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 3: Cross-polar/Russian Far East ATS route review - Asia/North America traffic flows

FINAL REPORT OF THE 13TH MEETING OF THE RUSSIAN/AMERICAN COORDINATING GROUP FOR AIR TRAFFIC CONTROL (RACGAT/13)

(Presented by the Secretariat)

SUMMARY

This information paper provides information on the outcome of the meeting of the Russian/American Coordinating Group for Air Traffic Control (RACGAT/13), which was held in Vladivostok, Russia on 20-23 October 2003.

Action by the meeting is at Paragraph 3.

1. INTRODUCTION

1.1 The Russian American Coordinating Group for Air Traffic Control (RACGAT) was established by Memorandum of Understanding between the United States and the Russian Federation in 1992. The purpose of the group is to facilitate coordination of near-term improvements to the air traffic services across the territories of the member States and their adjacent neighboring States' air traffic service providers. Consequently, delegations from many of these neighboring service providers attend RACGAT meetings.

1.2 During the past 10 years the work of RACGAT had developed to include three main areas of focus addressed by independent subgroups:

a) Air Traffic Services – this subgroup is devoted to resolution of near-term procedural issues and to the development of optimized route structures across the region.

b) ATC Modernization Committee – this subgroup is devoted to implementation of infrastructure necessary to support the objectives of the ATS Subgroup.

c) Air Traffic Flow Management Subgroup – this subgroup is focused on the development of strategic planning initiatives to improve the efficiency of traffic flows.

2. DISCUSSION

2.1 RACGAT/13 continued the development of a RACGAT Route Catalogue. This document was designed as a planning aid for air traffic service providers in the RACGAT service area. In light of the difficulty of forecasting route demand in today's economic environment, the meeting recognized the importance of solid planning data in prioritizing investment decisions within the region. The investment analysis that drives these decisions occurs outside of the scope of RACGAT. However, RACGAT is committed to development of complete service proposals that can be assessed by service providers and operators with an eye to more effective coordination in the route development process. The first version of the route catalogue was published in April 2004. The RACGAT/13 meeting report is at **Appendix A** to this paper. The ATS Route Catalogue is at **Appendix B** to this paper.

2.2 RACGAT did not meet in the Mini-RACGAT format in the spring 2004 timeframe. Both the State Civil Aviation Authority of Russia and the United States Federal Aviation Administration were undertaking significant realignment of their air traffic services organizations. Pending the outcome of these processes, the United States is tentatively scheduled to host the next RACGAT meeting in late October 2004.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the work undertaken by this regional ATS coordinating group.

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Summary of Discussion for the Sixth Meeting of the Mini-Russian/American Coordinating Group for Air Traffic Control (RACGAT/13)

1.0 Introduction

1.1 The RACGAT/13 meeting was held in Vladivostok, Russia, on 20-23 October 2003. Mr. Yuri Averianov of the State Civil Aviation Authority (SCAA) and Mr. Steve Creamer of the Federal Aviation Administration (FAA) chaired the meeting.

1.2 The meeting was attended by representatives of the SCAA of Russia, the United States FAA, FAA Alaska Region, the Civil Aviation Bureau of Japan, the Civil Aviation Authority of Mongolia, International Air Transport Association (IATA), Russian State ATM Corporation (SATMC), Russian ATC Enterprises from North West, North East, Chukotka, Kamchatka, Central Siberia, North Eastern Siberia, Eastern Siberia, and Far East Air Navigation Enterprises of the Russian Federation, Cathay Pacific Airways, Japan Airlines, All Nippon Airways, Singapore Airlines, and U.S. Airlines (United, Northwest, Continental, Delta, FedEx and UPS). The attendee list is in Appendix D.

1.3 Discussion of action items took place in the ATS and AMC Sub-groups. The RACGAT co-chairmen headed the ATS Sub-group. The AMC Sub-group was headed by Mr. Viacheslav Sokolov from SCAA and by Mr. Robert Sweet from the FAA. ATFM Sub-group issues were considered during the ATS Sub-group meeting.

2.0 Opening Remarks

2.1 Mr. Yuri Averianov, Russian Co-chairman, welcomed all the participants to the 13th RACGAT. Mr. Averianov expressed gratitude to the hosts, Primorsky Air Navigation Enterprise for providing this venue. He briefed the meeting on the background of RACGAT, and stressed the importance of RACGAT and its success in opening the Polar Routes and increasing traffic flow through the region, which serves the needs of the industry. Mr. Averianov wished the participants a very successful meeting.

2.2 Mr. Steve Creamer, the U.S. Co-chairman, welcomed everyone and thanked the Primorsky Air Navigation Enterprise for hosting RACGAT/13. Mr. Creamer acknowledged the progress RACGAT has made over the last 10 years and the challenges it faces in the future. He noted with appreciation continued user participation in RACGAT as we all work towards a seamless system for our customers, the flying public. In conclusion, Mr. Creamer stated he was looking forward to continued cooperative efforts in this forum.

2.3 Yuri Klionov, General Director of Primorsky Air Navigation Enterprise, welcomed the meeting back to Vladivostok. He noted that RACGAT/5 was held in Vladivostok 1995. Mr. Klionov also noted much has taken place since that RACGAT, including the opening of the Polar Routes and the increased operations. Mr. Klionov also pointed out the importance of the adjacent States participation in RACGAT. He wished the group a very successful meeting.

2.4 Vladilen Sytnik, Offical of the Primorsky Territorial Administration, welcomed the group on behalf of the Governor and Regional Administrator. They are happy to host RACGAT for a second time in Vladivostok. Mr. Sytnik noted many significant changes have occurred including the introduction of new aircraft routes from North America and the United States to South East Asia. Mr. Sytnik also stated

it was important that RACGAT continue to work with the International Civil Aviation Organization and the International Air Transport Association. In conclusion, he noted these relationships increase the integration of Russia with the world.

2.5 The proposed RACGAT/13 agenda was reviewed and accepted.

3.0 National and Regional Reports

3.1 Nikolay Zobov, First Deputy General Director, State ATM Corporation (SATMC) provided data on the Enterprises of the State ATM Corporation. The State ATM Corporation works in cooperation with 7 Federal regions, 80 constituencies, 7 Military Districts, 16 Regional air transport departments of the Ministry of Transport of the Russian Federation ensuring the operation of the airspace structure of the Russian Federation. The Russian Federation airspaces abut with Flight Information Regions (FIRs) of 20 adjacent countries. At present, the airspace structure includes 8 Zone ATFM centers, 4 auxiliary Zone ATFM centers, 67 area control centers (ACC) and 45 auxiliary ACCs. The Russian Federation currently manages air traffic on 571 international & domestic air routes, total length of which is 404,898 km. . From January to August 2003 the Russian ACCs provided services to 458,209 aircraft, including 231,216 foreign aircraft. During this period 428 flights were provided service on cross-polar routes.

3.1.1 Mr. Zobov reported between RACGAT/12 and RACGAT/13 the following work was accomplished:

3.1.2 VFR route for GA aircraft between Nome, Alaska and Provideniya Bay, Chukotka was opened. In order to perform flights on this route, on June 24, 2003 the Agreement on coordination procedures between Anadyr ACC and Anchorage ARTCC was signed. On August 11-13, 2003 U.S. aircraft successfully performed test flights on this route. The segment of the B369 route Provideniya-BATNI was published in the Russian AIP and since April 2003 was opened for regular flights. The representatives of FAA, Alaska, SATMC and Anadyr ACC signed a new Agreement on coordination between Nome FSS and Lavrentiya Tower, which took into account comments made at the previous meeting. Russian AIP marked borders between Lavrentiya and Provideniya Bay on B369, obligatory reporting point NALID, operating hours and VHF frequencies at Lavrentiya and Provideniya. Future extension of this route to Anadyr and Magadan is planned.

3.1.3 Kamchatka 4 route (B932) was published in AIP for demo flights. In order to conduct flight on this ATS route, an Agreement was signed between Yuzhno-Sakhalinsk ACC and Sapporo ACC as well as between the Petropavlovsk-Kamchatsky ACC and Anchorage ARTCC on July 24, 2003.

3.1.4 While implementing RVSM in the oceanic air space, it will be necessary by November 1, 2004 to solve the issues connected with the organization of parallel offset routes in order to resolve ATM problems posed by opposite traffic.

3.1.5 Mr. Zobov further spoke about the State Corporation to modernize ATC centers of Northern and Eastern Russia. Changes and additions to Amendment 2 to Annex 2 to MOC between FAA and the USSR Ministry of Civil Aviation of February 16, 1999 were forwarded to Ms. Ava Wilkerson, Director of International Aviation Office, FAA in August 2003. After the signing of the Amendment and the Agreement, SCAA will instruct State ATM Corporation to pay the bills for the satellite communications channels leasing.

3.1.6 In conclusion, Mr. Zobov advised an agreement was reached between the State ATM Corporation and the manufacturers regarding the inspection of the relay stations condition. After the completion of this work, the decision will be taken regarding the delivery or replacement of the relay stations

(November-December). Pursuant to the MOT's decision SCAA intends to consolidate Russian ACCs between 2003 and 2010 to establish 20 consolidated ACCs. That will help increase flight safety, optimize air space structure and modernize the ATM system.

3.2 Mr. Steve Creamer, US Co-chair gave the national and regional reports for United States and Anchorage ARTCC. Mr. Creamer advised the group that the 10 minute-in-trail (MINIT) separation standard was approved by ICAO. Anchorage ARTCC is prepared to sign LOAs with Murmansk and Magadan ACC for reduced separation minimum, 15 MINIT for Murmansk, 10 MINIT for Magadan. Mr. Creamer advised the meeting on the costs of the satellite circuit and the need to resolve this issue.

3.2.1 Mr. Creamer reported on the planned implementation of Advanced Technology Oceanic Procedures (ATOP) at Anchorage ARTCC and the implementation of RVSM in domestic U.S. airspace. Regarding ATOP, software testing is expected in late 2004 with initial operating capability expected in the 1st quarter of 2005.

3.2.2 Mr. Creamer acknowledged the excellent work that Kamchatka Volcanic Emergency Response Team (KVERT) has done with the Alaska Volcanic Observatory. He thanked Petropavlovsk-Kamchatsky for continued support of KVERT.

3.2.3 Mr. Creamer reported on the implementation of Reduced Vertical Separation Minimum (RVSM) in domestic U.S. airspace, including Anchorage ARTCC, which will no longer be transition airspace. The U.S. has a planned implementation date of 20 January 2005 for RVSM.

3.3 Mr. Toshihide Funayama, JCAB, expressed his appreciation for the invitation to RACGAT/13. He advised the meeting he was looking for clarification on two issues:

1. JCAB is prepared for demonstration flights on Kamchatka 4 – B932, however NOTAM information was confusing.
2. JCAB requested additional information and clarification on Polar 4B – B932, due to the impact on Narita due to the expected demand.

3.3.1 In addition, JCAB advised the meeting on the new airspace classification implementation plan that will start 19 February 2004. Class A airspace classification above 28,500 feet is expected by the end of 2004. Class B and C airspace will be introduced in 2005. RVSM will be introduced during the 1st half of 2005 making all Japanese FIRs RVSM. The airspace classification and realignment process will be completed by 1st quarter 2008.

3.4 Mr. Jigjid Tsolmon CAA of Mongolia, reported of the implementation of the new digital channel between Ulan Bator ACC and Irkutsk in August 2003. The new entry/exit point POLHO was established between China and Mongolia. Mr. Tsolmon also advised the Chinese have opened three new entry points. More details will be discussed during the Sub-groups.

3.5 Mr. Neil Jonasson, International Air Transport Association, applauded the group's achievements over the last 10 years. He thanked all the States for their consistence attendance at RACGAT. Mr. Jonasson then discussed the economic crisis that hampered airline growth during the last year. For instance Cathay Pacific had to cut traffic by 85%. IATA will provide a briefing later in the agenda that offers RACGAT information on the "Economics of Airline Route Selection".

3.5.1 Mr. Jonasson also thanked the States for the active participation in RACGAT. China and Mongolia have successfully worked together to address the China entry point issues. JCAB and the Russian ACCs are working on opening of Kamchatka 4. He urged continued cooperation in improving the route structure.

3.6 Alexander Kislitsin, Primorsky Air Navigation, noted the positive results of RACGAT work for the regions, in particular for Primorsky Air Navigation. Close coordination with Peoples Democratic Republic of Korea air traffic management authorities has been established. Mr. Kislitsin reported contingency procedures have been developed between Vladivostok, Pyongyang and Sapporo ACCs.

3.7 Vladimir Vakhrushev, Chukotka Air Navigation, reported that "Chukotaeronavigatsiya" continues training ATC specialists to work on A218 international air route. Since September 6, 2003 the Keperveyem ACC provides ATC in English. In addition, the agreement on the GA flights between Nome and Lavrentiya has been revised and signed. This summer GA flights were successfully performed on the route Nome-Lavrentiya-Provideniya Bay while a demo flight Nome-Provideniya-Anadyr is planned to be conducted in 2004. Finally the amendments on using additional flight level 9600 meters on A218 and B337 was published in AIP for use.

3.8 Yevgeny Shelkovnikov, Kamchatka Air Navigation, reported since RACGAT/12 the following work has been accomplished:

1. On June 24, 2003 the MOU was signed between Anchorage ARTCC and Petropavlovsk-Kamchatsky ACC on conducting the demonstration flights on Kamchatka 4 route (B932).
2. On June 24, 2003 the revised LOA was signed between Anchorage ARTCC and Petropavlovsk-Kamchatsky ACC, where the coordination procedures between the centers during flights on B932 were detailed.
3. On the basis of the Kamchatka Regional Civil Aviation Administration and the Institute of Volcano Geology and Geochemistry conducted the international meeting to summarize and assess the KVERT work.
4. Continue the work on expanding the range of VHF communications in Petropavlovsk-Kamchatsky ACC to support operations on G583 and B932.

3.9 Alexander Turchin, Far East Air Navigation, advised the meeting in order to increase the capacity of Trans-Siberian and Far East routes, enhance flight safety in crossing points of R22, B233 and B467 (Yedinka) routes, the "Far East Air Navigation" conducts work on the installation of radar positions in "Svetlaya". The opening of "Svetlaya" radar station will enable:

- to provide radar coverage in crossing points on the Japan Sea coast;
- to increase the capacity of Trans-Siberian and Far East routes;
- to transfer from temporary separations to radar separations;
- to decrease delays in Japan airports;
- to organize the flight control group on the basis of Khabarovsk ACC.

3.9.1 Mr. Turchin reported that the Far East Air Navigation" is ready to handle demonstration flights on Kamchatka 4 with the intensity of 1 aircraft per 3 hours in order to determine the possibility of ground-to-air communications at VHF and HF frequencies. In accordance with the RACGAT/12 decisions we signed a Memorandum with Sapporo ACC, which sets the plan to start demo flights on Kamchatka 4 route since August 7, 2003. In fact, the flights were approved from August 20, 2003 till October 20, 2003. Requests came from UAL and JAL. Unfortunately, no flights have been performed so far. We confirm again the need to install VHF relay stations on Kunashir and Iturup islands to provide for a reliable and stable VHF communications during air traffic control on Kamchatka 4.

3.9.2 New segments of the routes, proposed at Mini_RACGAT/6, Chokurdakh-Oymyakon-Okhotsk-Okha-Likon-Aksun and Okhotsk-Nikolayevsk on Amur were considered and are recommended for implementation

3.10 Yevgeny Melnik, East Siberia Air Navigation advised the meeting that during the first 8 months of 2003 Irkutsk and Bratsk ACCs served 105 aircraft on Polar 2, including 50 flights by Continental Airlines from New York to Hong Kong, and 55 by United Airlines from Chicago to Hong Kong. There were no negative comments.

3.10.1 The work was completed on linking Irkutsk ACC through digital circuits to the network communications circuits, which allow access through fiber-optic network. In November 2003 the digital circuit between Irkutsk ACC and Ulan-Bator ACC will implemented. The integration of Kyzyl ACC and Chita ACC through fiber-optic circuits is scheduled to be accomplished in the first quarter of 2004.

3.11 Viacheslav Golovin, Central Siberia Air Navigation, reported on modernization activities in the region. During the last year the enterprise accomplished the following:

1. Installed and put into operation SSR in Turukhansk and Vanavara ACCs with the "Alpha" and "Nord" display systems.
2. Installed the "Alpha" display systems in Khatanga ACC.
3. Installed VHF relay station in Dikson airport, which allows VHF radio communications from Norilsk ACC up to 350 km from the location.
4. Organized coordination via satellite circuits between the ACCs under the "Central Siberia Air Navigation" Enterprise:

Norilsk	-	Turukhansk
Norilsk	-	Tura
Podkamennaya Tunguska	-	Krasnoyarsk
Krasnoyarsk	-	Boguchany
Krasnoyarsk	-	Kolpashevo

5. Yeniseysk ACC was closed on March 20, 2003. The area of its responsibility was distributed among Krasnoyarsk, Podkamennaya-Tunguska and Boguchany ACCs.

3.11.1 Short-term (nearest) plans of technical modernization for the region include:

1. In 2003-2004 plan to install SSR in Khatanga and Boguchany ACCs.
2. Considering the issue of establishing the direct coordination channel between Boguchany ACC and Bratsk and Kerensk ACCs.
3. Considering the issue of transferring radar and voice data from Abakan, Kyzyl and Boguchany ACCs to Krasnoyarsk ACC. After resolving the transfer of radar and voice data issues, consolidation of these three ACCs will occur.

3.11.2 In March 2003 the proposal on developing Polar 2A AVERI-Island Sredny-Khatanga was coordinated at a regional level.

3.12 Andrey Kudriavtsev, North West Air Navigation, reported continued work on improving the quality of HF communications in the oceanic air space. Reconstruction of HF antenna fields is scheduled to be completed in 2004. We are considering reducing the minimum acceptable interval for the flights in the area of responsibility of the Murmansk Oceanic ACC from 20 to 15 min accordingly (for the turbo jet aircraft using the Mach number technology) as indicated in Doc 7030. Mr. Kudriavtsev advised of a new version of the LOA on the coordination procedures between Anchorage ARTCC and Murmansk ACC, which is proposed for signing at this meeting, contains changes regarding the decrease of the longitudinal separation to 15 min. As these changes affect the adjacent ACCs (Bodo, Reykyavik), we have prepared and forwarded letters to these centers. In addition it is necessary to make amendments to AIP of the Russian Federation.

3.12.1 Mr. Kudriavtsev reported the follow traffic count for air traffic in Murmansk ACC oceanic sector in 2003:

January	-	106
February	-	90
March	-	118
April	-	116
May	-	63
June	-	54
July	-	109
August	-	91
September	-	122

Polar 2 (B480) and Arctica 1 (B483) were most frequently used.

3.13 Mr. Gene Cameron, United Airlines, also advised the group of reduction in traffic during the early months of 2003. UAL cancelled the ORD-Hong Kong and ORD-Beijing was reduced due to the economic downturn. Mr. Cameron thanked the Chinese and Mongolians on their work in adding new entry points for the cross-polar routes.

3.13.1 Mr. Cameron reported UAL traffic has increased during September, 85 UAL flights have taken advantage of the cross-polar routes, including New York to Tokyo flights. UAL continues to look for opportunities to improve traffic flexibility using the cross-polar and Russian Far East routes. In conclusion, Mr. Cameron stated that while no one can predict future traffic growth, he is optimistic.

3.14 Mr. Curtis Taylor advised the meeting that Northwest Airlines had to slash their number of flights through the Russian airspace due to SARS. They had to switch to using smaller aircraft. Although the airline is currently under-using the Russian airspace they hope to increase traffic in the future, intending to use Polar 3 and RFE routes.

3.15 Because the Air Traffic Flow Management Subgroup did not meet at RACGAT/13, Mr. Alexey Buevich, who represented MATFMC reported on the status of action items contained in the RACGAT/12 Agreed Action Items List and provided traffic statistics for Cross-Polar and Trans-East routes. He also briefed the meeting on the proposed traffic forecast survey form being coordinated with ATCSCC. The proposed form is contained at Appendix I. The details of his report are included in the revised Agreed Action Item List prepared for this report and the traffic statistics are contained in Appendix F.

4.0 Agreed Action Items

4.1 The Co-chairmen of the Sub-groups presented the summaries of the action items at the final plenary meeting.

4.2 Discussion on the agreed action items from RACGAT/13 (Appendix C) is reflected in summaries of Sub-groups on ATS (Appendix A) and AMC (Appendix B).

5.0 Mini-RACGAT/7

5.1 The next meeting of RACGAT will tentatively be held April 2004 in Russia. Final decision on exact location and dates will be forthcoming.

6.0 Closing Remarks

6.1 Mr. Averianov thanked all participants for another successful RACGAT. Mr. Averianov thanked our gracious host, Primorsky Air Navigation, for hosting and supporting the meeting. He expressed appreciation for the delegations from Japan and Mongolia, the State ATM Corporation and the Russian Regional Enterprises for their active participation in the meeting. In conclusion, Mr. Averianov thanked the interpreters for their assistance, the FAA delegation and his co-chair, Mr. Steve Creamer.

6.2 Mr. Creamer echoed Mr. Averianov's expression of appreciation. He acknowledged Japan and Mongolia attendance at RACGAT. Mr. Creamer stated he appreciated the users and service provider's active involvement in the RACGAT forum. He noted the positive teamwork amongst the participants as they continue to work current and future issues. In conclusion, Mr. Creamer noted it was an honor for him to serve as co-chair of RACGAT and he looks forward to working future issues in RACGAT, such as RVSM.

7.0 Appendices

7.1 Appendix A: ATS Sub-group Summary of Discussions

7.2 Appendix B: AMC Sub-group Summary of Discussions

7.3 Appendix C: RACGAT/12 Action Items List

7.4 Appendix D: List of Attendees

7.5 Appendix E: RACGAT Cross-polar and Trans-east Route Development Catalogue

7.6 Appendix F, RACGAT Flight Statistics Summary from MATFMC

7.6 Appendix G, IATA Information Paper for Action Item R12-ATS-3

7.7 Appendix H, UAL Briefing on Flight Planning Factors

7.8 Appendix I, RACGAT Traffic Forecast Survey Form

For the State Civil Aviation Authority of the Ministry of Transport

Russian Federation

_____
Yuri Averianov

Date:_____

For the Federal Aviation Administration Department of Transportation

United States

_____
Steve Creamer

Date:_____

Air Traffic Services (ATS) Sub-group
Summary of Discussion

Co-chairmen: Yuri Averianov, SCAA
Steve Creamer, FAA

1.0 Introduction

1.1 The sub-group reviewed the open action items documented in the RACGAT/12 report that were assigned to the ATS Sub-group. Besides the summary of discussion of this report, a summary of agreed action is also documented in Appendix C, RACGAT/13 Agreed Action Items.

2.0 Outstanding Action Items

2.1 R1-ATS-2 SCAA and JCAB will evaluate Kamchatka Four as a new route 100nm north of R220

2.1.1 Kamchatka Four alignment has been coordinated and approved for demonstration flights. Demonstration flights are required to validate communication requirements. The following is required to allow for demonstration flights:

2.1.1.1 SCAA to extend the term of the demonstration NOTAM;

2.1.1.2 Airlines will provide demonstration flight schedules to SCAA;

2.1.1.3 JCAB/SCAA/FAA will extend the facility MOUs and LOAs that support the demonstration flights until 17 March 2004 at 2359 UTC.

2.1.2 Several technical issues still need to be resolved; therefore, after the demonstration flights are conducted an assessment of the VHF and HF communication capabilities will be completed. This action will be assigned to the AMC Sub-group for follow-up. Status will be reported at MR/7.

2.2 R3-ATS-5 To allow aircraft to transition between assigned altitudes (to/from meters-feet) on G-583 within Russian airspace where the aircraft is laterally separated from R-220

2.2.1 In order to implement the transfer of aircraft from meters to feet within Russian Federation airspace, a requirement of VHF coverage was identified. The AMC subgroup has undertaken an action to evaluate the feasibility of a VHF relay station covering the entry/exit point.

2.2.2 At RACGAT/12, Anchorage ARTCC introduced a new proposal to amend the Anchorage/Petropavlovsk-Kamchatsky LOA to reflect the same procedures recently introduced in the Anchorage/Magadan LOA. The purpose of their proposal is to harmonize the RVSM-based flight level assignments with the conventional metric altitudes used within the Petropavlovsk-Kamchatsky FIR.

2.2.3 Planning discussions on this issue can continue, but implementation cannot proceed until the communication issues can be resolved. Because the development plan for RVSM implementation is expected within the next year, and this plan will likely address any flight

level transition issues and necessary communication, this action item is closed.
Action Item Closed.

2.3 R7-ATS-4 Ensure funding for the Kamchatka Volcano Eruption Response Team (KVERT)

2.3.1 KVERT is beyond the regulatory scope of RACGAT. KVERT continues to provide vital information for the users and the Russian State ATM Corporation continues to finance KVERT activities. **Action Item Closed.**

2.4 R9-ATS-1 Implement a VFR general aviation route between Nome, Alaska, direct to Providenya on the Chukotka peninsula with future expansion to Anadyr and Magadan.

2.4.1 A VFR route from the U.S / Russian Border between Alaska and Chukotka, ATS route B-369 was published in the International AIP of the Russian Federation on April 17, 2003. The Alaskan Air Traffic Division of FAA, Chukotaeronavigatsia and the State ATM Corporation of the Russian Federation signed a revised LOA June 24, 2003. This LOA incorporated procedures developed during the previous demonstration flights and became effective July 1, 2003. The first regular VFR flights were flown during August 2003 on B-369. **Action Item Closed**.

2.5 MR5-ATS-3 Assess the feasibility of Reduced Vertical Separation Minima (RVSM) within Oceanic Airspace Delegated to the Russian Federation

2.5.1 The SCAA will develop a proposed rule for national implementation of RVSM, in accordance with governmental policy. The RVSM data from Kaliningrad and Rostov ACC will be reviewed in December 2003 as part of this process. SCAA reported that the Russian Federation's RVSM implementation plan should be defined and approved by late 2004. Progress will be reported at MR/7.

2.6 MR6-ATS-1 Identify appropriate flight level assignment to address RVSM and the feet/meter conversion issue while maintaining conventional vertical separation at the common Anchorage/Magadan and Anchorage/Murmansk FIR boundary.

2.6.1 A revised Letter of Agreement for Anchorage/Magadan and Anchorage/Murmansk was developed to effectively accommodate the transition from RVSM altitudes measured in feet to Russian altitude assignments measured in meters. Anchorage and Magadan signed a new LOA effective 15 Oct 2002. Anchorage and Murmansk have drafted a LOA for coordination and signing. This letter is effective on 1 January 2004. **Action Item Closed**.

2.7 MR6-ATS-2 Standardize longitudinal separation minima in the Arctic Region between SCAA, NAV CANADA and FAA.

2.7.1 The FAA has submitted an amendment request to ICAO to reduce its Arctic Region minimum longitudinal separation standard from 20 minutes to 10 minutes-in-trail and the amendment has been approved.

2.7.2 The FAA/SCAA are coordinating changes to the current LOAs between Anchorage/Murmansk and Anchorage/Magadan. The planned effective date of the new LOAs is 1 January 2004. Progress will be reported at MR/7.

2.8 R12-ATS-1 Develop a preliminary route catalogue for all current and proposed Trans East and Cross Polar routes.

2.8.1 The Route Catalogue will contain all routes currently in use for Trans East and Cross Polar Route Systems; and, will describe all proposed route segments under consideration as of RACGAT/13. The route catalogue was developed to help identify enhancements needed for current routes; and, the potential infrastructure needs and enhancements of proposed routes. A draft version is attached to the meeting report. Status will be reported at MR/7.

2.9 R12-ATS-2 To allow aircraft to transition between assigned altitudes (to/from meters-feet) in Anadyr ACC airspace.

2.9.1 Because the development plan for RVSM is expected within the next year, and this plan will likely address any flight level transition issues, this action item is closed. **Action Item Closed**.

2.9.2 R12-ATS-3 To describe the airline decision making processes and factors regarding the selection of PACOTS, NOPAC, Trans East or Cross Polar routes for city-pairs.

2.9.3 IATA provided RACGAT/13 a presentation on the general decision making processes and factors the airlines use in the route selection process. The briefing attached to the report includes economic, metrological, technical and other factors in city-pair route selection. **Action Item Closed.**

2.10 R12-ATS-4 To Define the Operational Concept for the Use of Aeronautical Interfacility Data Communications (AIDC) Between Anchorage ARTCC and Magadan ACC

2.10.1 Anchorage ARTCC introduced a working paper proposing a test plan for the use of AIDC between Anchorage and Magadan ACC. The meeting agreed that additional coordination work is necessary before work can begin on this test. Accordingly, RACGAT will first define the operating procedures for the use of AIDC, and then propose a work plan for implementation after requirements are more clearly defined. Progress will be reported at MR/7.

3.0 New Action Items

3.1 R13-ATS-1 Extend a VFR general aviation route from Provideniya Bay, Russia to Anadyr, Russia

3.1.1 During 2004, Chukotaeronavigatsia, Alaskan Region, FAA and Northeast Region SCAA, will extend the existing VFR route from Provideniya Bay to Anadyr for general aviation and conduct demonstration flights. Progress will be reported at MR/7.

3.2 R13-ATS-2 Establish Lavrentiya airport as an emergency airport for ATS route B369 VFR operations

3.2.1 SCAA and FAA will continue cooperative efforts to establish Lavrentiya airport as an emergency airport for VFR operations on ATS route B369 to improve safety, and inclusion in Russian AIP. Progress will be reported at MR/7.

3.3 R13-ATS-3 IATA coordinate airline prioritization of the new routes contained in the RACGAT Route Catalogue

3.3.1 IATA will coordinate with their membership to set a collective prioritization for the new routes contained in the route catalogue. IATA will provide this information to SCAA as soon as possible.

4.0 Other Business

4.1 Because the Air Traffic Flow Management Subgroup did not meet at RACGAT/13, Mr. Alexey Buevich, who represented MATFMC reported on the status of action items contained in the RACGAT/12 Agreed Action Items List and provided traffic statistics for Cross-Polar and Trans-East routes. He also briefed the meeting on the proposed traffic forecast survey form being coordinated with ATCSCC. The proposed form is contained at Appendix I. The details of his report are included in the revised Agreed Action Item List prepared for this report and the traffic statistics are contained in Appendix F.

ATC Modernization Committee (AMC) Sub-group
Summary of Discussion

Co-chairs: Viacheslav Sokolov, SCAA
Robert Sweet, FAA

1. Introduction

1.1 The ATC Modernization Committee (AMC) subgroup met separately to address the AMC agreed actions forwarded by the 12th Meeting of RACGAT (RACGAT/12), which was held in October 2002 in Las Vegas, United States and a number of new technical issues. The discussion concentrated on the enhancement of the air navigation services (ANS) infrastructure and related technical services needed to support the Russian Far East (RFE), cross-polar, and associated routes.

1.2 The AMC work specifically focused on ongoing cooperative efforts to improve interfacility and air-ground communications, and surveillance. The AMC subgroup also continued discussions regarding new infrastructure requirements and near- and long-term solutions to the same.

1.3 The discussions were structured around regional status reports and a review of the AMC action items forwarded by RACGAT/12. The AMC subgroup identified progress achieved on each of the action items and determined the next steps required to advance these efforts.

1.4 The review of aeronautical meteorological issues addressed by the AMC action items was limited by the absence of representatives of Roshidromet and the FAA's aviation weather organization at the Meeting. These issues are important to a number of initiatives managed by RACGAT. The AMC subgroup agreed that these offices should be encouraged to participate in the next RACGAT meeting.

2. Discussion of outstanding action items

2.1 **R7-AMC-7**. Air to ground and interfacility communication requirements for cross-polar routes.

2.1.1 ***Comments***. Representatives from the regional ATC enterprises and State ATM Corporation advised the group that since RACGAT/12 substantial progress has been achieved in improving the HF Aeronautical Mobile Services (AMS) supporting the cross-polar routes. In addition to establishing several new HF stations, including one at Murmansk, a number of existing facilities have been replaced with modernized equipment.

2.1.2 SCAA also noted that it has contracted with the Gosniiaeronavigatsiya Institute to investigate possible enhancements to AMS for the cross-polar routes. This research will include extended range HF stations and usage of Controller Pilot Data Link Communications (CPDLC) by RFE ACCs.

2.1.3 In response to the group's inquiries, IATA observed that there have been no significant complaints by the air crews flying on the cross-polar routes regarding voice communications with the Russian ACCs.

2.1.4 ***AMC Agreed Action***. Considering the above, the AMC agreed to retain the action item as forwarded by RACGAT/12.

2.2 **R7-AMC-11**. HF air-ground data link system.

2.2.1 ***Comments***. The group noted that HFDL, such as the service currently provided by ARINC in the RFE, does not meet the international performance requirements for select applications. This limitation was clarified by IATA, which indicated that based on an extensive analysis of HFDL performance in the Pacific, many ANS Providers have agreed that this system cannot adequately support Automatic Dependent Surveillance – Contract (ADS-C) or CPDLC. The group observed that HFDL remains an efficient alternative to regular HF voice communications in the oceanic environment.

2.2.2 IATA advised the group that HFDL delivers ATC messages within 60 seconds at a 67% rate and within 120 seconds at a 95% rate. This delivery speed is contrasted with HF voice relay, which delivers messages within 4-5 minutes at a 95% rate. VHF and satcom based data link achieves delivery within 60 seconds at a 95% rate.

2.2.3 The group was informed that significant information and decisions regarding HFDL AMS were presented at the latest meetings of the Informal Pacific Air Traffic Control Planning Group (IPACG) and the Informal South Pacific Air Traffic Control Planning Group (ISPACG). The FAA agreed to provide the pertinent information on HFDL usage from these Pacific groups and the appropriate ICAO technical panels to the AMC group at MR/7.

2.2.4 ***AMC Agreed Action***. Considering the above, the AMC agreed to modify the action item to reflect that the FAA will provide the Meeting the latest guidance on HFDL use for ATC from IPACG and ISPACG, as well as from the pertinent ICAO technical panels.

2.3 **R7-AMC-12**. Installation of additional remote VHF stations.

2.3.1 ***Comments***. The State ATM Corporation and the involved regional ATC enterprises advised the group that the modernization effort to improve VHF based AMS is underway. This program includes the conclusion of a contract for VHF stations with a new manufacturer that will facilitate logistical support, which has been problematic in the past.

2.3.2 A new VHF station from this manufacturer has been installed at Chita on 16 October 2003 for trials. The State ATM Corporation anticipates that this new system will be approved for operational use by January 2004.

2.3.3 The group confirmed the outstanding need for new VHF stations near Ust Bolsheretsk and Kunashir Island. Several regional ATC enterprises noted that there is also an operational need for VHF stations at a number of other crucial locations.

2.3.4 ***AMC Agreed Action***. Considering the above, the AMC agreed to retain the action item as forwarded by RACGAT/12 with the minor addition of language to reflect the operational need to implement additional VHF stations at other crucial locations.

2.4 **R9-AMC-1**. Organization of voice communications channels between the ACCs of Chita, Irkutsk, Kyzyl, Barnaul, and their adjacent ACC's in China and Mongolia.

2.4.1 ***Comments***. The SCAA advised the group that a new satellite-based voice Aeronautical Fixed Services (AFS) system has been installed that links the ACCs at

Khabarovsk, Blagoveshchensk, and Kharbin (China). In addition, new HF-based voice communications have been established between Vladivostok and Pyongyang.

2.4.2 The SCAA and its Mongolian counterpart will continue cooperative efforts to implement direct interfacility lines between Chita, Kyzyl, Irkutsk, and Ulaan Baator. The SCAA and CAA of China will also work to establish direct voice circuits between Chita, Khabarovsk, and Kharbin ACCs.

2.4.3 ***AMC Agreed Action***. Considering the above, the AMC agreed to modify the action item to reflect the progress that has been achieved to date by the Russian, Mongolian, North Korean, and Chinese CAAs.

2.5 **R10-AMC-2**. Implement interim and final solutions to transmit MET information for operations on cross-polar and RFE routes.

2.5.1 ***Comments***. Representatives from Roshidromet and the FAA's aviation weather office were not able to attend this meeting. While the group noted that both entities continue to make progress on this action item, no specific updates were available.

2.5.2 IATA confirmed that the users are largely satisfied with the current provision of aeronautical meteorological products. However, during a merged session with the RACGAT Air Traffic Services Subgroup, a number of airlines indicated that several of the RFE airports, including Anadyr (UHMA), Magadan (UHMM), and Petropavlovsk-Kamchatsky (UHPP), do not provide eight-digit information on runway conditions as part of their METARS reports.

2.5.3 ***AMC Agreed Action***. Considering the above, the AMC agreed to retain the action item as forwarded by RACGAT/12 with a minor modification to reflect the need for runway condition information to be included in METARS reports from select airports.

2.6 **R11-AMC-1**. Develop an interfacility communications architecture that supports polar, RFE, and associated routes. This architecture should be harmonized with national modernization plans.

2.6.1 ***Comments***. The group noted that the telecommunications working group established during RACGAT/12 to implement this action item has been inactive. The FAA advised the SCAA and State ATM Corporation that the lack of a resolution of the cost-sharing issue associated with the current AFS circuits from Anchorage to it RFE counterparts complicates future cooperation on telecommunication projects.

2.6.2 However, the group agreed that recent modernization efforts by the SCAA and State ATM Corporation, which includes the development of a satellite-based AFS network in the RFE, offers opportunities for cooperation. Accordingly, the work group should initiate its activities in the near future. The SCAA and State ATM Corporation agreed to facilitate this work by sharing information regarding the latest AFS changes in the RFE to the FAA.

2.6.3 ***AMC Agreed Action***. Considering the above, the AMC agreed to retain the action item as forwarded by RACGAT/12 with the minor addition of language to reflect the need to initiate the work of the subject working group as soon as possible in order to achieve concrete progress before RACGAT/14.

2.7 **R11-AMC-2**. Identify weather requirements to support VFR General Aviation route B369, including requirements for MET products from Provideniya Bay and Lavrentiya airports.

2.7.1 ***Comments***. Representatives from Roshidromet and the FAA's aviation weather office were not able to attend this meeting. While the group noted that both entities continue to make progress on this action item, no specific updates were available.

2.7.2 ***AMC Agreed Action***. Considering the above, the AMC agreed to retain the action item as forwarded by RACGAT/12.

2.8 **R12-AMC-1**. FAA, SCAA and State ATM Corporation to conclude Amendment 2 to Annex 2 to AIA/CA-50 agreement to address financial provisions for payment of cost associated with satellite communication circuits between Anchorage and ACCs in the Russian Far East.

2.8.1 ***Comments***. The FAA emphasized to the group that the conclusion of the subject agreement and the payment of the associated charges is an urgent priority. The SCAA and State ATM Corporation agreed that resolution was needed and reconfirmed their agreement to pay the Russian share of the recurring telecommunications costs under discussion once the necessary formal agreements have been concluded.

2.8.2 The FAA noted that discussions that include the agency's attorneys have been scheduled to take place in Moscow in mid-November of this year. It was also noted by the FAA that if this matter is not resolved in the very near future, the FAA will consider implementing an alternative AFS solution based on equal cost-sharing with its Russian counterparts, in accordance with international aviation norms.

2.8.3 The State ATM Corporation advised that additional talks would be welcome, but indicated that progress on finalizing the subject agreement would be difficult due to its ongoing reorganization, which includes the legal integration of the regional ATC enterprises. This reorganization, which is mandated by changes in Russian national authorizing legislation, was to be completed this past summer. The State ATM Corporation now anticipates that the changes will be finalized by January 2004.

2.8.4 It is currently unclear if the State ATM Corporation will be a signatory party to the subject agreement. The FAA requested that the SCAA and State ATM Corporation clarify this issue as soon as possible, noting that all other major issues associated with the agreement appear to be resolved.

2.8.5 ***AMC Agreed Action***. Considering the above, the AMC agreed to amend the action item forwarded by RACGAT/12 to reflect the recent discussions between SCAA and the FAA, as well as the upcoming discussions in November 2003.

2.9 **R12-AMC-2**. Post-delivery support of remote VHF stations and the supply of spare parts for locations in the Russian Far East.

2.9.1 ***Comments***. The State ATM Corporation anticipates the conclusion in the immediate future of a contract that will provide post delivery support and associated spare parts for remote VHF stations in the RFE. The SCAA will support the State ATM Corporation in the preparation of the subject contract. The FAA, to the limited extent possible, will also provide advice on this matter.

2.9.2 ***AMC Agreed Action***. Considering the above, the AMC agreed to retain the action item as forwarded by RACGAT/12.

RACGAT/1
Moscow

RACGAT/2
Anchorage

RACGAT/3
Petropavlovsk-Kamchatsky

RACGAT/4
San Rafael

RACGAT/5
Vladivostok

RACGAT/6
Anchorage

RACGAT/7
Irkutsk

RACGAT/8
Anchorage

RACGAT/9
Yakutsk

RACGAT/10
Anchorage

RACGAT/11
Moscow

RACGAT/12
Las Vegas

RACGAT/13
Vladivostok

Planning Route Catalogue for the

Russian American

Coordinating Group for Air Traffic Control

April 2004

ATS ROUTE G/UG – 489(POLAR 1)

Entry/Exit Point: ABERI/GOPTO

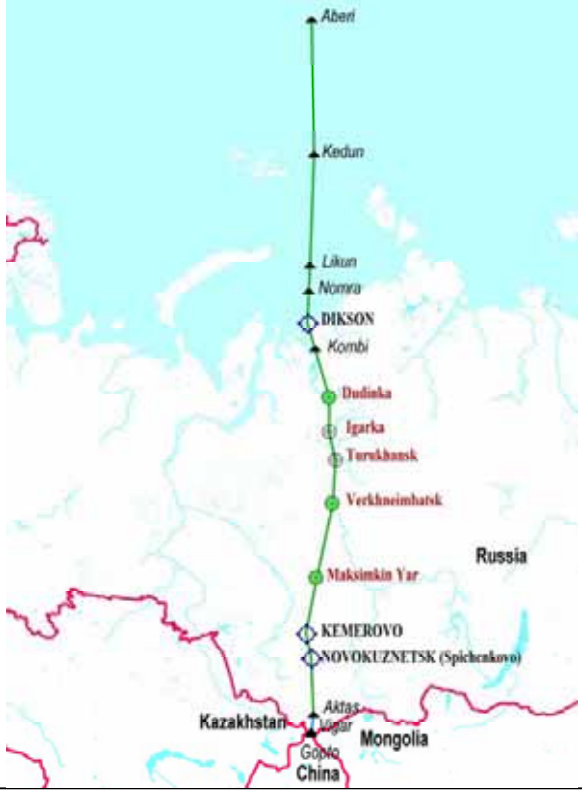
Route Description

Aberi	8730,0N 03200,0E
Kedun	8216,5N 07200,0E
Likun	7635,7N 07841,2E
Nomra	7512,7N 07932,1E
DIKSON (UODD)	7331,0N 08022,9E
Kombi	7205,0N 08244,0E
Dudinka	6925,0N 08614,0E
Igarka	6725,8N 08638,5E
Turukhansk	6547,0N 08756,0E
Verkhneimbatsk	6310,0N 08800,0E
Maksimkin Yar	5838,0N 08644,0E
KEMEROVO (UNEE)	5516,2N 08606,5E
NOVOKUZNETSK (UNWW) (Spichenkovo)	5348,6N 08652,7E
Aktas	5019,0N 08735,0E
Vigar (B 206)	4915,2N 08728,9E
Gopto (B 206)	4905,5N 08728,0E

Flight Levels of Operation

5400-12100m

Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (ZAN)	24 hours	HF via Arctic Radio/ARINC	RNAV	Not Available	Yes
Murmansk (ULMM)	24 hours	HF	Not Available	Not Available	Yes
Norilsk (UOOO)	24 hours	HF/VHF	NDB	NOMRA-KOMBI Not Available KOMBI-IGR SSR-100%	Yes
Turukhansk (UOTT)	24 hours	VHF	VOR/DME	SSR-100%	Yes
Podkamennay Tunguska (UNIP)	24 hours	VHP	VOR/DME	SSR-100%	Yes
Yeniseysk (UNII)	24 hours	VHF	VOR/DME	PSR-100%	Yes
Novosibirsk (UNNT)	24 hours	VHF	VOR/DME	PSR-100%	Yes

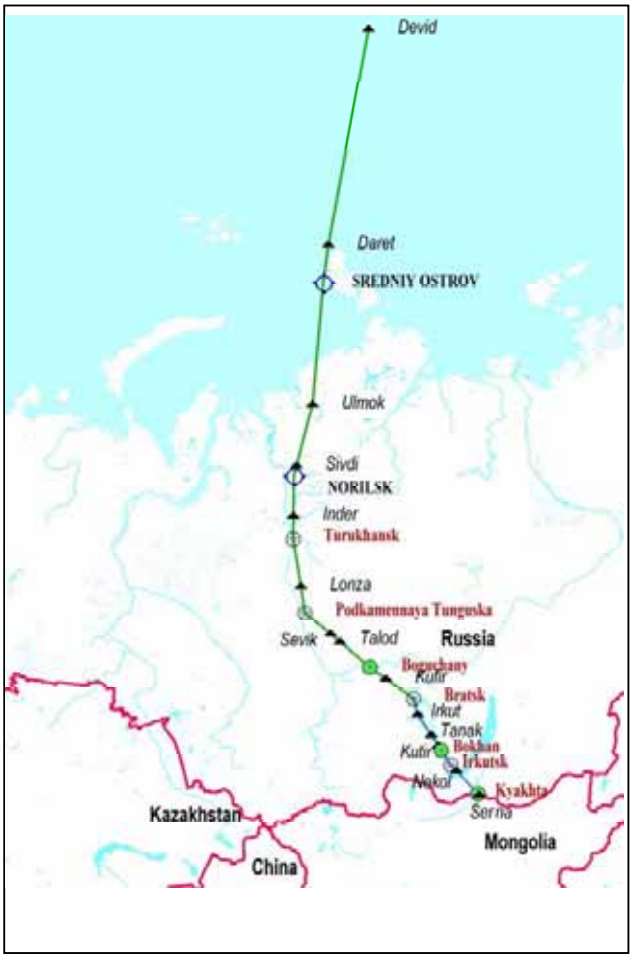
Additional-Items: This route is open and provides a year round daily option to all Cross-polar routes.
Potential City Pairs: (Current) -ORD-PEK; ORD-HKG; EWR-HKG; JFK-PEK (Potential) JFK-HKG; North America-India; India-North America; North America -SIN/BKK; BKK/SIN-North America; YYZ-HKG
Aircraft Types: B747-400, *3777,* A340

ATS ROUTE G/UG – 490(POLAR 1A)

Entry/Exit Point DEVID/SERNA
Route Description

Devid	8900,0N 16858,4W
Daret	8123,0N 09224,0E
SREDNIY (UODS)	7931,7N 09104,5E
Ulmok	7312,0N 08945,0E
Sivdi	6951,1N 08736,9E
NORILSK (UOOO)	6918,6N 08720,0E
Inder	6703,1N 08744,6E
Turukhansk	6547,0N 08756,0E
Lonza	6306,2N 08919,7E
Podkamennaya Tunguska	6135,9N 08959,4E
Sevik	6025,0N 09304,0E
Talod	5958,0N 09406,7E
Boguchany	5823,0N 09727,0E
Kufir	5743,0N 09900,0E
Bratsk	5622,3N 10141,2E
Irkut (A 91a)	5526,0N 10154,0E
Tanak (A 91a)	5410,7c 10257,8E
Kutir (A 91a)	5330,5N 10330,1E
Bokhan (A 91a)	5309,0N 10347,0E
Irkutsk (A 91)	5216,2N 10423,3E
Nekol (A 91)	5154,0N 10449,0E
Kyakhta (A 91)	5021,0N 10628,0E
Serna (A 91)	5018,5N 10628,1E

Flight Levels of Operation
3300-12100m
Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (ZAN)	24 hours	HF via Arctic Radio/ARINC	RNAV	Not Available	Yes
Murmansk (ULMM)	24 hours	HF	Not Available	Not Available	Yes
Norilsk (UOOO)	24 hours	HF/VHF	NDB	PSR-100%	Yes
Turukhansk (UOTT)	24 hours	VHP	VOR/DME	PSR/SSR-100%	Yes
Podkamennay Tunguska (UNIP)	24 hours	VHF	VOR/DME	PSR/SSR-100%	Yes
Yeniseysk (UNII)	24 hours	VHP	VOR/DME	PSR-100%	Yes
Boguchany (UNKB)	24 hours	VHF	VOR/DME	PSR-100%	Yes
Bratsk (UIBB)	24 hours	VHF	VOR/DME NDB	PSR-100%	Yes

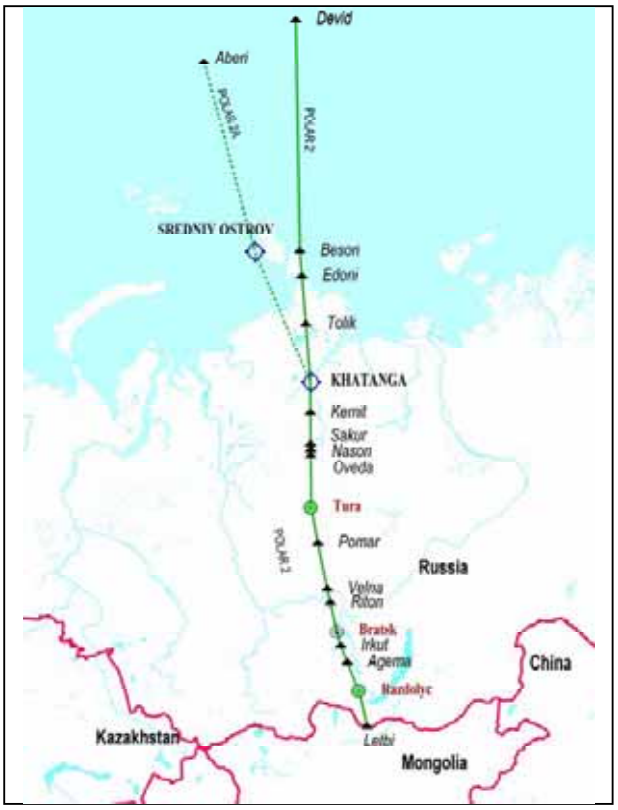
Additional Items: This route is open. IATA would consider suspending option in favor of opening Polar 2A.
Potential City Pairs: North America-India; India-North America
Aircraft Types: B747-400; B777, A340

ATS ROUTE B/UB – 480(POLAR 2)

Entry/Exit Point DEVID/LETBI
Route Description

Devid	8900,0N 16858,4W
Beson	7921,0N 10431,0E
Edoni	7800,3N 10359,6E
Tolik	7517,5N 10313,5E
KHATANGA (UOHH)	7158,1N 10229,2E
Kemit	7004,0N 10145,5E
Sakur	6814,4N 10111,6E
Nason	6753,8N 10105,3E
Oveda	6732,6N 10059,7E
Tura	6416,0N 10013,0E
Pomar	6201,0N 10037,0E
Velna	5906,0N 10108,0E
Riton	5813,5N 10118,6E
Bratsk	5622,3N 10141,2E
Irkut	5526,0N 10154,0E
Agema	5421,9N 10223,1E
Razdolye	5226,0N 10312,0E
Letbi	5011,9N 10330,6E

Flight Levels of Operation
5700-12100m
Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (2AN)	24 hours	HF via Arctic Radio/ARINC	RNAV	Not Available	Yes
Murmansk (ULMM)	24 hours	HF	Not Available	Not Available	Yes
Norilsk (UOOO)	24 hours	HF	NDB	Not Available	Yes
Khatanga (UOMM)	24 hours	VHF	NDB	PS R- 100%	Yes
Norilsk (UOOO)	24 hours	VHF	NDB	PSR-60%	Yes
Tura (UNIT)	24 hours	VHF	NDB	PSR-100%	Yes
Vanavara (UNIW)	24 hours	VHF	NDB	PSR-100%	Yes
Boguchany (UNKB)	24 hours	VHF	NDB	PSR-100%	Yes
Bratsk (UIBB)	24 hours	VHF	VOR7DME	PSR-100%	Yes
Irkutsk (UNI)	24 hours	VHF	VOR/DME	PSR-100%	Yes

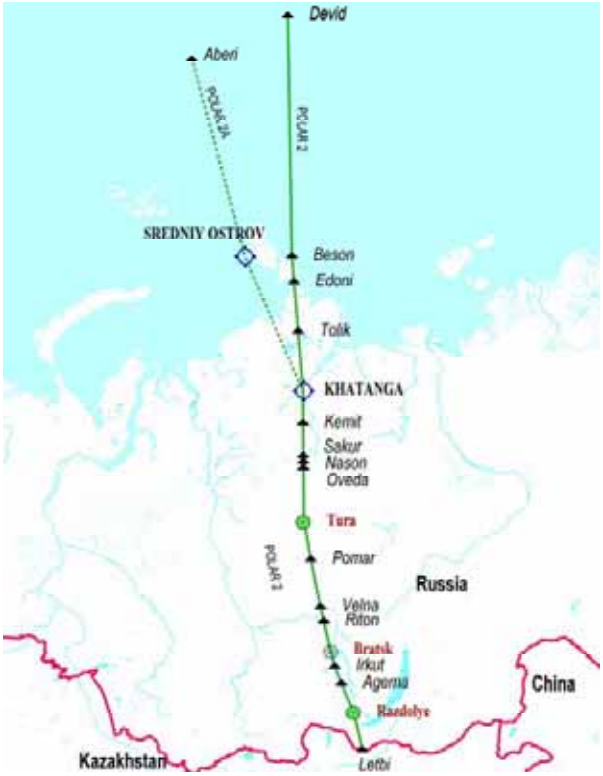
Additional Items: This route is open. This route provides year round daily options to all Cross-polar routes.. Potential **Citv Pairs:** ORD-PEK; ORD-HKG; EWR-HKG; JFK-PEK; JKF-HKG; North America-SIN/BKK
Aircraft Types: B747-400; B777, A340

ATS ROUTE POLAR 2A (Proposed)

Entry/Exit Point ABERI/ KHATANGA
Route Description

Aberi	8730,0N 03200,0E
SREDNIY OSTROV (UODS)	7931,7N 09104,5E
KHATANGA (UOHH)	7158,1N 10229,2E

Planned Flight Levels of Operation
8100-12100m
Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage ARTCC	24 hours	HF via Arctic Radio/ARINC	RNAV	Not Available	Yes
Murmansk (ULMM)	24 hours	HF	Not Available	Not Available	Yes
Norilsk (UOOO)	24 hours	HF/VHF	Not Available	Not Available	Yes
Khatanga (UOHH)	24 hours	HF/VHF	NDB	PSR-100%	Yes

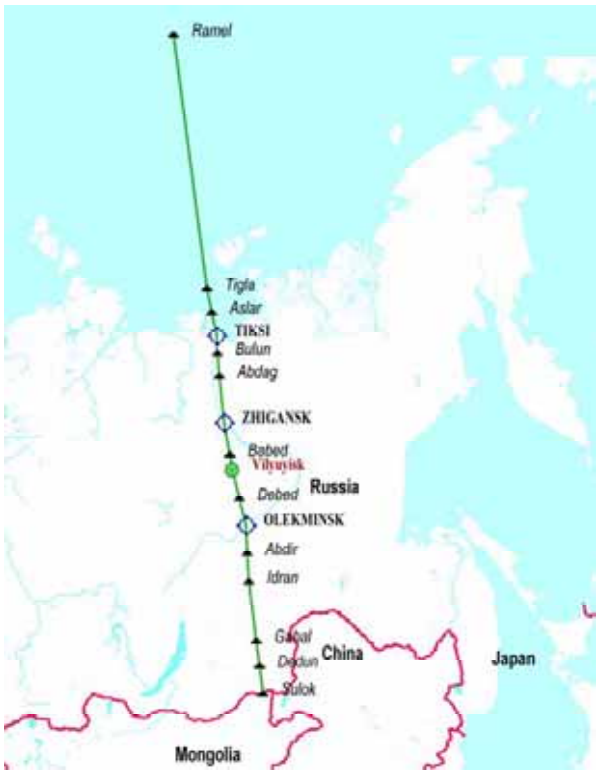
Additional Items: Provides daily route option for Cross-polar flights. This Route is preferred over Polar 1 A.
Potential Citv Pairs: ORD-HKG; ORD-PEK; JFK-PEK; EWR-HGK; JFK-HKG; YYZ-HKG
Aircraft Tvoes: B747-400; B777.A340

ATS ROUTE UG – 491(POLAR 3)

Entry/Exit Point RAMEL/ SULOK
Route Description

Ramel	8430,0N 16858,4з
Tigla	7420,0N 13158,4E
Aslar	7301,2N 13018,6E
TIKSI (UEST)	7141,8N 12853,6E
Bulun	7041,0N 12724,0E
Abdag	6927,2N 12557,4E
ZHIGANSK (UEVV)	6647,0N 12322,0E
Babed	6444,2N 12207,3E
Vilyuyisk	6348,0N 12137,0E
Debed	6200,6N 12058,5E
OLEKMINSK (UEMO)	6023,3N 12028,3E
Abdir	5838,5N 11918,3E
Idran	5655,0N 11817,0E
Gabal	5313,2N 11650,4E
Dedun	5138,2N 11618,0E
Sulok	4954,0N 11545,0E

Flight Levels of Operation
9600-13100m
Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (ZAN)	24 hours	HF via Arctic Radio/ARINC	RNAV	Not Available	Yes
Magadan (UHMM)	24 hours	HF	NDB	ADS	Yes
Tiksi (UEST)	0000-1200	HF/VHF	NDB	PSR-100%	Yes
Zhigansk (UEVV)	0000-1200	HF/VHF	NDB	PS R- 100%	Yes
Nurba(UENN)	0000-1200	HF/VHF	NDB	PSR-100%	Yes
Olekminsk (UEMO)	0000-1200	HF/VHF	NDB	PSR-100%	Yes
Bodaybo (UIKB)	0000-1200	VHF	NDB	PSR-1 00%	Yes
Mogocha (UIAM)	0000-1200	VHF	NDB	PSR-100%	Yes
Chita (UIAA)	0000-1200	VHF	NDB	PSR-100%	Yes

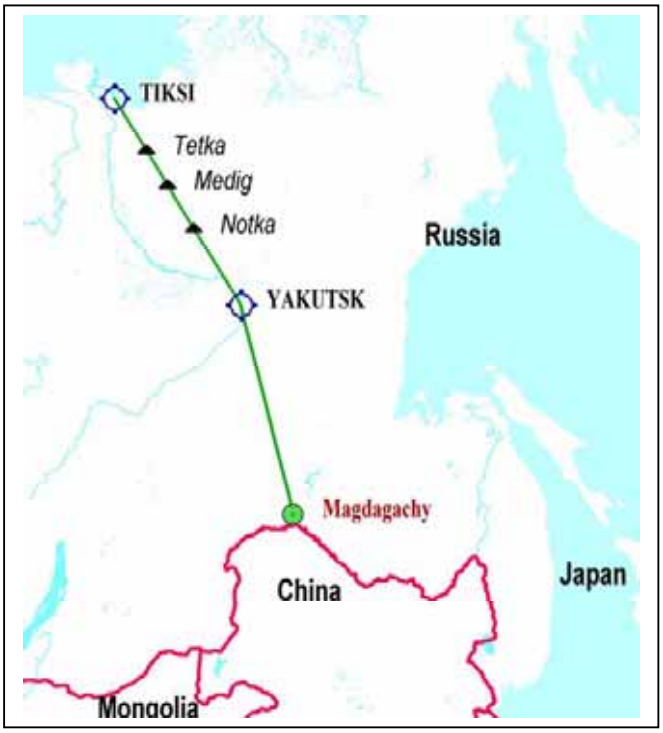
Additional Items: This route is open. This route provides year round daily options to all Cross-polar routes..
Potential Citv Pairs: ORD-PEK; ORD-HKG; EWR-HKG; JFK-PEK; JKF-HKG; North America-SIN/BKK *(Currently Most utilized cross-polar route).*
Aircraft Tvoes: B747-400; B777.A340

ATS ROUTE UG – 493(POLAR 3A)

Entry/Exit Point TIKSI/ MAGDAGACHY
Route Description

TIKSI (UEST)	7141,8N 12853,6E
Tetka	6916,2N 12911,4E
Medig	6739,5N 12921,0E
Notka	6539,4N 12931,3E
YAKUTSK (UEEE)	6205,6N 12946,3E
Magdagachy	5328,2N 12548,7E

Flight Levels of Operation
9600-13100m
Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (ZAN)	24 hours	CPDLC/HF	RNAV	ADS-A	Yes
Magadan (UHMM)	24 hours	CPDLC/HF		ADS-A	Yes
Tiksi (UEST)	0000-1200	HF/VHF	NDB	PSR-100%	Yes
Batagay (UEBB)	2100-1300	HF/VHF	NDB	PS R- 100%	Yes
Yakutsk (UEEE)	2100-1300	HF/VHF	NDB	PSR-80%	Yes
Aldan (UEEA)	2100-1300	HF/VHF	NDB	PSR-20%	Yes
Chulman (UELL)	2100-1300	HF/VHF	VOR/DME NDB	PSR-1 00%	Yes
Magdagachy (UHBI)	2100-1300	VHF	NDB	PSR-100%	Yes

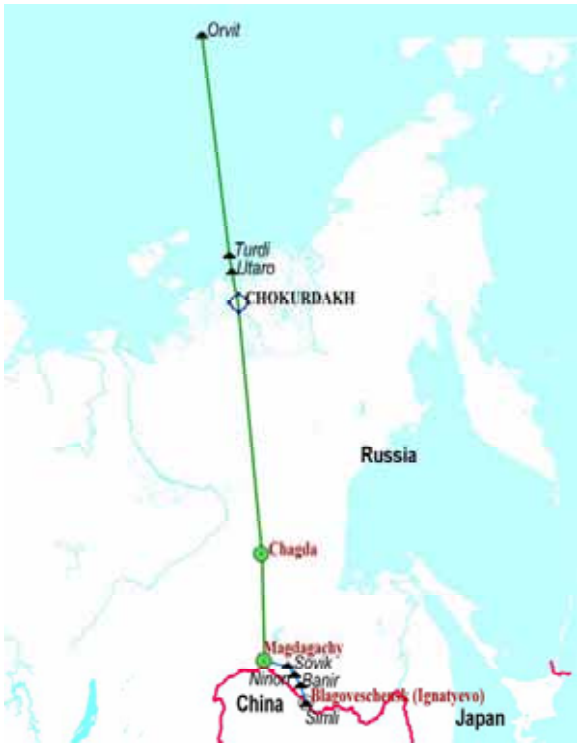
Additional Items: This route is open. This route provides year round daily options to all Cross-polar routes.
Potential CItv Pairs: ORD-PEK; ORD-HKG; EWR-HKG; JFK-PEK; JKF-HKG; North America-SIN/BKK
Aircraft Tvoes: B747-400; B777.A340

ATS ROUTE UG – 494(POLAR 4)

Entry/Exit Point ORVIT/SIMLI
Route Description

Orvit	7900,0N 16858,4W
Turdi	7236,3N 15227,8E
Utaro	7157,3N 15045,6E
CHOKURDAKH (UESO)	7037,5N 14753,8E
Chagda	5845,0N 13039,0E
Magdagachy (R 211)	5328,2N 12548,7E
Sovik (B 331)	5238,4N 12730,3E
Ninon (B 149)	5200,0N 12740,0E
Banir (B 149)	5119,5N 12740,0E
Blagoveschensk (Ignatyevo) (B 149)	5023,6N 12725,6E
Simli (B 149)	5017,4N 12722,1E

Planned Flight Levels of Operation
9100-16100m
Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (ZAN)	24 hours	CPDLC/HF	RNAV	ADS-A	Yes
Magadan (UHMM)	24 hours	CPDLC/HF		ADS-A	Yes
Chokurdakh (UESO)	2100-1300	HF/VHF	NDB	PSR-100%	Yes
Batagay (UEBB)	2100-1300	HF/VHF	NDB	PSR-100%	Yes
Tyoply Klyuch (UEMH)	2100-1300	HF/VHF	NDB	PSR-100%	Yes
Yakutsk (UEEE)	2100-1300	HF/VHF	NDB	PSR-80%	Yes
Aldan (UEEA)	2100-1300	HF/VHF	NDB	PSR-20%	Yes
Chulman (UFLL)	2100-1300	HF/VHF	VOR/DME NDB	PSR-100%	Yes
Magdagachi (UHBI)	2100-1300	VHF	NDB	PSR-100%	Yes

Additional Items: This route is open and provides a year round daily option to all Crass-polar routes. SATCOM coverage entire route.
Potential City Pairs: ORD-HGK; ORD-PEK; EWR-HKG; JFK-PEK; HKG-ORD; HKG-EWR; PEK-ORD; JKF-HKG, HKG-JFK; YYZ-HKG; HKG-YYZ *(North bound routings depends on China)*
Aircraft Types: B747-400; B777, A340

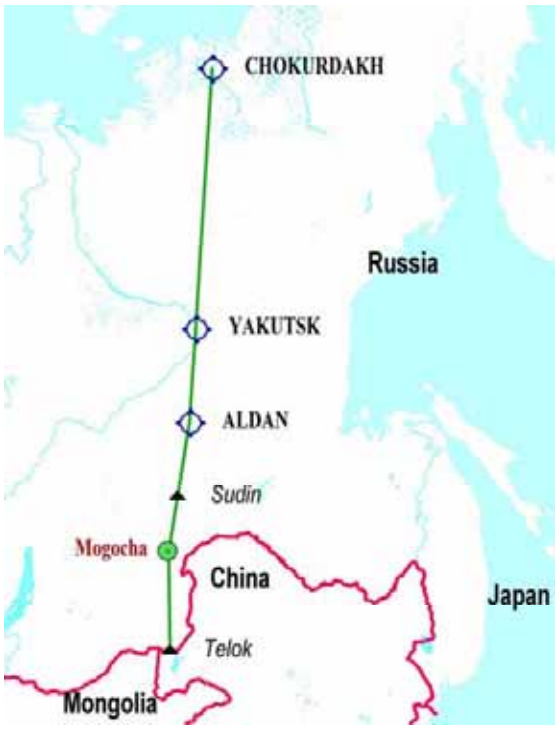
ATS ROUTE UG – 495(POLAR 4A)

Entry/Exit Point CHOKURDAKH /TELOK
Route Description

CHOKURDAKH (UESO)	7037,5N 14753,8E
YAKUTSK (UEEE)	6205,6N 12946,3E
ALDAN (UEEA)	5836,0N 12524,0E
Sudin	5549,5N 12159,2E
Mogocha	5344,0N 11946,0E
Telok	4937,6N 11722,7E

Planned Flight Levels of Operation
9600-16100m

Priority:HIGH/MED/LOW
IATA needs to identife.



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Chokurdakh (UESO)	2100-1400	HF/VHF	NDB	PSR-100%	Yes
Batagay (UEBB)	2100-1400	VHF	NDB	PSR-100%	Yes
Yakutsk (UEEE)	2100-1400	HF/VHF	NDB	PSR-100%	Yes
Aldan (UEEA)	2100-1400	VHF	NDB	PSR-100%	Yes
Chulman (UELL)	2100-1400	VHF	NDB	PSR-100%	Yes
Mogocha (UIAM)	2100-1400	VHF	NDB	PSR-100%	Yes

Additional Items: This route is open and provides a year round daily option to all Cross-polar routes. SATCOM coverage entire route.
Potential Citv Pairs: ORD-HKG; ORD-PEK; EWR-HKG; JFK-PEK; HKG-ORD; HKG-EWR; PEK-ORD; PEK-JFK; JFK-HKG; YYZ-HKG, SIN/BKK-North America
Aircraft Types: B747-400; B747-200; B777, A340, MD-11

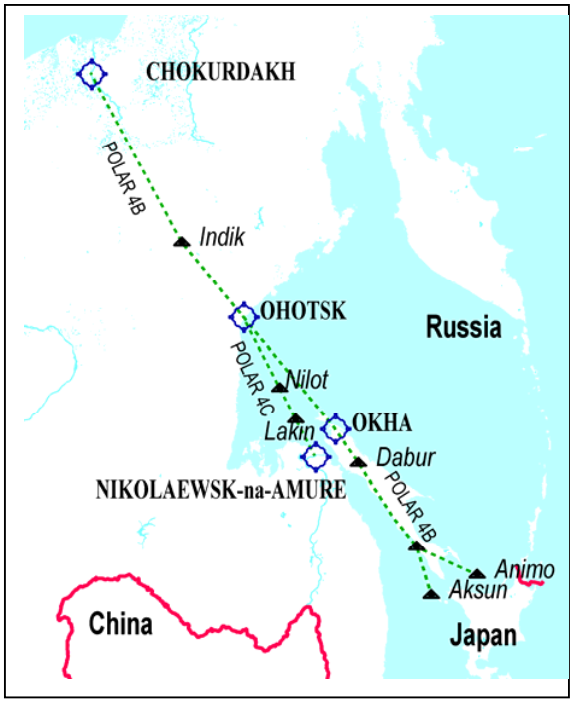
ATS ROUTE POLAR 4B (Proposed)

Entry/Exit Point CHOKURDAKH /AKSUN
Route Description

CHOKURDAKH (UESO)	7037,5N 14753,8E
Indik	6316,0N 14312,0E
OHOTSK (UHOO)	5924,1N 14303,1E
OKHA (UHSH)	5331,0N 14253,0E
Likon	4739,4N 14202,3E
Aksun	4545,0N 14054,5E
or	
Likon	4739,4N 14202,3E
Animo	4511,9N 14340,8E

Planned Flight Levels of Operation
9600-16100m

Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Chokurdakh (UESO)	2100-1100*	HF/VHF	NDB	PSR-100%	Yes
Zyryanka (UESU)	2100-1100*	HF/VHF	NDB	Not Available	Yes
Tyoply Klynch (UEMH)	2100-1100*	HF/VHF	NDB	Not Available	'Yes
Okhotsk (UHOO)	2100-1100*	HF/VHF	NDB	PSR-100%	Yes
Okha (UHSH)	2100-1100*	VHF	NDB	PSR-100%	Yes
Yuzh no-Sakhalinsk (UHSS)	2100-1100*	HF/VHF	NDB	PSR-100%	Yes
Sapporo (RJCG)	2100-1100*	VHF AKSUN	VOR/DME Rebun (RBZ)	Non-RADAR	Yes
		ANIMO	Asahikawa (AWZ)	RADAR	

***Except Sun**

Additional items: Route may require Polar OPS Spec approval on some current operators; provides daily option based on winds, payloads, and costs; alternate to Polar 4D.
Potential City Pairs: ORD/EWR-HKG; JFK/ATL/IAD-ICN; JFK/EWR/ORD/DTW/ATL/IAD/YYZ-NRT; North America (East Coast-Midwest)- Shanghai; JFK-TPE
Aircraft Types: B747-200/400; B777, A340, MD-11

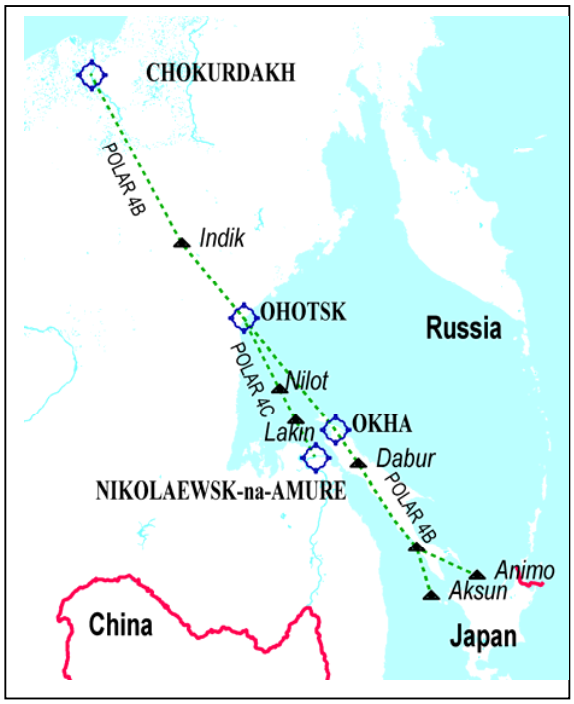
ATS ROUTE POLAR 4C (Proposed)

Entry/Exit Point CHOKURDAKH /AKSUN
Route Description

OHOTSK (UHOO)	5924,1c 14303,1в
Nilot	5611,0c 14142,7в
Lakin	5447,3c 14111,6в
NIKOLAEWSK-na-AMURE (UHNN)	5309,0c 14038,1в

Planned Flight Levels of Operation
9600-11100m

Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Okhotsk (UHOO)	24 hours	HF/VHF	NDB	PSR-100%	Yes
Okha (UHSH)	24 hours	VHF	NDB	PSR-100%	'Yes
Nikolaevsk (UHNN)	24 hours	HF/VHF	NDB	PSR-100%	Yes

Additional Items; Provides daily option based on winds, payload and costs.
Potential Citv Pairs: ORD/EWR/JFK-HKG; ORD/JFK-PEK
Aircraft Tvoes: B747-400; B777, A340,

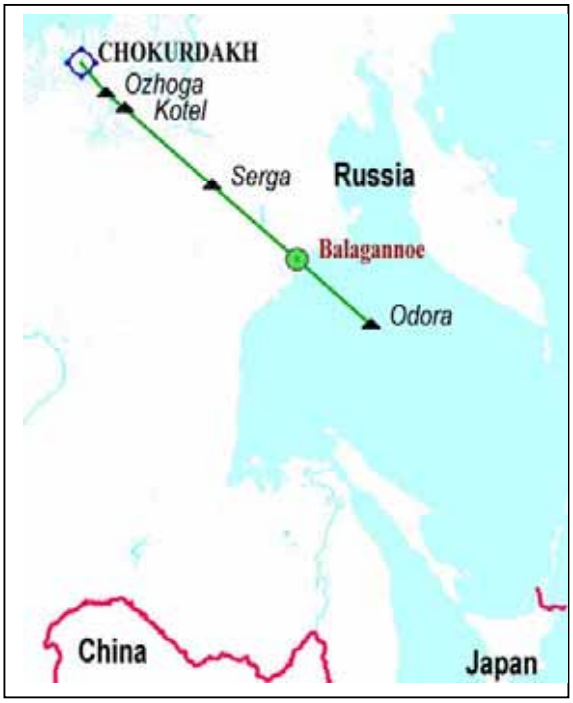
ATS ROUTE UG - 806

Entry/Exit Point CHOKURDAKH /ODORA
Route Description

CHOKURDAKH (UESO)	7037,5N 14753,8E
Ozhoga	6908,0N 14731,0E
Kotel	6816,3N 14748,2E
Serga	6357,9N 14832,6E
Balagannoe	5940,6N 14908,7E
Odora	5600,0N 14931,4E

Planned Flight Levels of Operation
9600-11100m

Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Chokurdakh (UESO)	2100-1100	HF/VHF	NDB	PSR-100%	Yes
Zyryanka (UESU)	2100-1100	HF/VHF	NDB	PSR-80%	Yes
Magadan (UHMM)	2100-1100	HF/VHF	ADS/NDB	PSR/SSR-100%	Yes

Additional Items: Route may require Polar OPS Spec approval for some operators; provides daily option based on winds, payfoads, and costs; Westbound mainly Fall/Winter/Spring
Potential CItv Pairs: ORD/EWR/DFW/DTW/MSP/IAD/ATL/MEM-NRT; ORD-HKG; ORD-PEK, JFK/ORD/IAD/YYZ-ICN;
Aircraft Tvoes: B747-200/400; B777, A340, MD-11

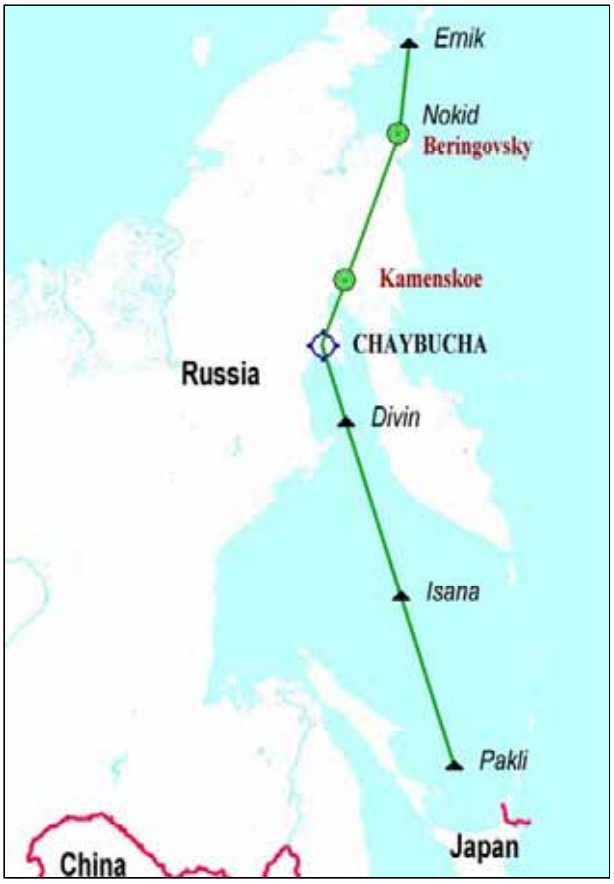
ATS ROUTE B/UB – 484

Entry/Exit Point DEVID/LETBI
Route Description

Ernik	6342,9N 17258,1W
Nokid	6306,0N 17953,0E
Beringovsky	6302,0N 17918,0E
Kamenskoe	6225,0N 16606,0E
CHAYBUCHA	6150,1N 16032,8E
Divin	5913,3N 15644,1E
Isana	5302,1N 15000,0E
Pakli	4646,3N 14508,0E

Planned Flight Levels of Operation
7200-12100m

Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Ust-Bolsheretsk (UHPB)	unknown	HF			Yes
Yuzhno-Sakhalinsk (UHSS)	unknown	HF			Yes
					Yes

Additional Items: Route charted but not open.. Westbound year round, some eastbound traffic in the summer. Potential for most most used RFE routing. Depends on winds, payloads and cost.
Potential City Pairs: All North America traffic to Japan/Korea/China. MEM-NRT Segment VHMG-PAKLI JFK/EWR/IAD/ATL/DTWATZ/ORD/MSPA^/R/SEA/SFO/PDX/LAX-NRT/KIX/ICN^PE/HKG/PVC/PEK
Aircraft Types: B747-200/400; B777, A340, MD-11

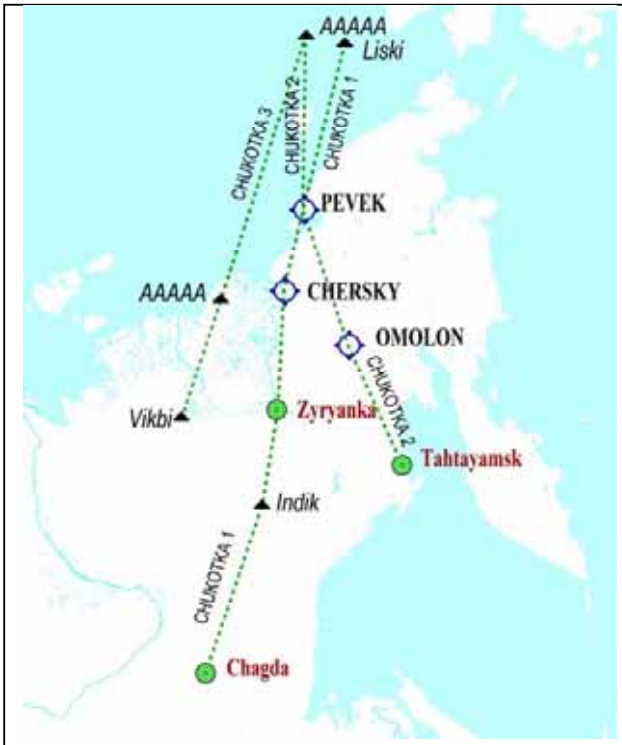
ATS ROUTE CHUKOTKA 1 (Proposed)

Entry/Exit Point LISKI/CHAGDA

Liski	7024,3N 16858,3W
PEVEK (UHMK)	6947,0N 17035,7E
CHERSKY (UESS)	6844,6N 16120,2E
Zyryanka	6543,8c 15046,2E
Indik	6316,0N 14312,0E
Chagda	5845,0N 13039,0E

Planned Flight Levels of Operation
9600-11600m

Priority:HIGH/MED/LOW
IATA needs to identife.



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (ZAN)	24 hours	VHP	RNAV	ADS-A	Yes
Mys Schmidta (UHMI)	2100-0600 (W)* 2000-0500 (S)*	HF/VHF	NDB	PSR-80%	
Pevek (UHMP)	2100-0600 (W)* 2000-0500 (S)*	HF/VHF	NDB	PSR-80%	Yes
Chersky (UESS)	2100-0600 (W)* 2000-0500 (S)*	HF/VHF	NDB	PSR-100%	Yes
Zyryanka (UESU)	2100-0600 (W)* 2000-0500 (S)*	HF/VHF	NDB	PSR-80%	
Tyoply Kluch (UEMH)	2100-0600 (W)* 2000-0500 (S)*	HF/VHF	NDB	PSR-80%	
Yakutsk (UEEE)	2100-0600 (W)* 2000-0500 (8Г	HF/VHF	NDB	PSR-100%	
Aldan (UEEA)	2100-0600 (W)* 2000-0500 (S)*	HF/VHF	NDB	PSR-80%	

***Expect Sat/Sun**

Additional Items: Polar OPS specs not required; Provides daily option to Cross-polar routes based on winds, payload and cost.
Potential City Pairs: ORD-HGK; ORD-PEK; EWR-HKG; JFK-PEK; HKG-ORD; HKG-EWR; PEK-ORD; JKF-HKG, HKG-JFK; YYZ-HKG; HKG-YYZ
Aircraft Types: B747-400; B777, A340

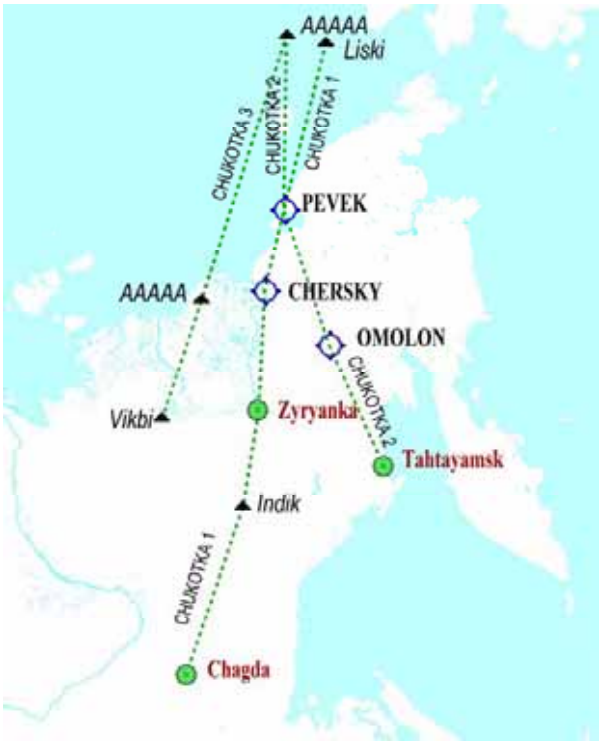
ATS ROUTE CHUKOTKA 2 (Proposed)

Entry/Exit Point AAAAA(7200,0N 16858,4W)/Tahtayamsk

AAAAA	7200,0N 16858,4W
PEVEK (UHMK)	6947,0c 17035,7в
OMOLON (UHMH)	6514,3c 16032,5в
Tahtayamsk	6012,0c 15441,0в

Planned Flight Levels of Operation
9100-11600m

Priority:HIGH/MED/LOW
IATA needs to identife.



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (ZAN)	24 hours	CPDLC/HF	RNAV	ADS-A	Yes
Mys Shmidta (UHMU)	21 004)600 W* 2000-0500 S*	HF/VHF	NDB	PSR-100%	Yes
Pevek (UHMP)	21 00-0600 W* 2000-0500 S*	HF/VHF	NOB	PSR-100%	Yes
Omolon (UHMN)	2100-0500	VHF/HF	A/bfc	Radar	
Magadan (UHMM)	24 hours	VHF/HF CNS/ATM	ADS/ NDB	PSR/SSR-100% ADS	Yes

***Expect Sat/Sun**

Additional Items: Polar OPS specs not required; Provides potential most desired RFE route from the Midwest and Eastern North America
Potential City Pairs: JFK-NRT: EWR-NRT; YYZ-NRT; ORD-NRT; DFW-NRT; IAD-NRT; ATL-NRT; DTW-NRT; MSP-NRT; JFK-ICN; IAD-ICN; ORD-ICN; MEM-NRT; North America-TPE, HKG
Aircraft Types: B747-400; B747-200; B777, A340, MD-11

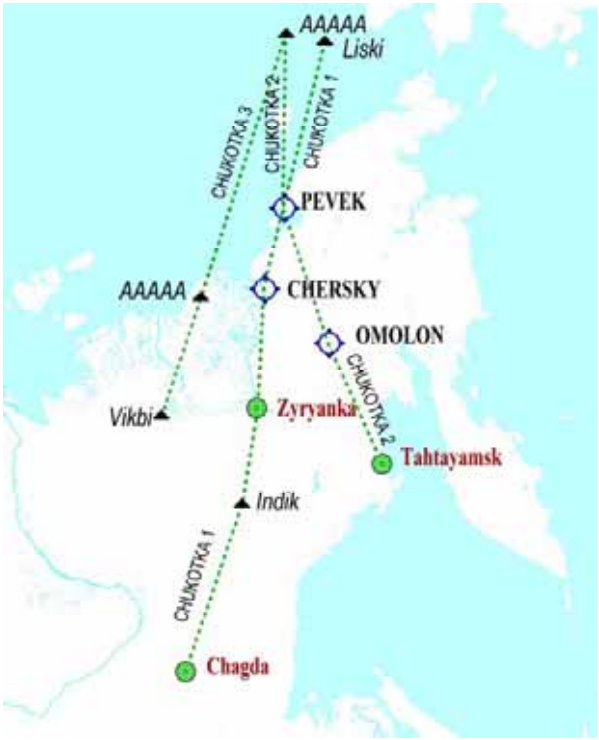
ATS ROUTE CHUKOTKA 3 (Proposed)

Entry/Exit Point AAAAA(7200,0N 16858,4W)/Vikbi

AAAAA	7200,0N 16858,4W
AAAAA	7033,2N 15555,0E
Vikbi	6817,1N 14247,1E

Planned Flight Levels of Operation
9600, 10600, 11600m

Priority:HIGH/MED/LOW



Facilities	Hours of Operation	Communication	Navigation	Surveillance	English Language
Anchorage (ZAN)	24 hours	CPDLC/HF	RNAV	ADS-A	Yes
Mys Shmidta (UHMI)	21 00-0600 W* 2000-0500 S*	HF/VHF	NDB	PSR-100%	Yes
Chersky (UESS)	21 00-0600 W* 2000-0500 S*	HF/VHF	NDB	PSR-80%	Yes
Chokurdakh (UESO)	21 00-0600 W* 2000-0500 S*	HF/VHF	NDB	PSR-100%	Yes
	* Expect Sat/Sun				

Additional Items: Polar OPS specs not required; Provides daily option to Cross-polar routes based on winds, payload and cost.
Potential City Pairs: ORD-HGK; ORD-PEK; EWR-HKG; JFK-PEK; HKG-ORD; HKG-EWR; PEK-ORD; JKF-HKG, HKG-JFK; YYZ-HKG; HKG-YYZ
Aircraft Types: B747-400; B777.A340