International Civil Aviation Organization

The Special ATS Coordination Meeting Cross Polar and Russian Trans-East ATS Routes (SCM POLAR & RTE)

Bangkok, Thailand, 15 and 16 November 2005

Agenda Item 2: Operations Asia/North America via Cross-Polar/Russian Far East routes

RUSSIAN ROUTE ACCESS-ANCHORAGE TRACK ADVISORY PROGRAM

(Presented by IATA)

SUMMARY

This paper provides a review of the state of operations and air traffic services to the daily traffic flows from North America to Asia that fly the Cross-Polar and Russian Far East tracks.

Traffic demand continues to increase and the demand today frequently exceeds existing route capacities. Although there is a Track Advisory Program that covers most routes, operators today are too frequently forced to accept less than optimum routings or less optimum flight levels due to the existing capacity constraints. The ongoing fuel crisis makes this situation critical and if this situation is left unchanged the upcoming 2008 Olympics in Beijing will significantly exacerbate this problem.

The ATS Providers and airlines urgently need to work together to find ways to increase airspace capacity and enhance the Air Traffic Flow Management.

1. Introduction

1.1 The FAA, Anchorage Center, provides a Track Advisory Program for access into Russian airspace. Track Advisory includes routes into the Russian Far East, and the Cross Polar routes, two, three, and four.

1.2 Currently there is no track advisory program required for cross-polar flight entering Russia on Polar 1 (ABERI), and Russia does not have a track advisory program for flights that operate eastbound into the Anchorage FIR.

1.3 There has been a significant increase in traffic utilizing the Russian Far East Routes and Cross Polar routes over the last couple of years. A reference to year-over-year traffic increases (2003 to 2004), was recently presented at the Global Air Traffic Flow Management Conference (September 2005) in Ottawa Canada by the Russian delegation, indicating a 41.5 percent increase in operations in the Russian Far East (RFE), and a 132.5 percent increase of operations using the cross polar routes.

1.4 With an increase in demand on these routes, we see a greater number of flights receiving delays, or conversely they are not being as efficiently planned as they could be due to the limited

capacity of the traffic advisory program. With record fuel costs and extreme pressures on operators to manage costs, it is imperative to increase capacity and improve efficiency on these operations.

2.0 Background

2.1 Track Advisory is a computer based program, utilizing the FAA DOTS Plus computer, which is designed to assign route of flight, altitude and oceanic departure release times for aircraft utilizing Westbound Russian airspace. It was originally designed, and has been in operation, for Westbound Pacific Organized Tracks (PACOTS), since 1992. Anchorage Center began using DOTS Plus Track Advisory program in September 2000.

2.2 The FAA Anchorage Center provides a Track Advisory Program for access into Russian airspace from Anchorage airspace. The Track Advisory provides slot times for crossing specific points for all flights operating either between 1700UTC to 0700UTC, and from 0700UTC to 1700UTC. The primary demand for entry into Russian airspace is from 2000UTC to 0300UTC. Track Advisory includes routes into the Russian Far East, and the Cross Polar routes, two, three, and four, into Russia.

2.3 The following is an extract from the Track Advisory Guide for Dispatchers, provided by the FAA, and illustrates the Anchorage Track Advisory parameters:

Route, track designator, coordination fix, longitudinal separation standards and useable altitudes are as follows:

Route	Track Designator	Fix	In-trail spacing	Useable Altitudes
A218	N	LISKI	20 minutes	96, 106, 116
B244	P	FRENK	20 minutes	96, 106, 116
G212	Q	YUREE	20 minutes	86, 96, 106, 116
G583	R	MARCC	20 minutes	96, 106
B480/G490	P2	DEVID	25 minutes	310, 350, 390
G491	P3	RAMEL	20 minutes	320, 340, 380
G494	P4	ORVIT	20 minutes	320, 340, 380

2.4 Longitudinal separation standards will be continuous or increasing in-trail spacing (10 minutes plus 10 minute window /for DEVID 15 minutes plus a 10 minute window) for flights at the same altitude on the same track.

2.5 As stated above, the FAA implemented this program at Anchorage Center in the year 2000 as a means to space aircraft as they transitioned from Anchorage airspace into Russian airspace.

3.0 Discussion

3.1 The traffic demand into Russia can vary substantially from day to day, week to week, and month by month depending on several factors.

3.2 Listed below are reasons for high demand for Russian Routes:

a) Upper air winds making the Russian routes the most desirable for flight time improvement over typical North Pacific routings.

b) A combination of faster flight times and payload demand that cannot be accommodated (payload) on the North Pacific routes.

c) Russian routes can save fuel on city pair services. (This is especially significant due to current high fuel prices).

d) Significant flight time improvement requiring consideration to maintain passenger connections at Asian destinations.

e) Certain flights, such as New York or Chicago to Hong Kong can only operate on a year round basis by utilizing cross polar or Russian Far East routes due to aircraft limitations or en-route operational considerations.

f) Less traffic (at times), less turbulence or en-route significant weather than non-Russian routes.

3.3 There are also several factors why Russian Routes are not chosen, and flights will operate over the Non-Russian North Pacific routes;

a) Russian over flight navigation charges compared with non- Russian routes.

b) Operators have a choice of avoiding Russian airspace, by using the North Pacific routes.

c) Flight time savings and fuel savings flying Russian routes do not off set Russian over flight navigational charges.

d) Payload demand does not warrant paying the additional over flight fees.

e) North Pacific routes are not “slot” allocated. NOPAC does not require slots, therefore no wheels up delays.

f) Capacity is limited on the Russian routes based on number of route choices and flight levels available.

g) North Pacific routes have more efficient flight levels due to RVSM. For example, most Russian routes are limited to three flight levels, 9600, 10600, and 11600 meters. NOPAC routes, with RVSM, have upwards of ten or more flight levels such as listed on R220 (200 220 240 260 280 300 320 330 340 350 360 370 380 390 400 410). This is due to one-way traffic and 1000 feet separation standard with RVSM.

h) Selecting a Russian route with high traffic demand could result in being forced to accept a less optimum flight level either in initial planning or due to tactical decisions approaching the Russian entry point. (See Appendix B)

i) Traffic has increased on the Polar 1, due in part to the opening of the Polar 1/B934 route within Russia. There is no Track Advisory Program for Polar 1 operations and therefore the traffic demand is not known when operators are flight planning cross polar flights. Separation on this route is a minimum of 15 minutes, with three flight levels at ABERI of 9100, 10100, and 11100 meters. Unlike the Anchorage Track Advisory program, there is no way to know if there is a demand on any given day that will limit efficiency of operations.

j) Eastbound traffic from Russia over the cross polar routes has also seen an increase year over year, and having an Air Traffic Flow Management tool to review planned operations would be beneficial to operations and ATSP as well.

k) There are quota limitations and also additional limitations on freighter access - if/when these are liberalized traffic will increase yet again.

3.4 In reviewing the parameters of track advisory for Anchorage center, the following factors must be considered:

a) The “P” track and “Q” track are considered as a single track by the DOTS Plus track advisory program because both routes (B244 from FRENK, and G212 from YUREE, merge into G212 at Anadyr (UHMA), which is 347nautical route miles from YUREE, and 349 nm from FRENK. This limits total capacity into the Russian Far East.

b) Minimum longitudinal separation into the Russian Far East is 10 minutes, using Mach Number Technique, except polar 2 is 15 minutes longitudinal separation.

c) Due to different speed regimes of aircraft, Mach Number Technique may be a limiting capacity. For example, a 767-300 may cruise at Mach .80 and a 747-400 at Mach .85. This can drastically affect the longitudinal separation applied.

d) A 10-minute window is added to the separation standard in determining the slot. Anchorage utilizes the 10-minute window to adjust flights that are either too early or too late for their assigned slot time entering Russia.

e) Because of the 10-minute window, a maximum of 3 aircraft per hour, per flight level, can be planned on a given route, although hypothetically six aircraft an hour could be handled with the minimum longitudinal separation applied.

f) The Track Advisory Program programmatically assigns wheels up delays to enable the 20-minute slot between aircraft.

g) Cross Polar route 2 into Murmansk FIR requires a separation factor of 15 minutes plus a window of ten minutes for a total of 25 minutes between slots at the same flight level. This limits capacity to two flights per hour per flight level.

h) There is a transition of altitude from ICAO feet to Russian meters required that can further limit efficiency of flight operations into Russia.

i) Air to ground to air communications can be limiting due to HF propagation problems, and ground-to-ground coordination can also be limited by telephone or data capability between Russian ACC’s, Anchorage, and Edmonton Centers.

j) Polar 2 entry into Russia at DEVID is at 89 north latitude. The total amount of time and distance within Anchorage airspace averages 4 minutes and 32nm. This requires early coordination between Edmonton Center, Anchorage, and Murmansk for an HF transfer of control provided by Arctic Radio.

k) Polar 3 entry into Russia at RAMEL is at 84.30 north latitude. The total amount of time and distance within Anchorage airspace averages 23 minutes and 170nm. Likewise coordination is required with Edmonton, Anchorage, and Magadan. CPDLC is limited to about 82 north; therefore transfer of control may be coordinated by HF or CPDLC, depending on the time and location of transfer.

l) Polar 4 entry into Russia at ORVIT is at 79 north latitude. There is sufficient time and distance with Anchorage airspace (average 48 minutes and 400nm) to affect transfer of control utilizing CPDLC.

m) Several airports of origin have been unable to adhere to published wheels up times. The most significant problem appears to be Chicago O'Hare Airport. Due to runway configurations and traffic density, it is not uncommon to have multiple flights "launched" within minutes of each other with same flight level, route entry. These flights are unable to achieve the slot time for crossing into Russia and require Air Traffic Management intervention.

n) Air Traffic Flow Management, once en route, has been mainly ad hoc between the Anchorage Traffic Management Unite (TMU) and the airline dispatch office. Recently an informal Flow Management resolution has been implemented by Nav Canada at the National Operations Center (NOC) to facilitate missed slot situation. This process is initiated by contact from the airline dispatch office to the NOC.

o) The involvement of airline dispatch offices is probably limited to NAM airlines - certainly JAR/OPS based airlines (like CX) have no provision for this - the point of contact in our case being the pilot for any liaison with ATC for a missed slot situation.

p) Nav Canada's Edmonton Center is limited in direct control to pilot communications and surveillance in the northern airspace, and even though Anchorage and Magadan ACC can accept traffic at 10 minutes longitudinal separation, Edmonton will apply 15 to 20 minutes longitudinal separation when HF communications are marginal or poor.

q) Edmonton ACC cannot utilize FL360 in transition to Anchorage for traffic into Magadan ACC (Polar 3 and 4) because of an MOU for "eastbound" traffic. This limits flexibility in Edmonton to prepare aircraft into transition to one of three levels into Magadan airspace.

r) Airlines try to select the most optimum route and flight levels for each international operation. Due to scheduling requirements, banking of multiple flights, the demand exceeds capacity for efficiency.

s) Second choice routes are selected to avoid en-route flight level restrictions based on missed slot times. Many international flights are operating at maximum range or payload capability and cannot accept en route penalties. These can lead to unplanned tech stops due to excess fuel burn at lower flight levels.

t) Re-routes, prior to Russian entry, to other Russian routes is not acceptable.

u) Flights have been put into 360-degree turns to ensure the proper longitudinal separation between aircraft at the same level prior to entry to Russia.

v) Flights have been planned of different routes to avoid slot allocation restrictions, only to conflict with other traffic in southern Russia and Mongolia.

w) The LISKI entry point is not available 24 hours a day and therefore capacity is reduced for entry into Russia.

x) Polar 4 cannot be used for Saturday departures from North America due to Russian staffing issues in some ACC's. This often results in more demand for polar 2 and polar 3, or routes via LISKI. With less capacity for Saturday departures, flights are operated less efficient and subject to slot delays.

3.5 As an example of how the closure of polar 4 can affect the flow of aircraft for a Saturday departure, the October 15, 2005 Anchorage GRL has been provided (Appendix A).

3.5.1 UAL801 New York to Tokyo had to plan Russian entry at LISKI (A218 and B337 routing) because the ORVIT entry was not available for Saturday departures, (Closed ACC's UESO, UESU, UEMH).

- LISKI route was 24 minutes longer than ORVIT
- LISKI route required 9,100 pounds more fuel burn than ORVIT and denied 6,400 pounds of revenue cargo
- LISKI route resulted in a 20-minute wheels up delay for a slot
- time over LISKI.

3.5.2 The Anchorage GRL for October 15, 2005 had 39 flights listed, 17 flights were listed over LISKI, and 10 of the total 39 delayed (26 percent), with delays average 15.1 minutes preflight with the largest delay 35 minutes.

3.6 As a second example of how critical the use of polar "can" be to the New York to Tokyo flight, a Polar 3 route with a transition from UEEE to Japan was operated on October 24, 2005.

Route	Flight time	Fuel Burn	Payload
RAMEL	13:06	207,300 lbs	84,200 lbs
LISKI	13:41	216,000 lbs	75,500 lbs
R220/NOPAC	13:57	219,800 lbs	71,700 lbs

3.6.1 Had this been a "Saturday Departure" the RAMEL routing could not be planned, requiring a flight time 35 minutes longer, burning 8,700 pounds more fuel, and carrying 8,700 pounds less payload.

- Due to performance limitations and payload demand on some flights, the same route and flight level must be planned resulting in wheels up delays or en-route flight level restrictions. More route choices, or more routes available seven days a week could alleviate this.
- Demand for Russian routes varies day to day, depending on many factors listed previously. Demand can fluctuate from 15 to 20 flights on some days of the week to exceeding 50 flights a day, with Saturday having the highest demand.
- It is not uncommon to see as many as 25 percent of the flights on the GRL being affected by a wheels up delay when the total number of flights exceeds 30.

3.7 What can be done to improve route efficiency and capacity?

There are several ways to improve capacity, and to increase flexibility and efficiency for the operators. Not listed in any specific order:

a) Open Polar 4 access at ORVIT for Saturday departures from North America.

b) Open Polar 3 access for Saturday departures from North America that transition through currently closed ACC's.

c) Increase access to 24 hours for all routes,(LISKI, ORVIT, RAMEL currently limited).

d) Consider new entry points, such as one at 72 north latitude, referred to as Chukotka 2 on the RACGAT/13 route catalog. This could provide significant improvement to access to Russia and alleviate some traffic from Polar 4 and traffic over LISKI.

e) Consider the implementation of RVSM in the Arctic region. Additional flight levels would significantly increase capacity and efficiency. Transitions from current feet to meters could be eliminated.

f) Consider some ATS routes as westbound only, for certain hours when traffic demand is greatest. This could add at least one more flight level during peak demand periods. LISKI A218 would be a potential candidate for this suggestion.
   a. There could be an affect on airlines with different schedules and consequently
   b. cause a negative impact on their eastbound operations.

g) Consider reducing the "window" for slots from ten minutes to five minutes.

h) Consider reduced separation minima on some routes such as 50nm longitudinal separation, or 30nm separation for RNP4 aircraft.
   a. Segregation of routes or flight levels by aircraft capability (CNS/ATM). Magadan ACC's use of CPDLC/ADS, (not considered acceptable by all operators).
   b. Airline operators "spread out" operations to reduce high demand in certain time frames, (not viable due to a multitude of reasons).
   c. Eliminate the Track Advisory Program. We are not sure what the effect of this would be, and therefore it may not be a desirable option.
   d. Request the FAA to upgrade the Track Advisory Program to a web based, dynamic product.
   e. Develop a cooperative Air Traffic Flow Management relationship with Nav Canada, the FAA, and Reykjavik ACC to provide real time coordination of traffic matters in the cross polar and Russian Far East route structures.

4.0 Conclusion and Action by the Meeting

4.1 Flexibility on day-to-day operations is essential to efficiency of airline operations. Fuel cost over the past couple of years has severely affected airline operations, as well as affecting global economies. There is no end in sight of continued high fuel cost.

4.2 Traffic demand continues to increase with new international operations between North America and Asia. New aircraft, such as the Boeing 777LR (Long Range) will be entering airline service during 2006 and most likely will also be operating over these route structures.

4.3 It is therefore essential that operators consider all aspects of their operations to reduce costs. Route flexibility and route efficiency are paramount in international operations. The current Track Advisory Program was designed to "manage" aircraft, however, the demand is frequently exceeding capacity, and operators are also frequently forced to accept less than optimum routings or less optimum flight levels due to that capacity constraint.

4.4 We urge Russia to consider this paper in addressing the concerns of the operators. Much of what is written requires coordinated discussions and agreements between states. It is therefore suggested that this paper be a consideration for further discussions at the next RACGAT. We also believe that many of the suggestions may be possible, such as new routes and entry points, unilaterally by Russia.

4.5 We ask the delegation from Russia to consider the current industry concerns dealing with route flexibility and route efficiency and we look forward to working together on these issues.

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Appendix A

ANCHORAGE GRL October 15, 2005 (Saturday Departures)

QU HDQDHUA
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GATEWAY RESERVATION LIST (COMPILED 10/15/05 15:31) PAGE 1 OF 3

ANCHORAGE ARTCC
TRAFFIC MANAGEMENT
GATEWAY RESERVATION LIST

	=REQUESTED=			=RELEASED=			
	WHEEL	CROSS		WHEEL	CROSS		
FLIGHT	UP TIME	FIX TIME	DEPT	DEST	UP TIME	FIX TIME	ALT	TRK	RELEASED
FLIGHTS FOR TRACK N CROSSING FIX LISKI									
ANA009	1650	2352	KJFK	RJAA	1650	2352	96	N	
KAL038	1810	0053	KORD	RKSI	1810	0053	96	N	
KAL082	1755	0105	KJFK	RKSI	1803	0113	96	N	
NWA69	1952	0234	KDTW	RJBB	1952	0234	96	N	
JAL47	1440	2132	KJFK	RJAA	1440	2132	106	N	
COA9	1540	2227	KEWR	RJAA	1540	2227	106	N	
ANA001	1635	0000	KIAD	RJAA	1635	0000	106	N	
UAL801	**1655**	**0000**	**KJFK**	**RJAA**	**1715**	**0020**	**106**	**N**	**<<<<<<<UAL801**
UAL877	1727	0005	KORD	RJBB	1802	0040	106	N	
ACA001	1745	0038	CYYZ	RJAA	1807	0100	106	N	
KAL094	1755	0114	KIAD	RKSI	1801	0120	106	N	
NWA25	1840	0128	KDTW	RJAA	1852	0140	106	N	
NWA19	2020	0208	KMSP	RJAA	2020	0208	106	N	
NWA11	1945	0230	KDTW	RJAA	1945	0230	106	N	
NWA3	2035	0223	KMSP	RJAA	2047	0250	106	N	
NWA71	2010	0252	KDTW	RJGG	2028	0310	106	N	
JAL5	1800	0052	KJFK	RJAA	1800	0052	116	N	
FLIGHTS FOR TRACK P2 CROSSING FIX DEVID									
THA791	1620	2224	KJFK	VTBD	1620	2224	350	P2	
UAL835	1742	0000	KORD	ZSPD	1742	0000	350	P2	
CPA831	2010	0220	KJFK	VHHH	2010	0220	350	P2	
FLIGHTS FOR TRACK P3 CROSSING FIX RAMEL									
UAL851	1730	2345	KORD	ZBAA	1730	2345	340	P3	
CCA982	2100	0330	KJFK	ZBAA	2100	0330	340	P3	

FLIGHTS FOR TRACK Q CROSSING FIX YUREE

KAL232	1500	1618	PANC	RKSI	1500	1618	96 Q
KAL258	1545	1703	PANC	RKSI	1545	1703	96 Q
CKK226	2015	2134	PANC	ZBAA	2015	2134	96 Q
CCA9006	1605	1750	PANC	ZBAA	1605	1750	106 Q
AAR297	1835	1955	PANC	RKSI	1835	1955	106 Q
UPS6928	1857	2016	PANC	ZSPD	1857	2016	106 Q
FDX155	1916	2032	PANC	RKSI	1920	2036	106 Q
UPS6972	2117	2234	PANC	ZGGG	2117	2234	106 Q
AAL167	1557	2317	KJFK	RJAA	1557	2317	106 Q
ACA029	1935	2339	CYVR	ZBAA	1935	2339	106 Q
AAR271	2030	0058	KSEA	RKSI	2030	0058	106 Q
SIA017	2120	0126	CYVR	RKSI	2120	0126	106 Q
KAL026	2120	0146	KSEA	RKSI	2120	0146	106 Q
CCA986	2140	0230	KSFO	ZBAA	2140	0230	106 Q
UAL889	2059	0234	KSFO	ZBAA	2115	0250	106 Q
KAL032	1755	0053	KDFW	RKSI	1755	0053	116 Q
KAL036	1725	0123	KATL	RKSI	1725	0123	116 Q

ANALYSIS OF ABOVE ADVISORY

NUMBER OF FLIGHTS PUT INTO PROGRAM: 39
NUMBER OF FLIGHTS SCHEDULED ON-TIME: 29
NUMBER OF FLIGHTS SCHEDULED WITH DELAY: 10
MINIMUM DELAY: 4 MAXIMUM DELAY: 35
AVERAGE DELAY TIME: 15.3

APPENDIX B

ANCHORAGE GRL October 18, 2005 (Tuesday Departures)

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GATEWAY RESERVATION LIST (COMPILED 10/18/05 19:36) PAGE 1 OF 4

ANCHORAGE ARTCC
TRAFFIC MANAGEMENT
GATEWAY RESERVATION LIST

	=REQUESTED=		=RELEASED=			
	WHEEL	CROSS	WHEEL	CROSS		
	UP	FIX	UP	FIX	RELEASED	
FLIGHT	TIME	TIME	DEPT	DEST	TIME	TIME	ALT	TRK
FLIGHTS FOR TRACK N		CROSSING FIX LISKI						
JAL9	1655	2326	KORD	RJAA	1655	2326	96	N
KAL094	1750	0052	KIAD	RKSI	1750	0052	96	N
NWA69	1955	0217	KDTW	RJBB	1955	0218	96	N
NWA71	2013	0235	KDTW	RJGG	2015	0238	96	N
ANA009	1645	2343	KJFK	RJAA	1700	2358	106	N
ANA001	1720	0008	KIAD	RJAA	1730	0018	106	N
KAL038	1805	0049	KORD	RKSI	1805	0049	106	N
NWA25	1840	0101	KDTW	RJAA	1848	0109	106	N
KAL036	1725	0109	KATL	RKSI	1745	0129	106	N
NWA11	1945	0207	KDTW	RJAA	1945	0207	106	N
NWA19	2025	0214	KMSP	RJAA	2038	0227	106	N
UAL877	1725	2352	KORD	RJBB	1725	2352	116	N
KAL082	1750	0052	KJFK	RKSI	1750	0052	116	N
DAL55	1630	0045	KATL	RJAA	1657	0112	116	N
FLIGHTS FOR TRACK P		CROSSING FIX FRENK						
ACA029	1935	2325	CYVR	ZBAA	1955	2345	96	P
ACA001	1750	0031	CYYZ	RJAA	1759	0040	96	P
ACA039	2130	0121	CYVR	RJBB	2130	0121	96	P
ACA007	2145	0135	CYVR	VHHH	2151	0141	96	P
JAL47	1430	2131	KJFK	RJAA	1430	2131	106	P
JAL5	1750	0052	KJFK	RJAA	1750	0052	106	P

FLIGHTS FOR TRACK P2 CROSSING FIX DEVID

ACA015 1402 1939 CYYZ VHHH 1402 1939 350 P2
ACA031 1424 2006 CYYZ ZBAA 1424 2006 350 P2
THA791 1620 2230 KJFK VTBD 1620 2230 350 P2
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FLIGHTS FOR TRACK P3 CROSSING FIX RAMEL

UAL895D1410 1950 KORD VHHH 1410 1950 340 P3
COA89 1630 2234 KEWR ZBAA 1630 2234 340 P3
UAL895 1750 2317 KORD VHHH 1750 2317 340 P3
UAL835 1755 2337 KORD ZSPD 1755 2337 340 P3
UAL851 1930 0110 KORD ZBAA 1930 0110 340 P3
CPA831 2010 0223 KJFK VHHH 2010 0223 340 P3
CCA982 2100 0330 KJFK ZBAA 2100 0330 340 P3
UAL829 2325 0504 KORD VHHH 2325 0504 340 P3
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FLIGHTS FOR TRACK P4 CROSSING FIX ORVIT

UAL801 1709 2331 KJFK RJAA 1709 2331 320 P4
COA9 1540 2200 KEWR RJAA 1540 2200 340 P4
UAL881D1627 2220 KORD RJAA 1627 2220 340 P4
UAL881 1737 2331 KORD RJAA 1738 2332 340 P4
UAL883 1836 0033 KORD RJAA 1836 0033 340 P4
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FLIGHTS FOR TRACK Q CROSSING FIX YUREE

UPS6880 1614 1734 PANC RJAA 1614 1734 96 Q
UPS6830 1639 1802 PANC RJBB 1639 1802 96 Q
UPS6991 1842 2002 PANC VHHH 1842 2002 96 Q
FDX13 1901 2025 PANC RKSI 1901 2025 96 Q
FDX19 1942 2106 PANC RJBB 1942 2106 96 Q
ACA035 1930 2325 CYVR RJBB 1930 2325 96 Q
CCA992 2020 0015 CYVR ZBAA 2020 0020 96 Q
UPS6928 1712 1830 PANC ZSPD 1712 1830 106 Q
UPS6940 1716 1836 PANC VHHH 1730 1850 106 Q
UPS6995 1747 1904 PANC RKSI 1753 1910 106 Q
UPS6972 1847 2003 PANC ZGGG 1847 2003 106 Q
ACA037 1935 2310 CYVR ZSPD 1935 2310 106 Q
ACA063 1950 2340 CYVR ZSPD 1945 2340 106 Q
COA7 1620 2355 KIAH RJAA 1633 0008 106 Q
AAL167 1705 0022 KJFK RJAA 1711 0028 106 Q
UAL889 2059 0156 KSFO ZBAA 2059 0156 106 Q
KAL232 1500 1614 PANC RKSI 1500 1614 116 Q
KAL258 1545 1659 PANC RKSI 1545 1659 116 Q
N809C 2200 2325 PANC ZBAA 2200 2325 116 Q
AAL153 1625 2349 KORD RJAA 1653 2349 116 Q

KAL032 1750 0054 KDFW RKSI 1750 0054 116 Q
AAL27 1810 0110 KORD RJGG 1814 0114 116 Q
KAL026 2120 0125 KSEA RKSI 2129 0134 116 Q
SIA015 2135 0231 KSFO RKSI 2135 0231 116 Q
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FLIGHTS FOR TRACK R CROSSING FIX MARCC

ACA009 2030 0104 CYVR RJGG 2030 0104 96 R
ACA003 2030 0058 CYVR RJAA 2030 0058 106 R

ANALYSIS OF ABOVE ADVISORY
NUMBER OF FLIGHTS PUT INTO PROGRAM: 62
NUMBER OF FLIGHTS SCHEDULED ON-TIME: 45
NUMBER OF FLIGHTS SCHEDULED WITH DELAY: 17
MINIMUM DELAY: 1 MAXIMUM DELAY: 27
AVERAGE DELAY TIME: 10.8