



International Civil Aviation Organization

**Trans-Regional Airspace and Supporting ATM Systems Steering Group
Third Meeting (TRASAS/3)**

Paris, France, 19 – 20 October 2010

Agenda Item 9: Any other business

PACIFIC PROJECT

(Presented by IATA)

SUMMARY

This paper proposes the establishment of the PACIFIC PROJECT leading to seamless airspace between North America and Asia.

1. Introduction

1.1. The ICAO Global ATM Operational Concept (Doc 9854) recognized that “integrated, harmonised and globally interoperable air traffic management systems” serving “gate to gate” operations would be essential to meet the projected growth in air traffic demand.

1.2. As operations between North America and Asia span three ICAO regions (ASPAC/EUR/NAM) we seek the support of this meeting in the establishment of a single focus group to drive enhancement in the area linking the world’s second largest aviation market to the world’s largest and fastest growing aviation market.

2. Discussion

2.1. With air traffic between North America and Asia expected to double by 2025 the current capacity of the North Pacific routes will be insufficient to meet that demand.

2.2. Benefits continue to be delivered by groups such as Cross Polar Trans East Air Traffic Management Working Group (CPWG) and Informal Pacific ATC Coordination Group (IPACG), as well as by individual providers within their airspace.

2.3. But these improvements will be piecemeal whilst no single group considers the entire area across the North Pacific.

2.4. IATA proposes that a specific project and work group (“Pacific Project”) be established to collectively plan the future of all operations between North America and Asia.

2.5. The aim of this project is to improve operational efficiency and environmental outcomes by enabling aircraft to utilise current on board technology efficiently with User Preferred Routes the primary navigation means on this traffic flow.

(3+9 pages)

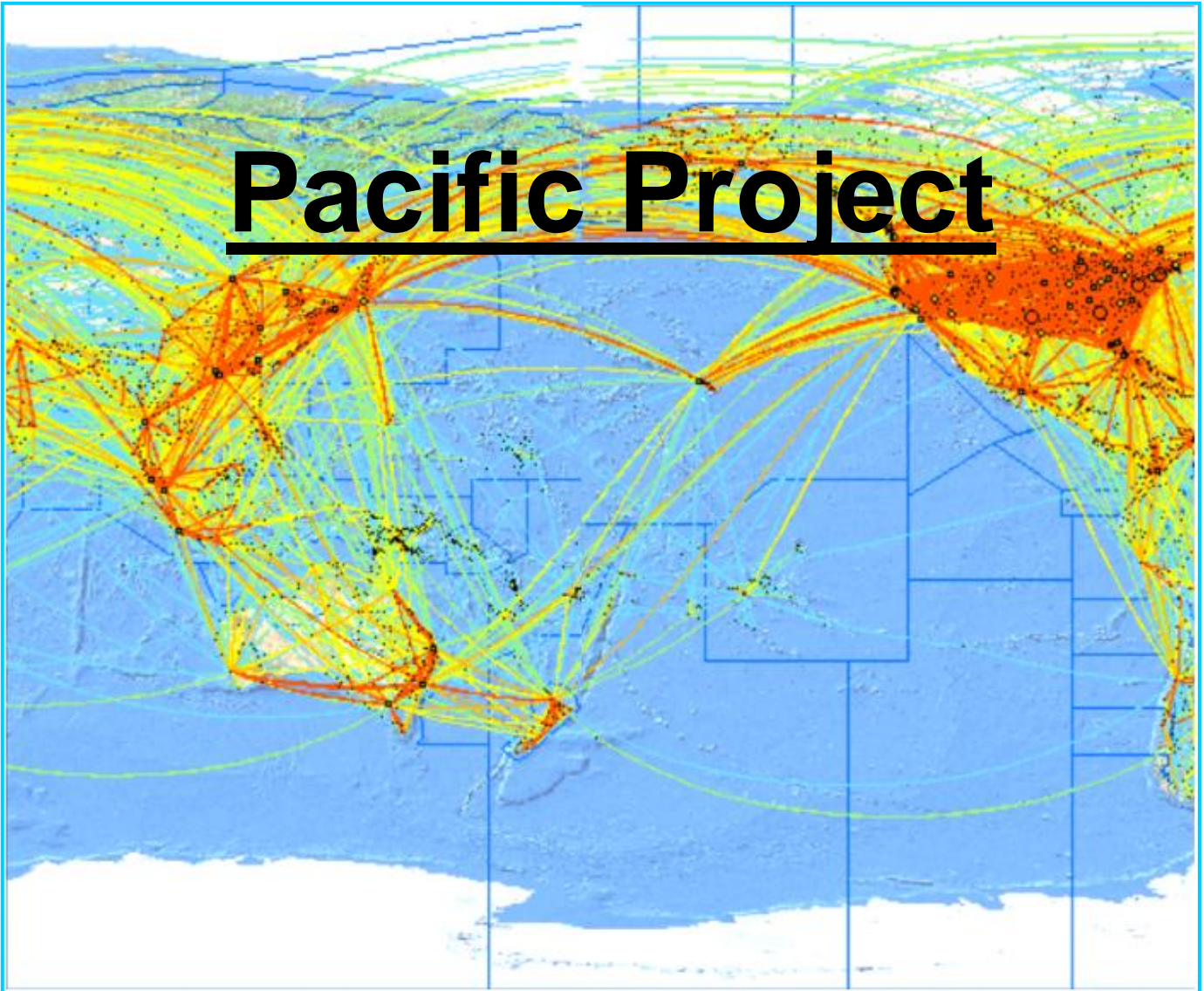
- 2.6. The project requires the involvement of key stakeholders Canada, Japan, Russian Federation, USA and IATA/ Airlines.
- 2.7. The project will need to involve China, Democratic Peoples Republic of Korea, Philippines and the Republic of South Korea during the process to facilitate connector routes.
- 2.8. IATA has deliberately not developed this proposal beyond the Operational Concept stage due to the broad scope and believing that it is for the States involved to set the parameters as part of a collaborative project with other stakeholders (including Users).
- 2.9. This project was initially tabled at IPACG/31 and CPWG/8 in late 2009 acknowledging that neither of these groups has the complete membership to address airspace matters within this entire area.
- 2.10. IPACG, as the bi lateral meeting between Japan and US, noted that both States would need to be included in any regionally coordinated discussion.
- 2.11. At CPWG/8 FAA, NavCanada and State ATM Corporation Russian Federation endorsed the proposal of establishing a single project to consider all operational aspects for the traffic flow with all the States involved.
- 2.12. The meeting noted that ICAO endorsement, and sponsorship, would be necessary as the proposed project scope was beyond that of the CPWG, and in fact any other currently established group.
- 2.13. It was agreed that IATA would present a summary of the proposal and the subsequent discussions to TRASAS/3 as the Trans Regional body most appropriate to guide this project.
- 2.14. With the deferral of TRASAS from February 2010, the project was again discussed at CPWG/9 and IPACG/32 where IATA presented the paper prepared for TRASAS.
- 2.15. IPACG/32 also agreed to endorse the concept of the Pacific Project and supported the plan for IATA to present the proposal for further discussion to the ICAO TRASAS forum.
- 2.16. Subsequently we have socialised the plan directly with key stakeholders as well as presenting an outline of the proposal at APANPIRG/21 in Bangkok 6-10 Sept 2010.
- 2.17. The aviation industry has established ambitious environmental impact reduction targets and air traffic management enhancements will be an important contributor to these reduction.
- 2.18. However unless traffic flows are considered collectively, then the resulting efficiencies will only be incremental.
- 2.19. This project is consistent with the ICAO transition to future concepts objectives whereby defined strategies are developed for similar homogeneous airspace types which span States and Regions of the world.
- 2.20. IATA believes it is vital that this project be established to collectively consider the traffic flow between North America and Asia. The project potentially could deliver the greatest environmental benefits, on a per flight basis, than any other ATM project in the world.
- 2.21. An outline of the Pacific Project is contained in **Appendix A**.

3. Action by the Steering Group

3.1. The Steering Group is invited to:

- a) review the concept of the Pacific Project as presented in Appendix A;
 - b) endorse the establishment of a specific project and work group involving key stakeholders (Canada, Japan, Russian Federation, USA and IATA/Airlines) considering all operational aspects for flights between North America and Asia with the objective of enabling UPR as the primary means of navigation when traffic management permits; and
 - c) determine the mechanism under which the Pacific Project Work Group should function.
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Pacific Project



Pacific Project

Objective

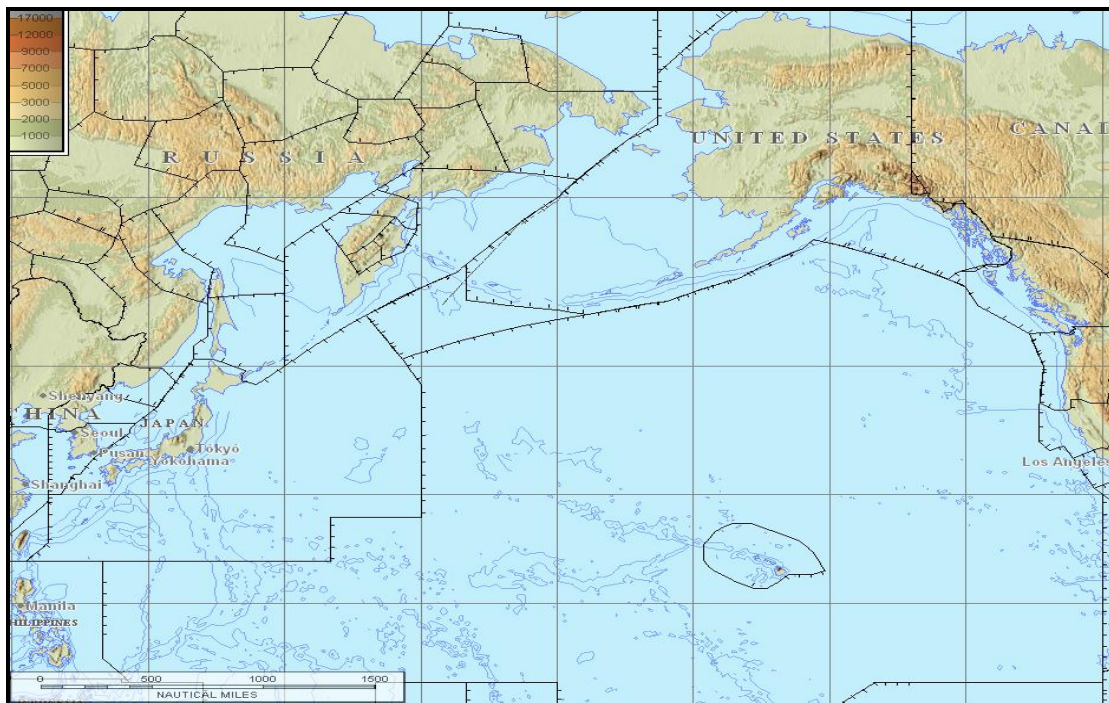
This project aims to substantially improve operational efficiency and environmental outcomes on the major air traffic flow between North America and Asia.

The key to this objective is to enable aircraft to more effectively utilise current onboard technology while flying User Preferred Routes (UPR).

The project will integrate capability with NEXTGEN and SESAR and provide a link to the Asia Pacific “Seamless Skies” initiative launched at this year’s Directors General Conference in Japan.

Background

The North Pacific is characterised by large geographic volumes of airspace managed by Canada, Japan, Russia and the United States.



Over the last two decades new routes and procedures have increased capacity and improved efficiency.

However, this capacity has been absorbed by air traffic growth, which will continue to outpace capacity increases.

Over the same period airlines have invested heavily in improved aircraft capability, which is now well in advance of ATC capabilities and supporting infrastructure. Unfortunately this creates a situation where proven technology and procedures cannot be employed to deliver available benefits in safety, capacity and efficiency.

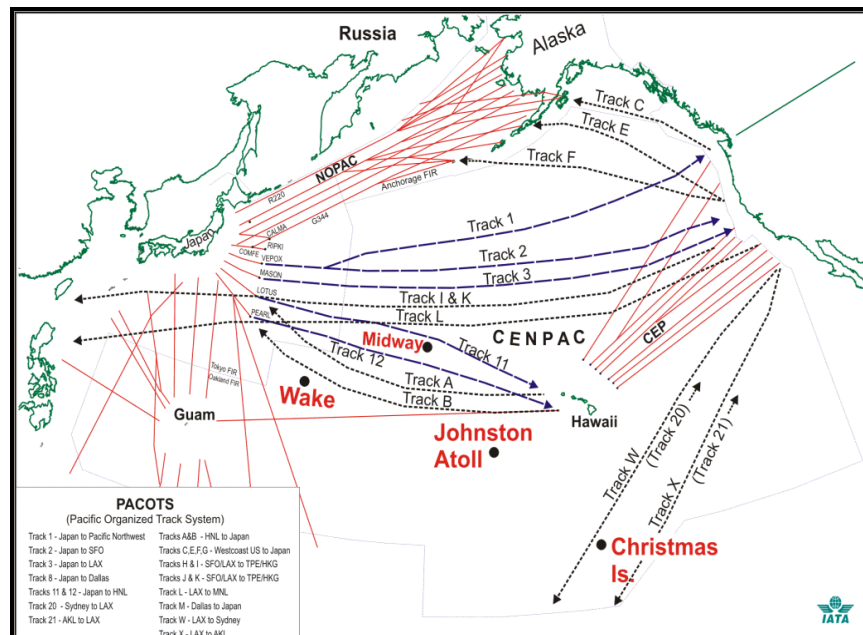
The “Pacific Project” aims to collectively generate improvements in airspace management to more effectively utilize this airborne capability. In so doing this will increase airspace capacity and assist to satisfy future demand without the ongoing escalation of inefficiencies.

Current Situation

The current route structure is based on fixed tracks (NOPAC, RTE, etc) together with flexible tracking (PACOTS) and User Preferred Routes (UPR) in defined areas.

- Many of the fixed tracks are based on terrestrial aids
- NOPAC fixed tracks condense traffic into a confined area
- NOPAC fixed tracks are assigned priority limiting the benefits which could be obtained from more a flexible route structure
- Flights that transit Russian airspace have limited entry/exit points and therefore little track flexibility
- The great circle nature of fixed tracks does not allow best use of prevailing winds and avoidance of unfavourable winds
- Demand for the limited number of tracks frequently exceeds capacity
- The design of fixed tracks does not take advantage of developing navigation capacity such as PBN

PACOTS do generate efficiencies but they are limited in their generic nature, validity periods, lead-time for publishing and operational restrictions against NOPAC.



UPRs are available in some areas but operational restrictions can negate any possible benefit due to the priority allocated to both PACOTS and fixed tracks.

A “seamless” operation is not possible because of the varying separation and navigation requirements and the surveillance and communication capabilities.

Benefits

The greatest benefit will clearly be obtained by the use of UPR.

Benefits include reduced flight times and fuel burn, increased payload capability and significantly reduced environmental emissions¹.

The long-haul nature of flights between North America and Asia enables enormous gains if aircraft are able to take advantage of upper wind patterns.

Modelling conducted to date between LAX/HKG suggests that a B777 UPR flight time reduces on average by 25 minutes. There are similar savings LAX/BJS.

Of greater significance, B747 aircraft UPR LAX/HKG have potential winter flight time reductions of 70-80 mins and payload increases of 5%.

This is a saving of 8000kg of fuel and CO2 reduction of some 25000Kg.

Extrapolating these savings across the number of aircraft which fly in this area manifestly demonstrates the potential benefit.

Environment

Aviation must reduce CO2 emissions.

The aviation industry has agreed ambitious environmental targets².

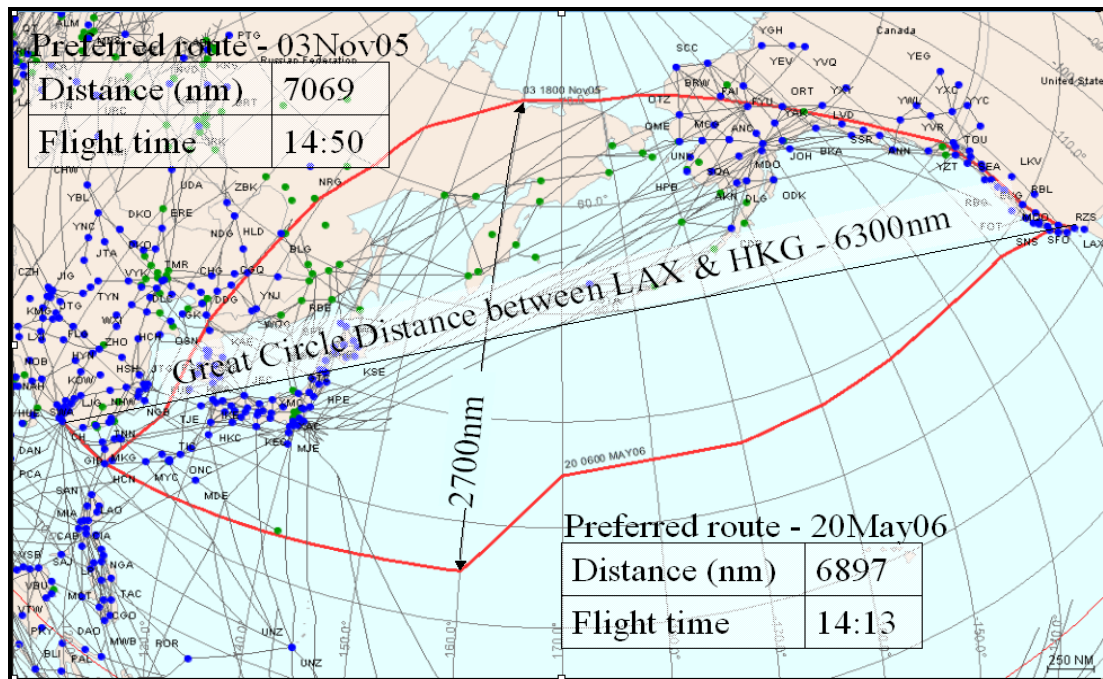
Efficient airspace management will be an integral part of attaining these targets.

Initiatives such as the ASPIRE demonstration flights have shown the efficiencies possible if all other aircraft are removed from the trial aircraft's desired profile.

The Pacific Project will enable ALL aircraft to fly their desired profile and ALL aircraft to obtain the efficiencies, which we know are obtainable.

¹ Examples of expected benefits for a B772 detailed at Appendix 1

² ICAO HLM on Environment



Whilst this may, on the face of it, seem an insurmountable challenge today the seasonal variation will provide a partial solution. Flights eastbound would look to take advantage of westerly jet streams whereas flights westbound would be looking to avoid these areas. Nature effectively producing a uni-directional flow arrangement.

Next Steps

Whilst various forums, such as IPACG & CPWG, have facilitated significant regional gains there is no single forum for this project.

Therefore, we propose that a specific project be established to consider operations between North America and Asia collectively and from end-to-end.

This project requires the involvement of the key stakeholders, Canada, Japan, Russia, USA and IATA/Airlines. Significant input is also required from China to provide connector routes for aircraft to feed into the North Pacific area. Other stakeholders DPR Korea, the Philippines and South Korea also need to be engaged during the project to facilitate connector routes.

IATA will be promoting this project at both Operational and Political forums to gain endorsement. We are looking to the States to provide the necessary support to this project to begin the quest to reduce airline costs and reduce CO2 emissions.

Summary

We believe that the benefits are undeniable.

Conversely we do not under estimate the challenge.

We acknowledge Industry has worked tirelessly, together, to provide benefits across the current North Pacific track structure.

We applaud current efforts to demonstrate where environmental savings can be obtained in an attempt to coalesce action.

We now look for Leadership, from all parties, to agree that these benefits are worth the effort required and that we should now join together and work out a plan.

And from planning to action – the time has come.

Any comments or questions please contact

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Example Data of Projected Benefits B772
(Oct 2009-Oct 2010 based on historical winds)

EASTBOUND			TIME			FUEL			DIST		
			NOW	FLEX	Δ mins	NOW	FLEX	Δ kgs	NOW	FLEX	Δ NM
PEK	YVR	OCT	9.28	9.16	12	55,006	53,302	1,704	4,447	4,318	129
		APR	9.31	9.24	7	65,869	64,693	1,176	4,427	4,350	77
PEK	LAX	OCT	11.16	10.48	28	84,307	80,132	4,175	5,330	5,096	234
		APR	11.04	10.36	28	79,847	76,034	3,813	5,107	4,910	197
NRT	YVR	OCT	8.20	8.10	10	57,857	56,623	1,234	3,895	3,823	72
		APR	8.05	8.03	2	54,607	54,469	138	3,722	3,721	1
NRT	LAX	OCT	9.48	9.41	7	70,212	68,989	1,223	4,628	4,562	66
		APR	9.05	9.05	0	62,325	62,282	43	4,188	4,195	-7
HKG	YVR	OCT	11.23	10.47	36	83,802	78,249	5,553	5,412	5,098	314
		APR	11.01	10.56	5	80,775	80,091	684	5,164	5,116	48
HKG	LAX	OCT	13.07	12.26	41	98,049	93,581	4,468	6,270	5,923	347
		APR	11.54	11.47	7	86,327	85,265	1,062	5,554	5,507	47
SIN	YVR	OCT	14.15	13.46	29	105,029	102,228	2,801	6,823	6,583	240
		APR	13.39	13.32	7	100,099	99,313	786	6,435	6,377	58
SIN	LAX	OCT	15.43	15.15	28	113,460	110,671	2,789	7,531	7,286	245
		APR	14.32	14.25	7	104,928	104,159	769	7,727	7,703	24

Appendix 1

WESTBOUND			TIME			FUEL			DIST		
			NOW	FLEX	Δ mins	NOW	FLEX	Δ kgs	NOW	FLEX	Δ NM
YVR	PEK	OCT	10.35	10.13	23	78,033	74,989	3,044	4,985	4,797	188
		FEB	10.33	10.07	26	76,719	72,117	4,602	4,715	4,695	20
		JUN	9.57	9.47	10	73,325	71,636	1,689	4,659	4,566	93
LAX	PEK	OCT	12.29	12.03	26	93,573	91,116	2,457	4,179	4,251	-72
		FEB	12.26	12.00	26	91,669	88,454	3,215	4,448	4,393	55
		JUN	11.52	11.30	22	88,478	86,288	2,190	5,565	5,403	162
YVR	NRT	OCT	9.04	8.55	9	65,202	63,989	1,213	4,179	4,251	-72
		FEB	9.31	9.24	7	68,599	67,553	1,046	4,448	4,393	55
		JUN	9.06	9.02	4	65,810	65,024	786	4,271	4,228	43
LAX	NRT	OCT	10.20	10.12	8	76,094	74,887	1,207	4,874	4,838	36
		FEB	11.10	11.03	7	82,851	81,791	1,060	5,262	5,198	64
		JUN	10.58	10.54	4	81,992	81,803	189	5,190	5,174	16
YVR	HKG	OCT	12.16	12.01	15	92,084	90,582	1,502	5,804	5,678	126
		FEB	13.22	12.46	36	97,817	94,203	3,614	6,286	5,997	289
		JUN	12.11	11.54	17	91,425	89,798	1,627	5,759	5,613	146
LAX	HKG	OCT'09	13.37	13.21	16	100,215	98,669	1,546	6,463	6,326	137
		NOV	14.52	14.28	24	106,533	104,117	2,416	6,998	6,797	201
		DEC	14.44	14.25	19	105,957	104,129	1,828	6,942	6,787	155
		JAN	14.49	14.06	43	105,868	102,149	3,719	6,931	6,634	297
		FEB	15.12	14.31	41	108,713	104,794	3,919	7,162	6,836	326
		MAR	14.56	14.40	16	107,090	105,430	1,660	7,035	6,890	145
		APR	14.29	13.47	42	104,105	100,550	3,555	6,792	6,469	323
		MAY	13.36	13.21	15	99,841	98,404	1,437	6,443	6,321	122
		JUN	14.15	13.55	20	104,606	102,757	1,849	6,786	6,637	149
		JUL	13.53	13.27	26	102,561	99,786	2,775	6,624	6,413	211
		AUG	13.49	13.38	11	101,733	100,677	1,056	6,563	6,492	71
		SEP	13.58	13.37	21	101,983	99,878	2,105	6,585	6,421	164
		OCT'10	14.17	13.59	18	104,396	102,263	2,133	6,781	6,612	169
YVR	SIN	NOV	14.44	14.36	8	107,408	106,573	835	7,034	6,976	58
		MAR						0			0
		JUL						0			0
LAX	SIN	OCT	16.59	16.39	20	120,141	118,206	1,935	8,120	7,956	164
		FEB	17.12	16.38	34	120,491	117,251	3,240	8,153	7,899	254
		JUN	16.29	16.13	16	117,109	115,485	1,624	7,873	7,731	142