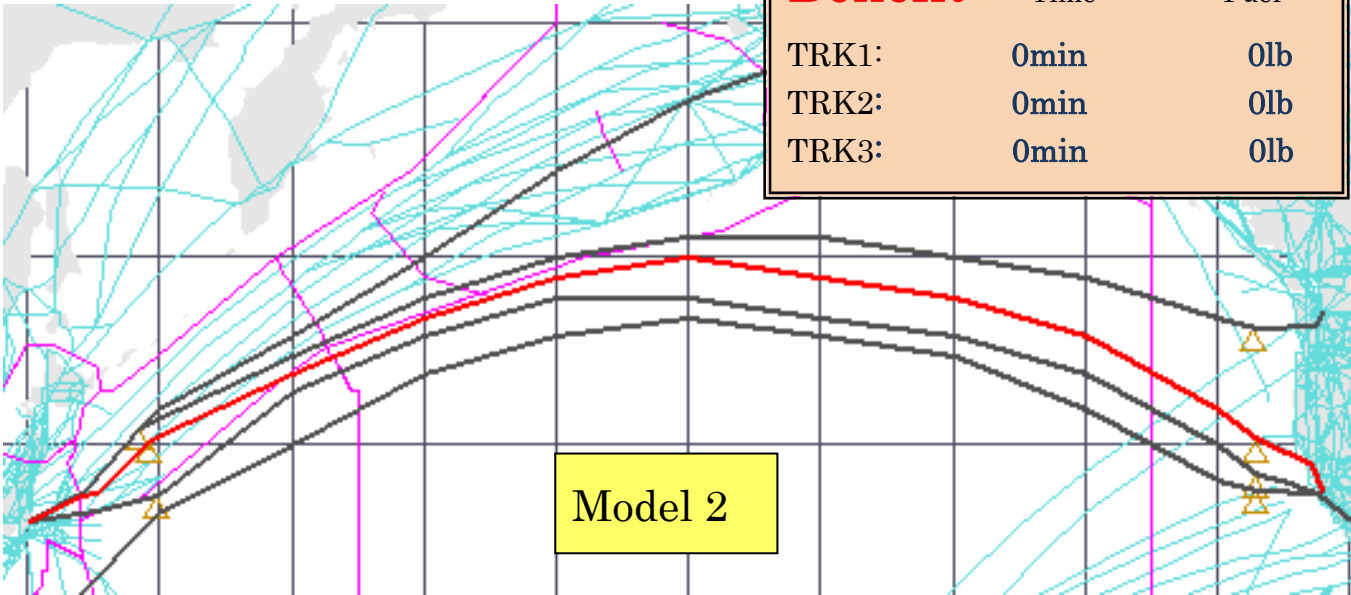
NOPAC
25 Jun 2011
Case 1

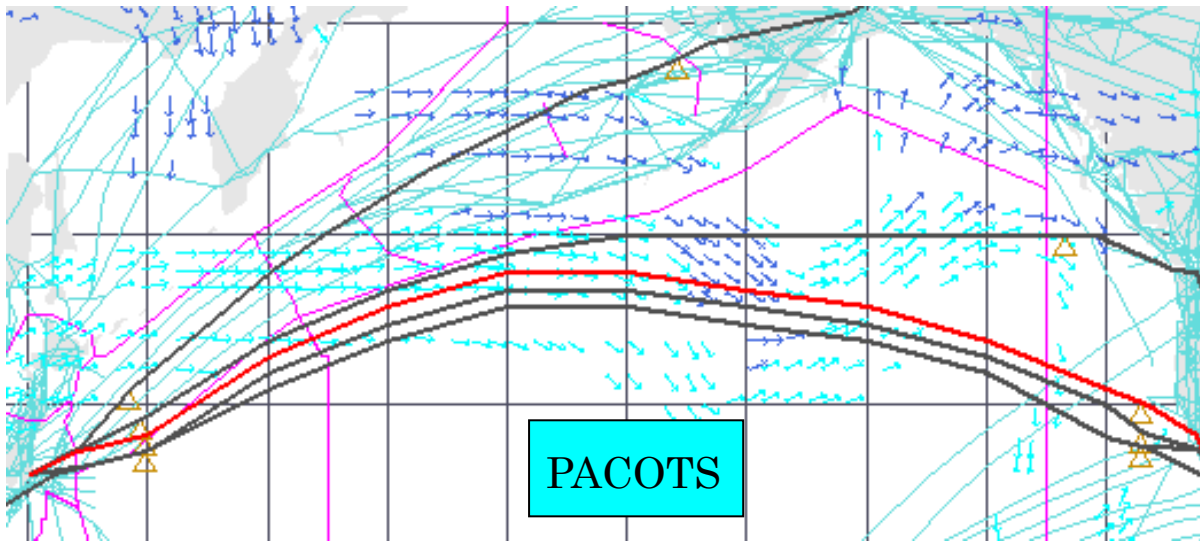
Model 1	Diverging point	Time	Fuel
TRK1	POXED	7:32	169864
TRK2	ADGOR	8:03	179321
TRK3	LEPKI	8:48	192858
JAA-ANC	A590	5:44	134466

Model 2	Diverging point	Time	Fuel
TRK1	POXED	7:32	169864
TRK2	ADGOR	8:03	179321
TRK3	LEPKI	8:48	192858
JAA-ANC	RANDOM	5:38	132376

- It is superior to PACOTS.
- It is superior to Model1.
- It is worse than Model1.

Benefit	Time	Fuel
TRK1:	0min	0lb
TRK2:	0min	0lb
TRK3:	0min	0lb





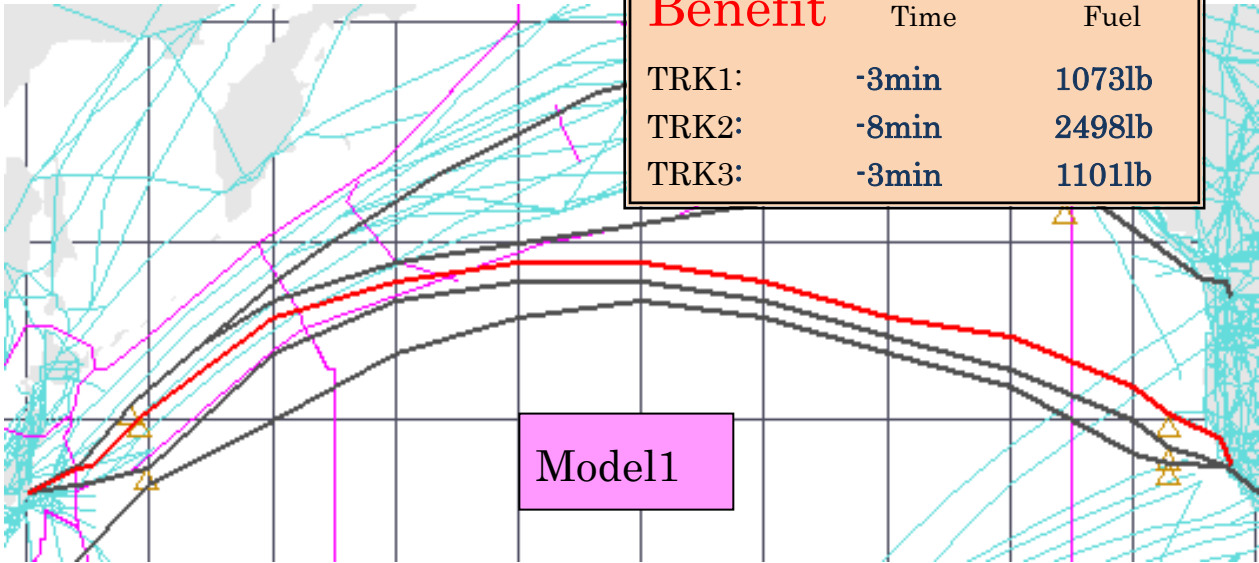
NOPAC
25 Aug 2011
Case 2

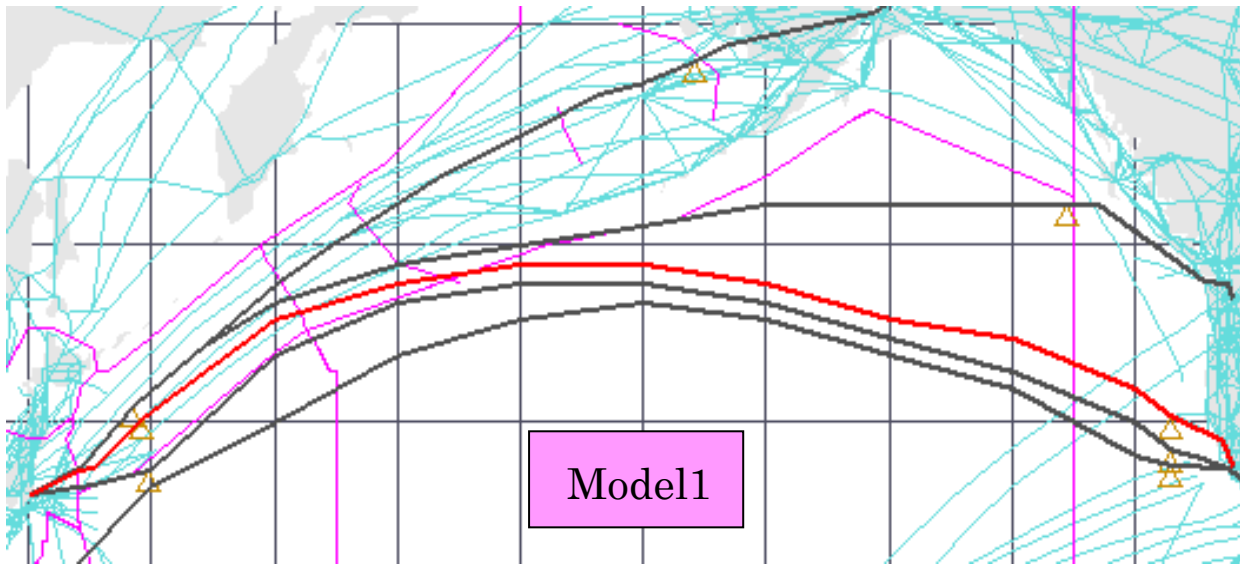
PACOTS		Time	Fuel
TRK1	KALNA	7:48	173974
TRK2	EMRON	8:26	185744
TRK3	LEPKI	9:09	199058
JAA-ANC	A590	5:49	135166

Model 1	Diverging point	Time	Fuel
TRK1	PUGAL	7:45	172901
TRK2	ADGOR	8:18	183246
TRK3	LEPKI	9:06	197957
JAA-ANC	A590	5:49	135166

Benefit	Time	Fuel
TRK1:	-3min	1073lb
TRK2:	-8min	2498lb
TRK3:	-3min	1101lb

- It is superior to PACOTS.
- It is superior to Model1.
- It is worse than Model1.



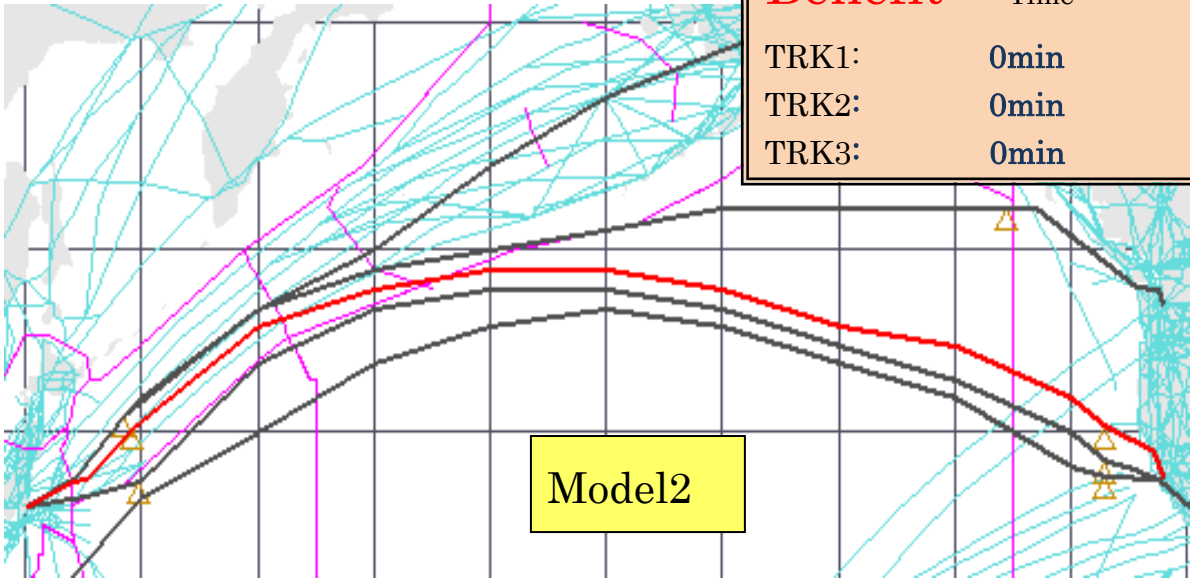


NOPAC
25 Aug 2011
Case 2

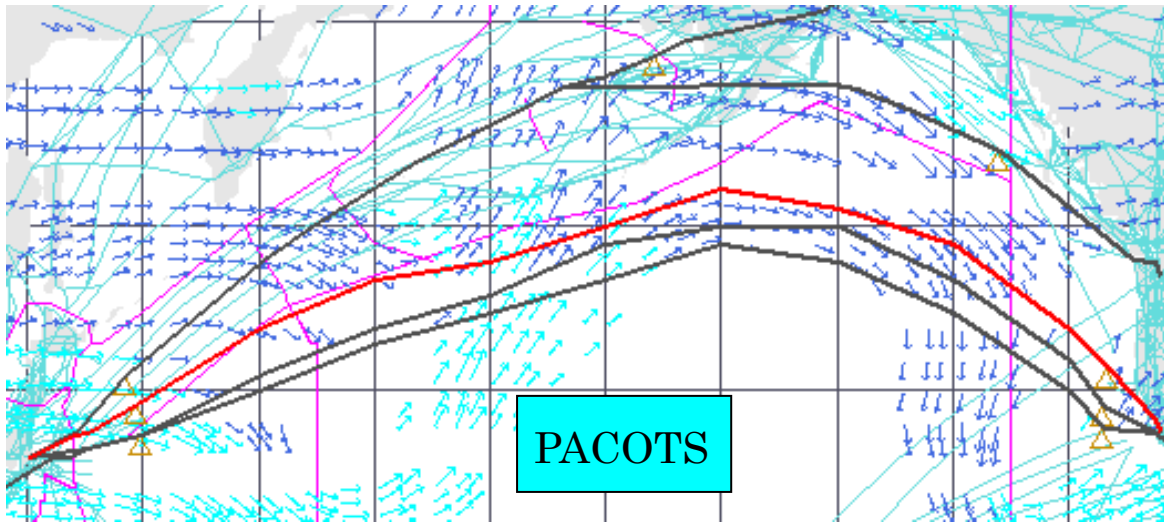
Model 1	Diverging point	Time	Fuel
TRK1	PUGAL	7:45	172901
TRK2	ADGOR	8:18	183246
TRK3	LEPKI	9:06	197957
JAA-ANC	A590	5:49	135166

Model 2	Diverging point	Time	Fuel
TRK1	POXED	7:45	172971
TRK2	ADGOR	8:18	183246
TRK3	LEPKI	9:06	197957
JAA-ANC	RANDOM	5:47	134302

- It is superior to PACOTS.
- It is superior to Model1.
- It is worse than Model1.



Benefit	Time	Fuel
TRK1:	0min	+70lb
TRK2:	0min	0lb
TRK3:	0min	0lb



NOPAC

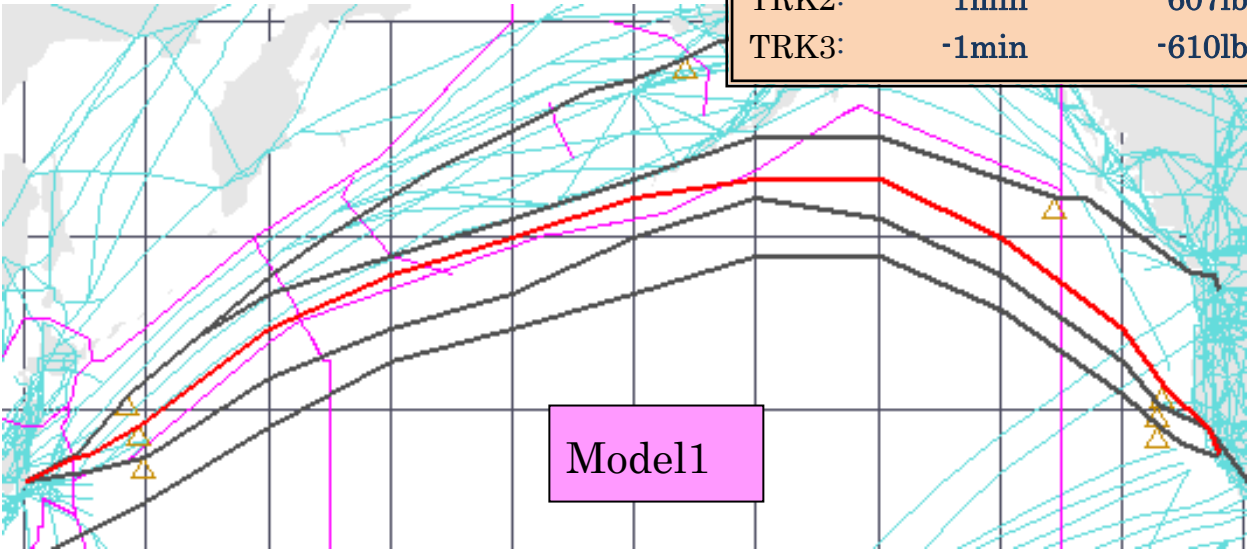
11 Nov 2011
Case 3

PACOTS		Time	Fuel
TRK1	A590	7:44	170950
TRK2	KALNA	8:27	184000
TRK3	LEPKI	9:14	198519
JAA-ANC	A590	5:41	130610

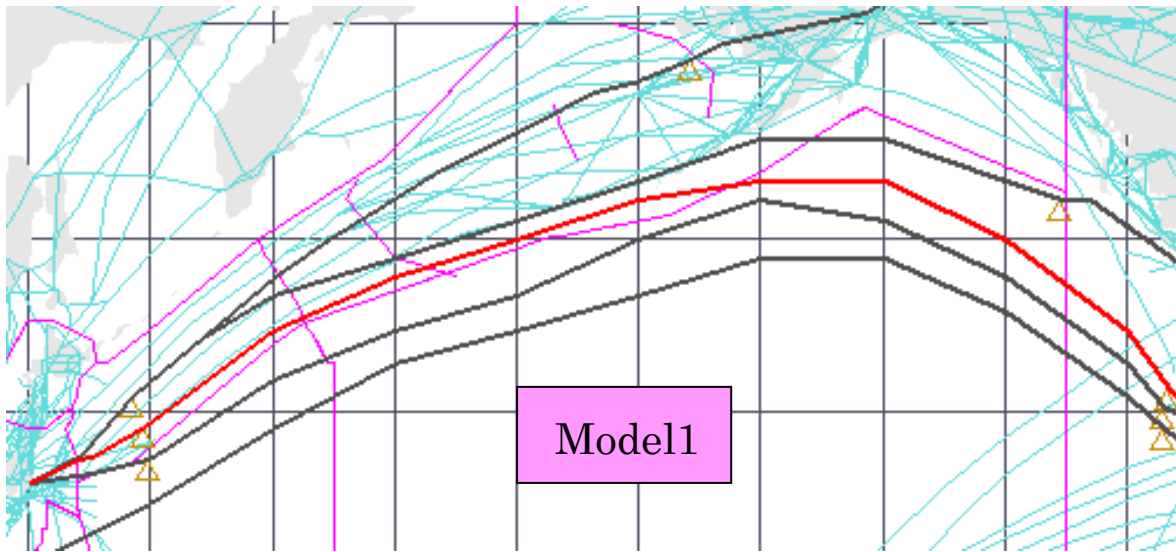
Model 1	Diverging point	Time	Fuel
TRK1	PUGAL	7:40	169541
TRK2	KALNA	8:26	183393
TRK3	LEPKI	9:13	197909
JAA-ANC	A590	5:41	130610

Benefit

	Time	Fuel
TRK1:	-4min	-1409lb
TRK2:	-1min	-607lb
TRK3:	-1min	-610lb



- It is superior to PACOTS.
- It is superior to Model1.
- It is worse than Model1.



NOPAC

11 Nov 2011
Case 3

Model 1	Diverging point	Time	Fuel
TRK1	PUGAL	7:40	169541
TRK2	KALNA	8:26	183393
TRK3	LEPKI	9:13	197909
JAA-ANC	A590	5:41	130610

Model 2	Diverging point	Time	Fuel
TRK1	POXED	7:40	169702
TRK2	KALNA	8:25	183406
TRK3	LEPKI	9:13	197909
JAA-ANC	RANDOM	5:42	130639

<div></div>	It is superior to PACOTS.
<div></div>	It is superior to Model1.
<div></div>	It is worse than Model1.

Benefit	Time	Fuel
TRK1:	0min	+161lb
TRK2:	-1min	+13lb
TRK3:	0min	0lb

