



Federal State Unitary Enterprise
«State ATM Corporation»

Branch «North East Air Navigation»



User Preferred Routes within Magadan ACC Airspace

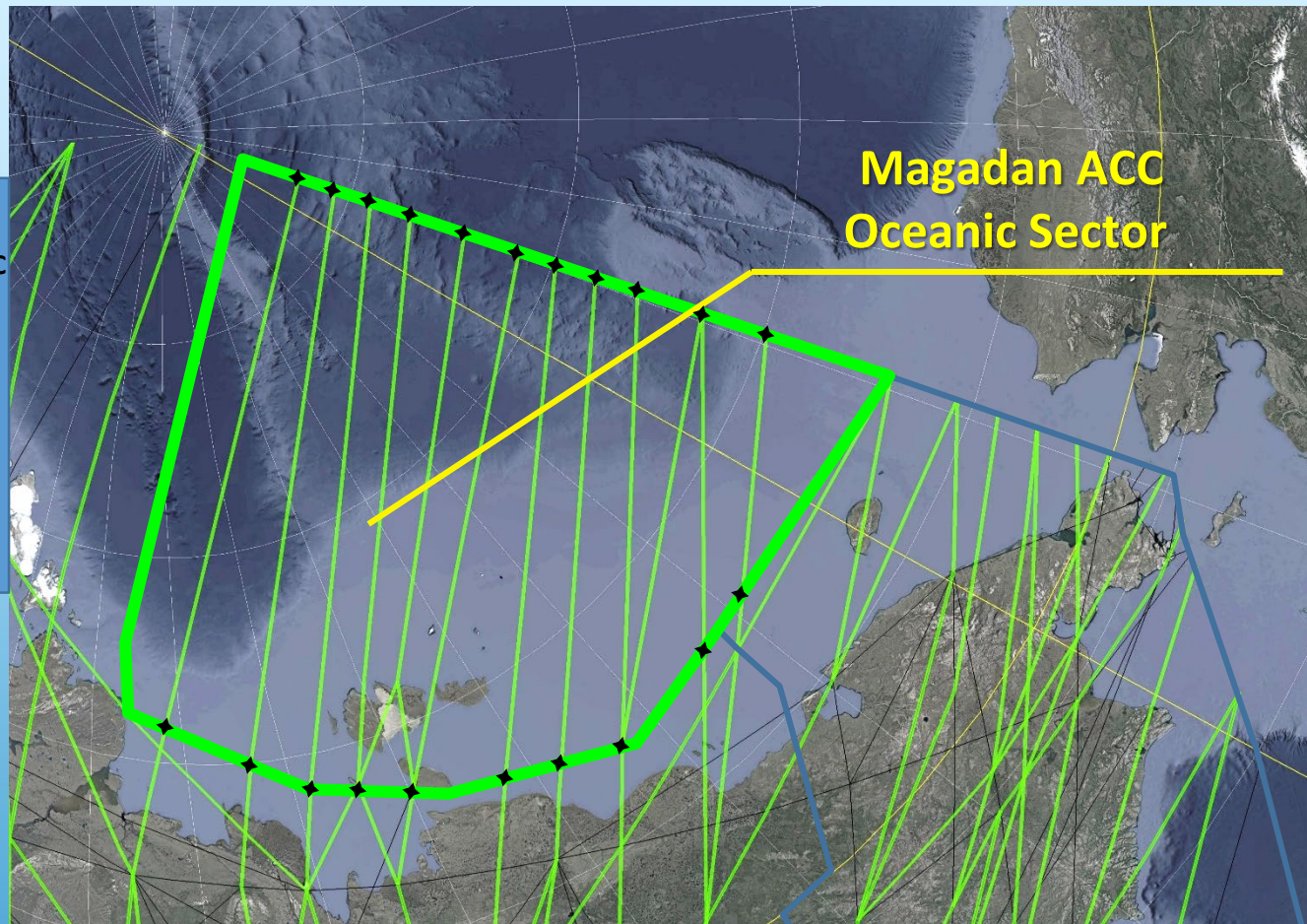




Oceanic Airspace

- 11 points of coordination with Anchorage ARTCC
- 13 RNAV (RNP 4) routes

12338 flights
were handled in 2019
(before COVID-19 outbreak)





Working Group STATE ATM Corporation

In December 2019 the State ATM Corporation established a working group for the development of proposals on improvement of Magadan ACC Oceanic Airspace.

From May to June this year the working group in close collaboration with IATA and dispatch services of United Airlines, Cathay Pacific Airways, Korean Air Lines Co., LTD., Asiana Airlines, American Airlines, Inc. conducted “Paper tests”. The idea was that the airline files the actual flight plan together with the flight plan for the User Preferred Route with an index «TST» considering the current flight conditions (wind, temperature at FL, etc.).

The test results allowed us to propose a real test flight via UPR routes to airlines.

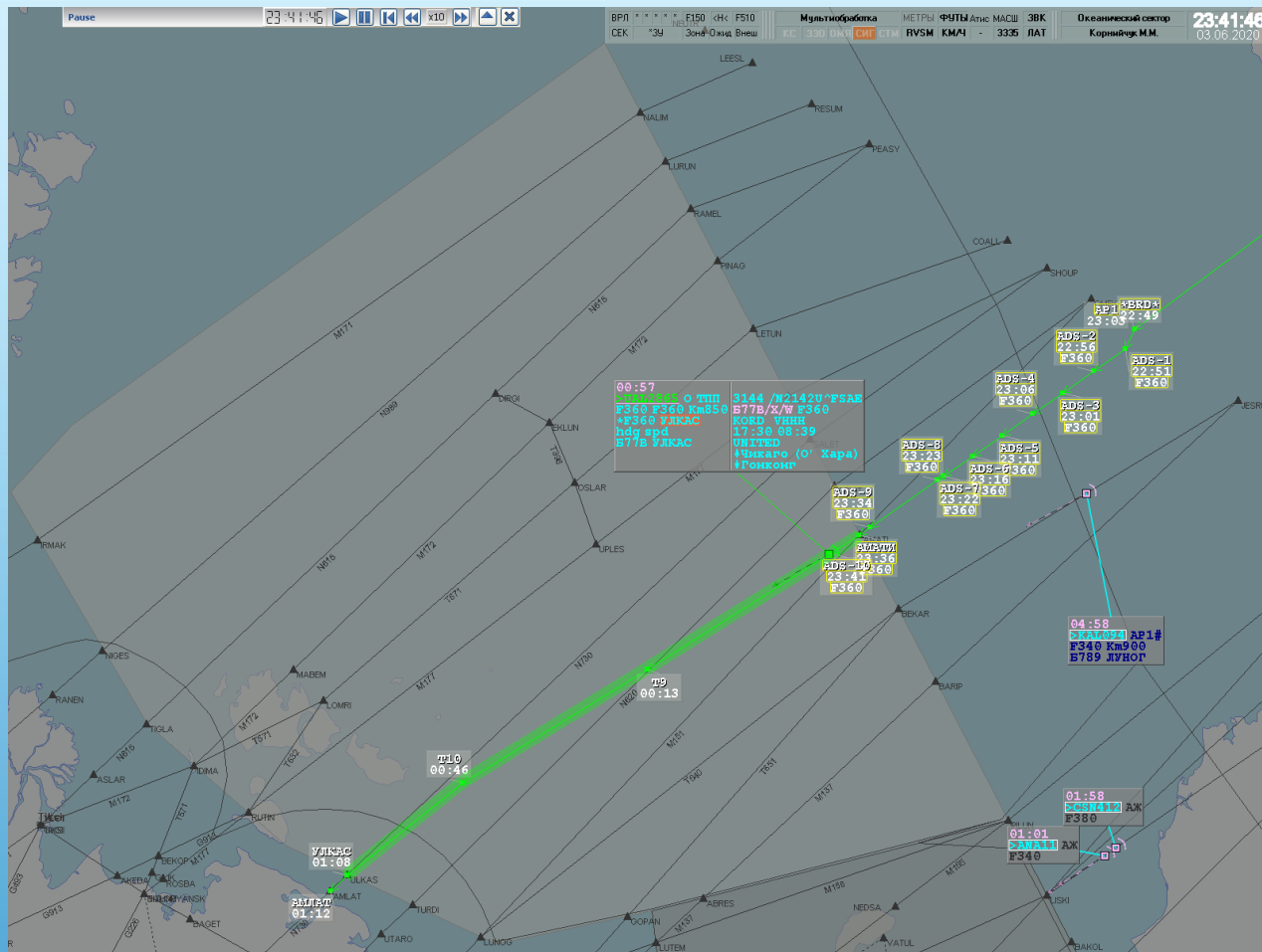


First flight Via User Preferred Route Flight UAL2865 on June 03, 2020

The first UPR flight in Magadan Oceanic sector was performed from Chicago to Hong Kong on June 04, 2020.

The total length of the flight route was 55,5 km less as compared to the flight which would be performed via fixed ATS routes.

5 minutes of flight time and 800kg (1760LBS) of fuel were saved.





NOTAM

A NOTAM valid until December 31, 2020 has been published to inform airspace users :

(A6003/20 NOTAMR A4384/20

Q)UHMM/QAFX/IV/NBO/E/270/530/7700N16000E998

A)UHMM B)2009031630 C)2012312359

E)FIR MAGADAN OCEANIC SECTOR:

FLT PLANNING AND OPS OF ACFT WITH FANS 1/A EQUIPAGE POSS VIA ATS RTE AS WELL AS VIA USER PREFERRED ROUTES (UPR) USING ENTRY/EXIT POINTS BETWEEN MAGADAN FIR AND ANCHORAGE FIR (NALIM, LURUN, RAMEL, PINAG, LETUN, NIKIN, SALET, ORVIT, AMATI, BEKAR, BARIP, PILUN), MAGADAN FIR AND YAKUTSK FIR (IRMAK, NIGES, TIGLA, IDIMA, RUTIN, ULKAS, TURDI, LUNOG, GOPAN, LUTEM).

F)FL270 G)FL530)



UPR Flights within Oceanic Airspace Arctic Ocean

Throughout the period of UPR flights performing in the Oceanic Sector there have been proposals from the airspace users to expand the area for UPR flights in Magadan ACC Airspace.

Once coordination between specialists from the Main ATM Center and North East Air Navigation Branch had been completed the flight geography for the UPR flights was extended to the adjacent Magadan ACC North-2 Sector. A NOTAM was published after the completion of the test flight:

(A6454/20 NOTAMR A6428/20

Q)UHMM/QAFXX/IV/NBO/E/270/530/6830N17400W150

A)UHMM B)2009240540 C)2012312359

E)MAGADAN FIR SECTOR NORTH 2:

**FLT PLANNING AND OPS FOR ACFT EQUIPPED WITH FANS 1/A POSS VIA ATS
RTE AS WELL AS VIA USER PREFERRED ROUTES (UPR) USING ENTRY/EXIT
POINTS BETWEEN MAGADAN FIR AND ANCHORAGE FIR (AGURA, TESMA, BAKOL,
LISKI) AND MAGADAN FIR POINTS (BABAD, NATUR, TEPIN, RABID) IN
EAST AND WEST DIRECTIONS.**

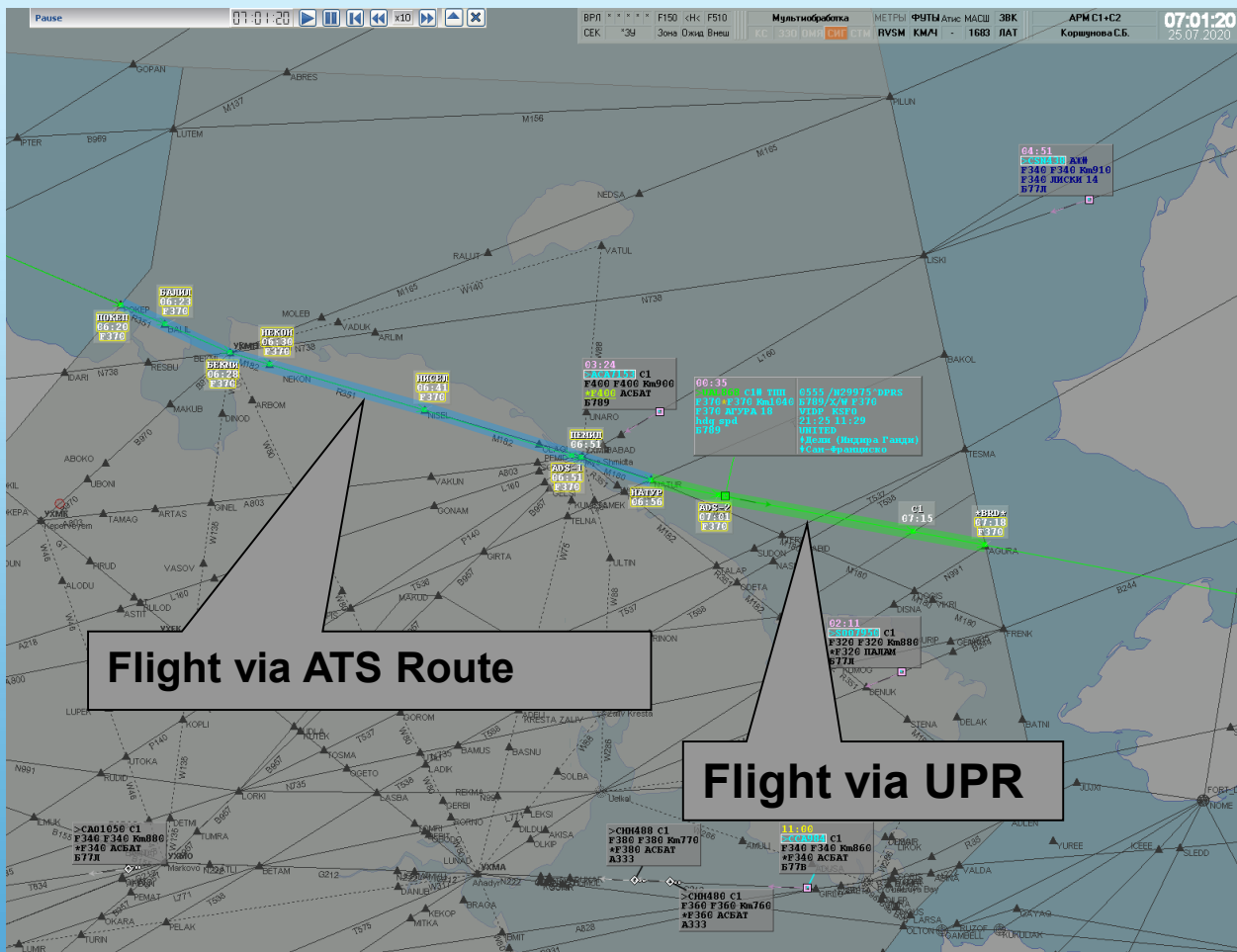
F)FL270 G)FL530)



Flight UAL868 on July 25, 2020

Test Flight via User Preferred Route in North-2 Sector

On July 25, 2020 United Airline planned and performed a test UPR flight through the Magadan FIR (North-2 Sector) from Delhi to San Francisco.





NOTAM

A NOTAM was published in December 2020 informing users about the possibility to plan and perform flights within the Magadan Oceanic and North-2 airspace:

(A8495/20 NOTAMN

Q)UHMM/QAFXX/IV/NBO/E/270/530/7700N16000E700

A)UHMM B)2012230000 C)2106012359

E)MAGADAN FIR: FLT PLANNING AND OPS FOR ACFT EQUIPPED WITH FANS 1/A
POSS VIA ATS RTE AS WELL AS OUT OF ATS RTE:

(NALIM, LURUN, RAMEL, PINAG, LETUN, NIKIN, SALET, ORVIT, AMATI,
BEKAR, BARIP, PILUN, LISKI, BAKOL, TESMA, AGURA)

AND POINTS

(IRMAK, NIGES, TIGLA, IDIMA, RUTIN, ULKAS, TURDI, LUNOG, GOPAN,
LUTEM, MOLEB, BABAD, NATUR, SUDON, NASUM).

IN EAST AND IN WEST DIRECTIONS.

F)FL270 G)FL530)



UPR Flights within Magadan ACC

Airlines have been performing the UPR flights over the Arctic Ocean in Magadan Oceanic and North -2 sectors since June 05, 2020.

All UPR-related information is recorded and analyzed.

Involved airlines and number of flights:

▪ Korean Air Lines Co., Ltd. (KAL)	– 338
▪ Air Canada (ACA)	– 182
▪ Asiana Airlines, Inc. (AAR)	– 105
▪ United Airlines, Inc. (UAL)	– 50
▪ China Southern Airlines Co., Ltd. (CSN)	– 50
▪ China Cargo Airlines Ltd (CKK)	– 48
▪ EVA Airways Corporation (EVA)	– 44
▪ AirBridgeCargo Airlines, LLC (ABW)	– 5
▪ Polar Air Cargo (PAC)	– 2
▪ China Airlines (CAL)	– 1

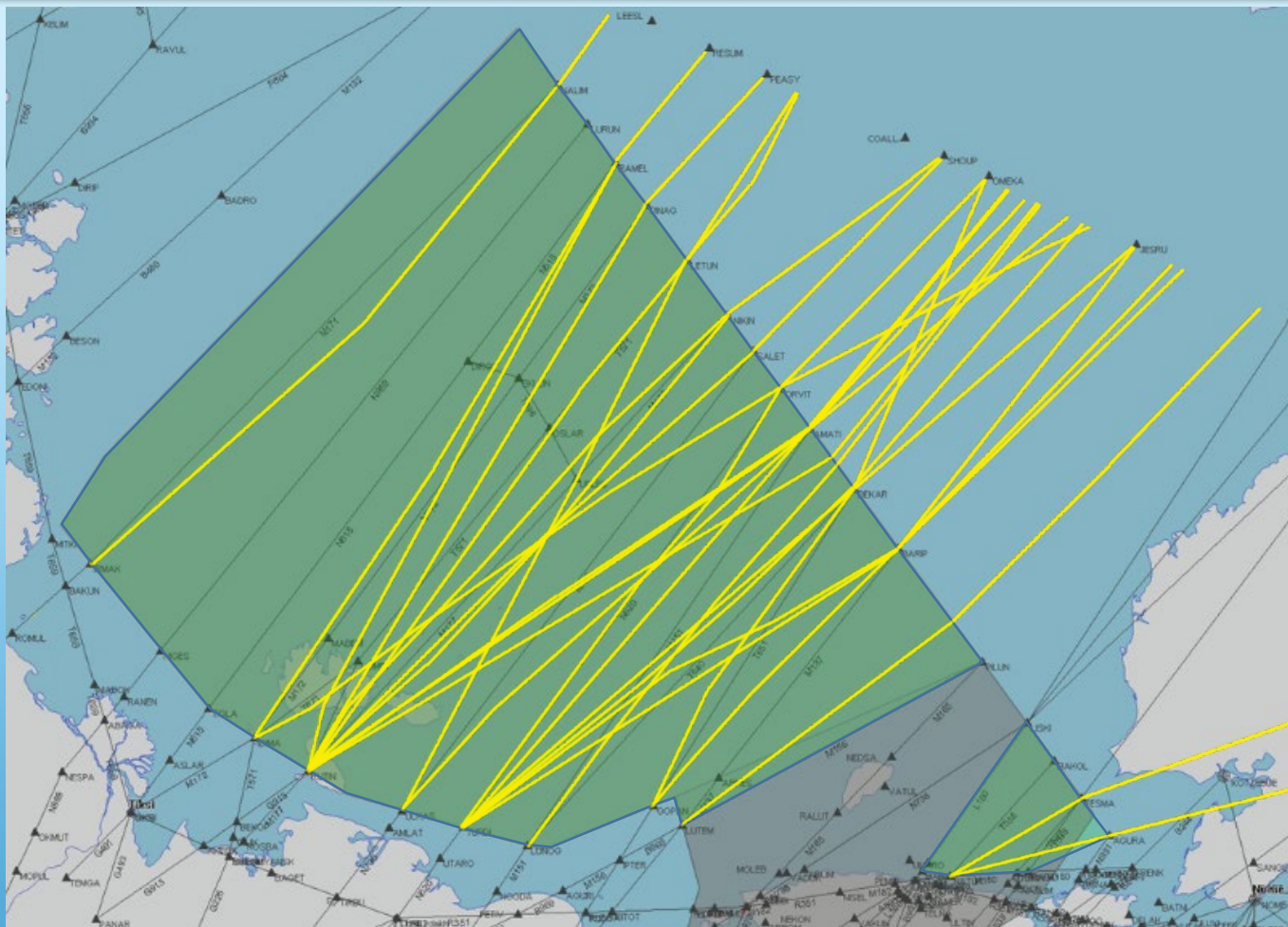
**825 flights were conducted
as at February 28, 2021.**



Actual Flights via UPR Routes in Oceanic and North-2 sectors of Magadan ACC

Airlines plan and perform flights via UPR routes considering flight conditions at the time of flight (winds, temperature, pressure, aircraft performance and etc.).

This makes the flight more cost-effective and the airspace more attractive!





UAL2865 Flight, June 29, 2020

The performed flights are tracked by means of ADS-C; CPDLC is used to provide the communication with the mandatory HF checks by SELCAL.

Neither any communication/surveillance failures, nor standard separation loss have been registered.

All UPR flights proceed normally.

The screenshot displays a flight tracking application with two main windows:

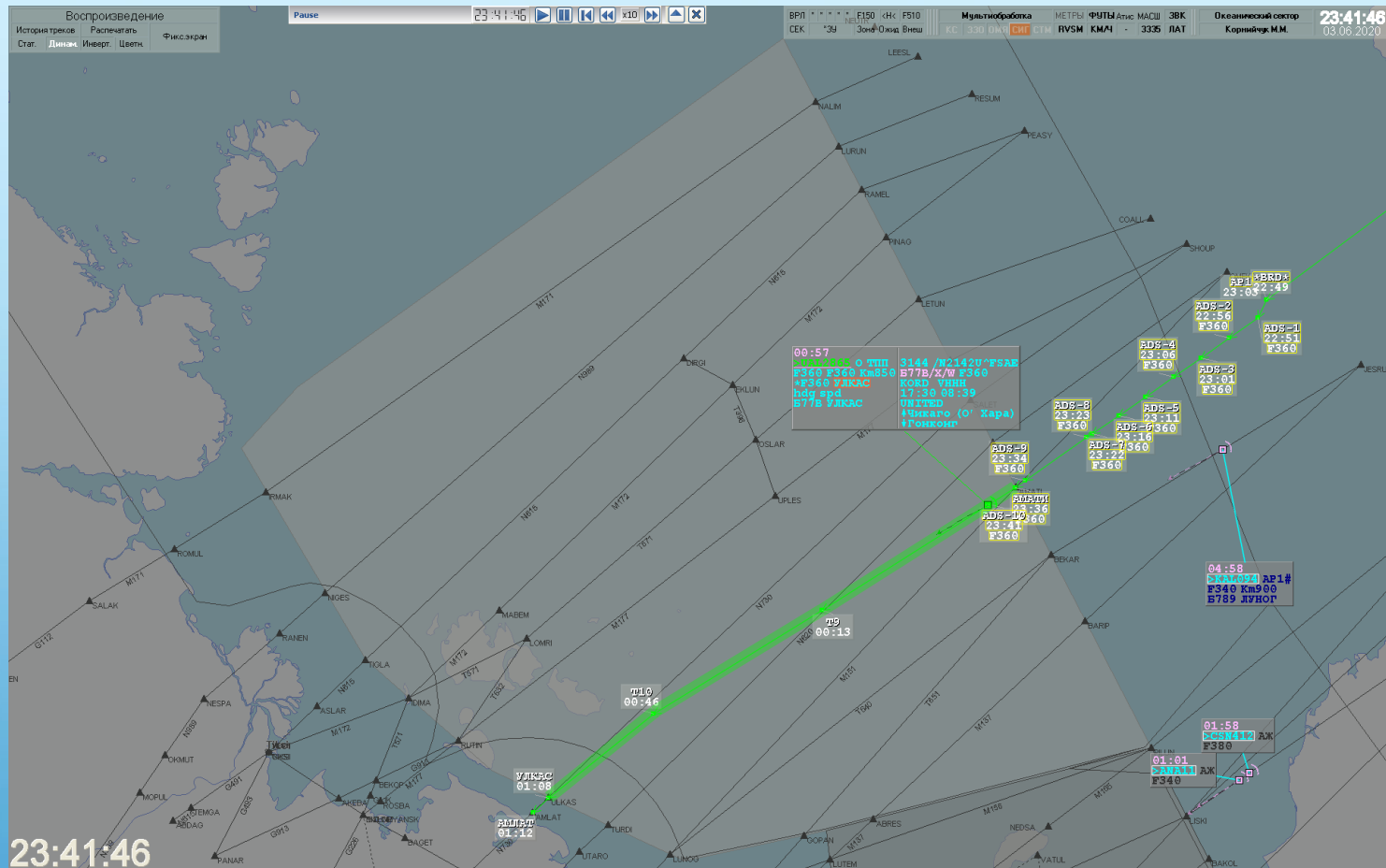
- Aircraft Message History (CPDLC dialog box):** Shows a list of messages for flight UAL2865/N2846U. The messages include:
 - 23:40:47 Aircraft active
 - 23:30:09 MAINTAIN [F360] REPORT PASSING [TURDI] AT [TURDI] CONTACT [YAKUTSK:CONTROL] [125.600 MHz VHF]
 - 23:30:27 WILCO
 - 23:39:36 REPORT PASSING [76.0N180.0E]
 - 23:39:58 ROGER
- ADS-C Route Map:** Shows a map of the Yakutsk region with a green line representing the flight path. A callout box points to the route with the text "ADS-C the actual route".

Additional interface elements include a table of flight data, a status panel, and various control buttons.



UAL2865 June 05, 2020

After performing UPR flight UAL2865 Chicago-Hong Kong UAL airline provided their feedback:
«2865 had a savings of 1 minute, 305 pounds of fuel, and 958 pounds of CO2 emissions saved. Doesn't seem like much, but flying that particular route ended up saving a 34 minutes of flight time. Even though the savings were not specific to the "Free Flight" region, the end result was very good.»

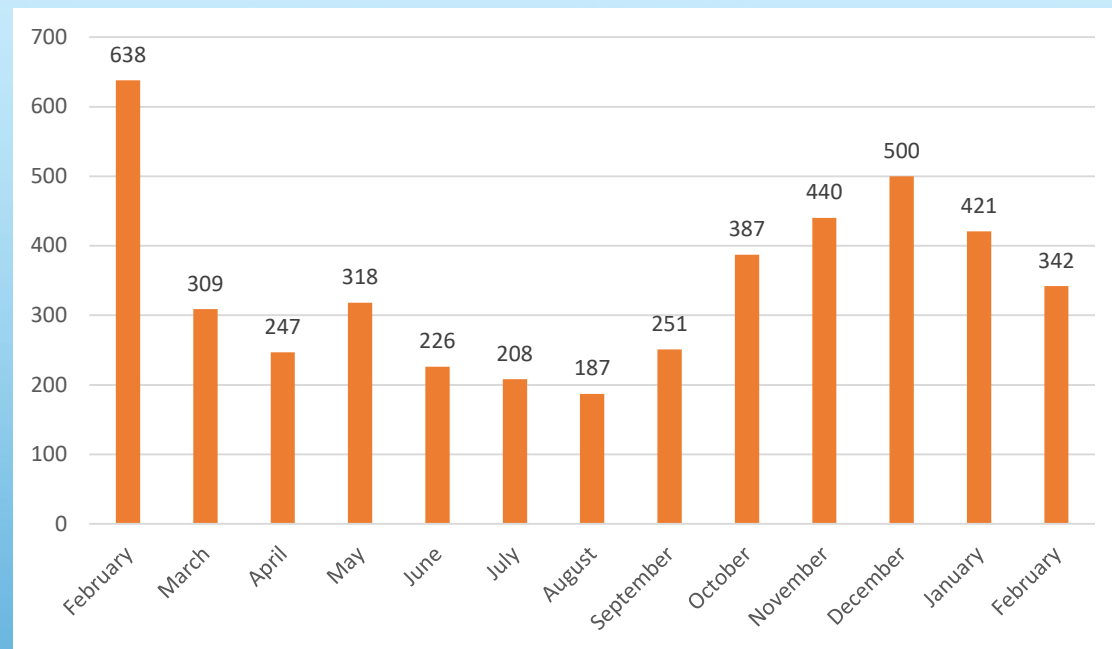




Total Number of Flights, Magadan ACC Oceanic Sector

The number of flights has been significantly reducing worldwide since February 2020 reflecting the spread of the new coronavirus infection (COVID-19).

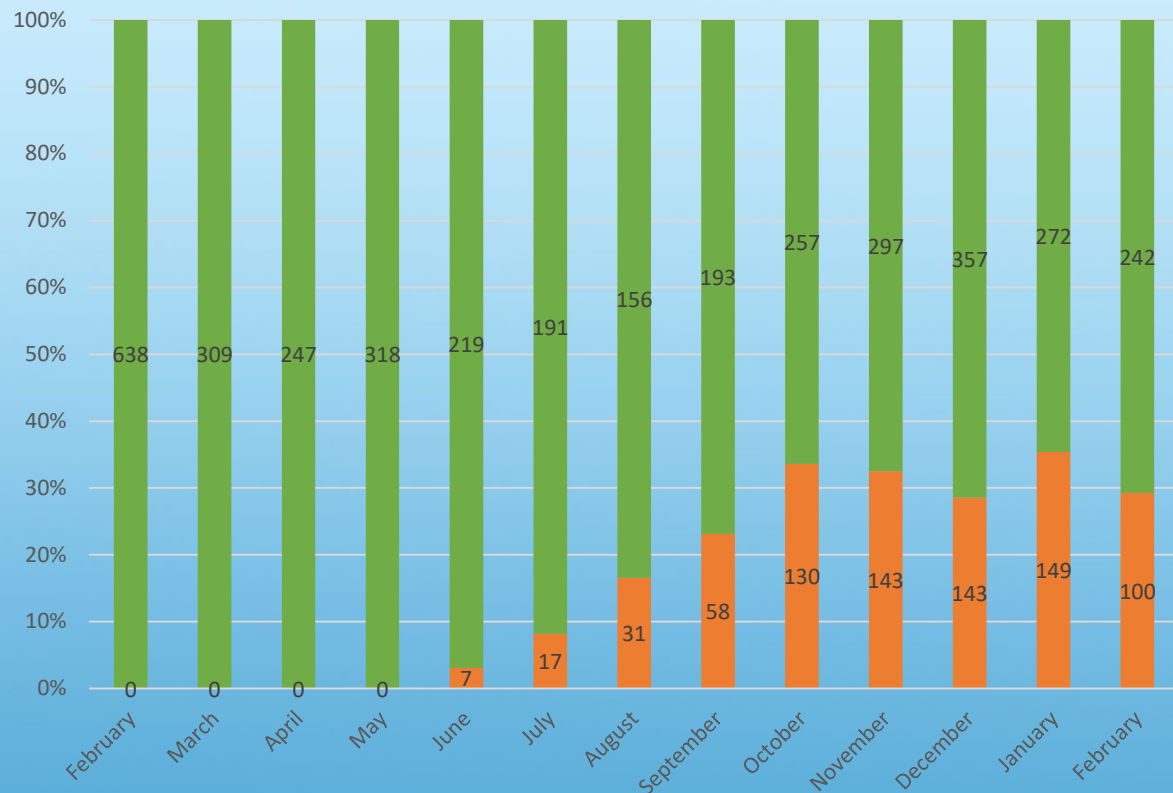
At present moment the stabilization of traffic intensity indicators with an increasing trend is being recorded in Magadan ACC Oceanic sector.





Distribution of Flights via UPR and Area Navigation Routes, Magadan ACC Oceanic Sector

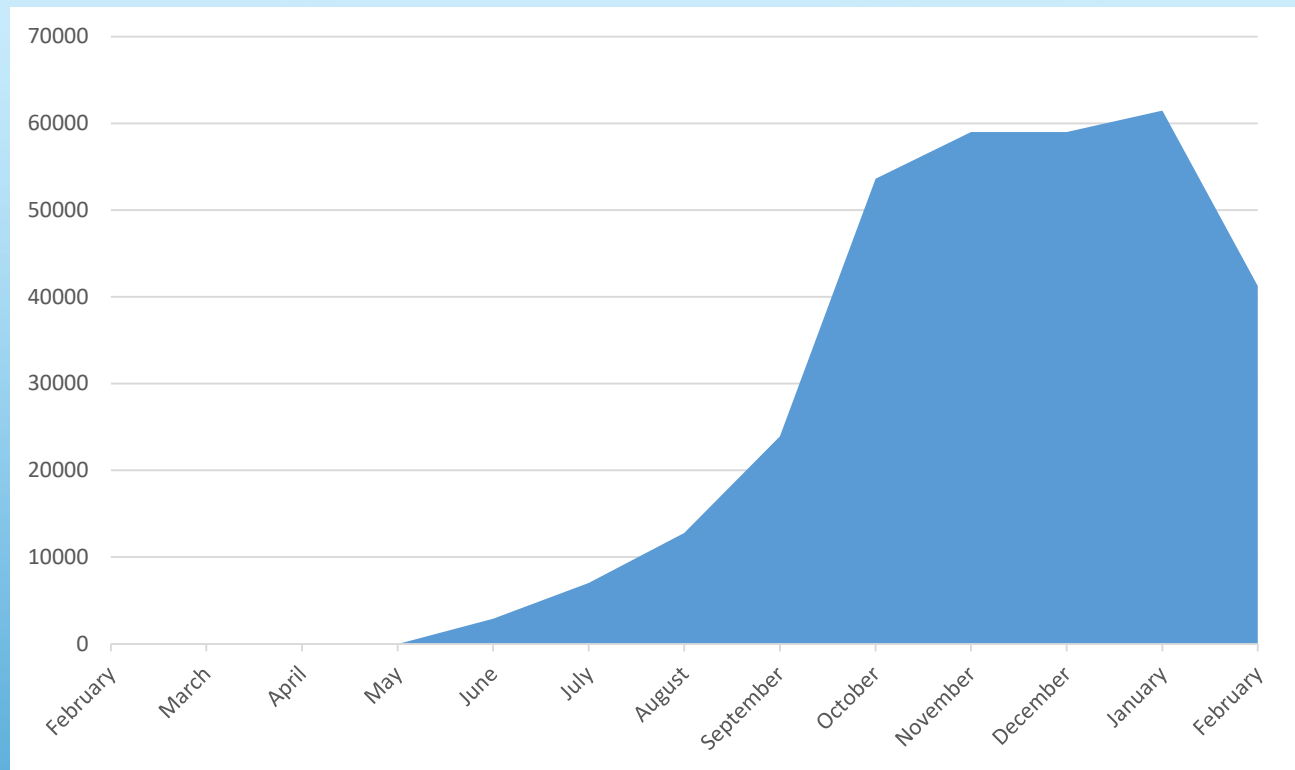
From June to October 2020 the number of UPR flights was doubling every month. Starting from October 2020 the percentage of UPR flights in the Oceanic sector has reached approximately 35 percent of the overall flights. Should the current trend continue, the majority of flights will be performed via UPR routes by the end of 2021.





Fuel Savings (kg) with UPR Flights Magadan ACC Oceanic Sector

Free routes enable the airlines to save the fuel and reduce the costs through proceeding via UPR considering the weather conditions and aircraft performance.

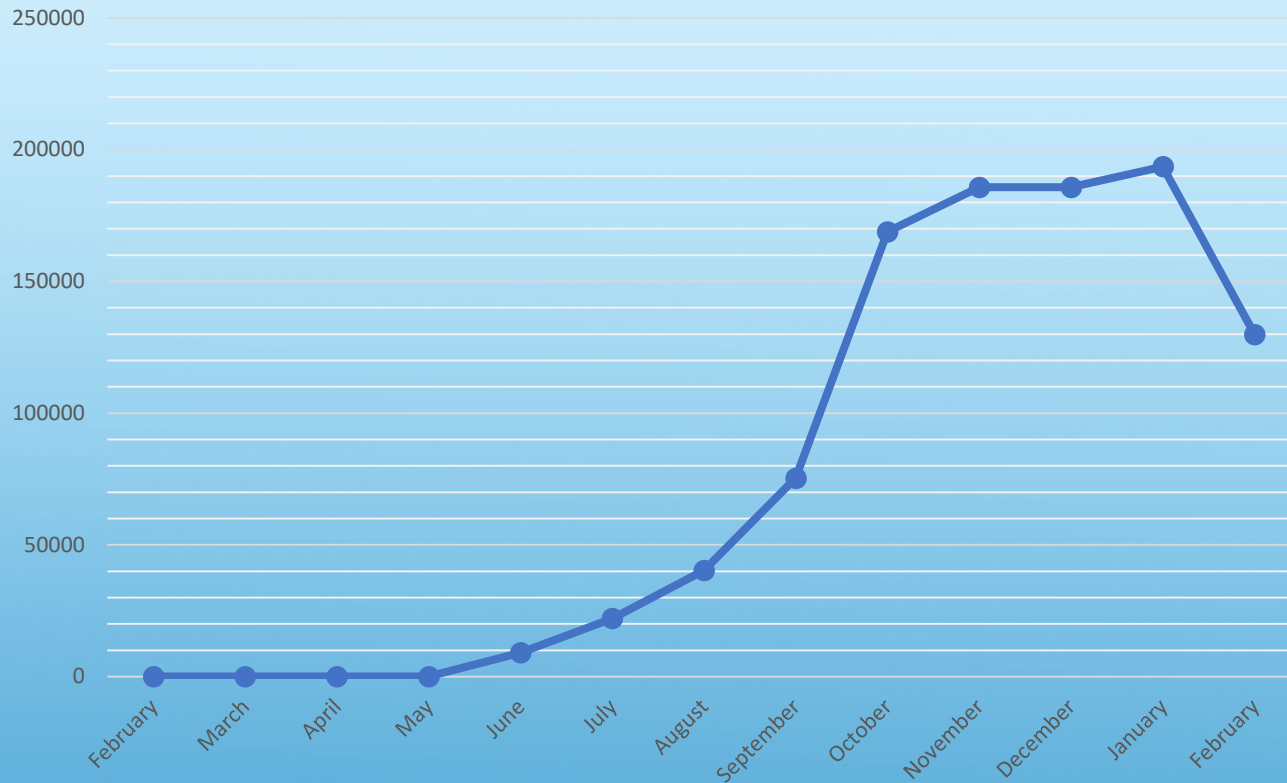




Negative Environmental Impact Reduction (CO2 emission, average kilogram value)

The introduction of FRA enables to significantly reduce the negative environmental impact of aviation which is a high ICAO priority.

The obtained statistical data show that the performed UPR flights via Magadan ACC Oceanic sector have already reduced the CO2 emissions by more than **1 million tones**.





Airspace Structure Modification

At present class A airspace is established in Magadan Oceanic area above FL265. Once the FRA testing in Oceanic and North-2 sectors is completed, the FRA airspace, specifications for the aircraft (RNP 4, ADS-C, CPDLC, SATCOM, HF-Radio), requirements for flight planning and flight operations will be specified in Aeronautical Information Publication.

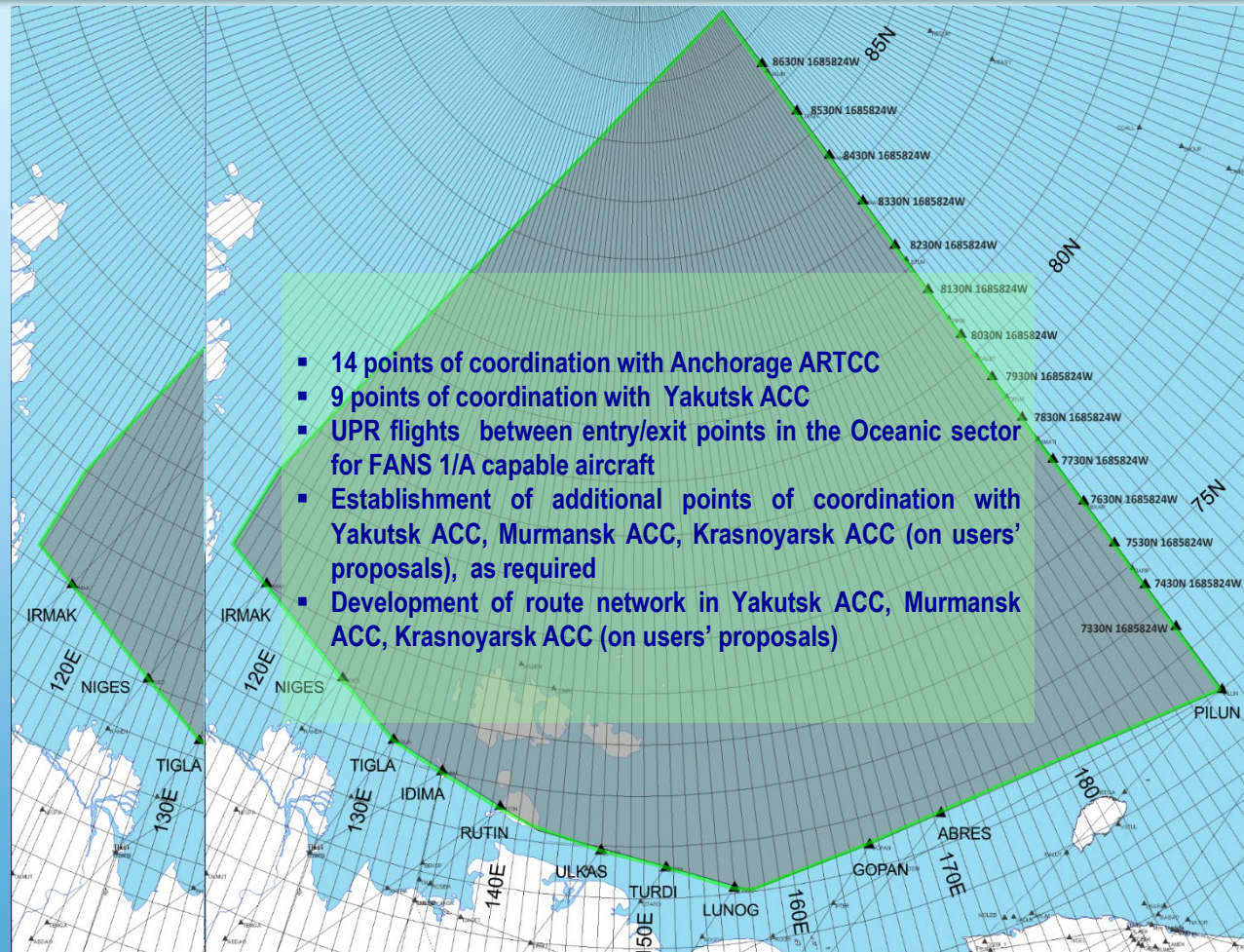
14 new 5LNC exit/entry points of coordination (every other latitude degree) will be introduced along Magadan ACC Oceanic sector and Anchorage ARTCC FIR boundary. Fixed RNAV routes will be eliminated in Magadan ACC Oceanic sector.

Additional points of coordination and route network in adjacent Yakutsk ACC, Murmansk ACC and Krasnoyarsk ACC will be established and developed on users' proposals, as required.



Airspace Structure Modification Magadan ACC Oceanic Sector

- 11 points of coordination with Anchorage ARTCC
- 9 points of coordination with Yakutsk ACC
- 13 RNAV (RNP 4)





Great Circle Track - Minimal Distance

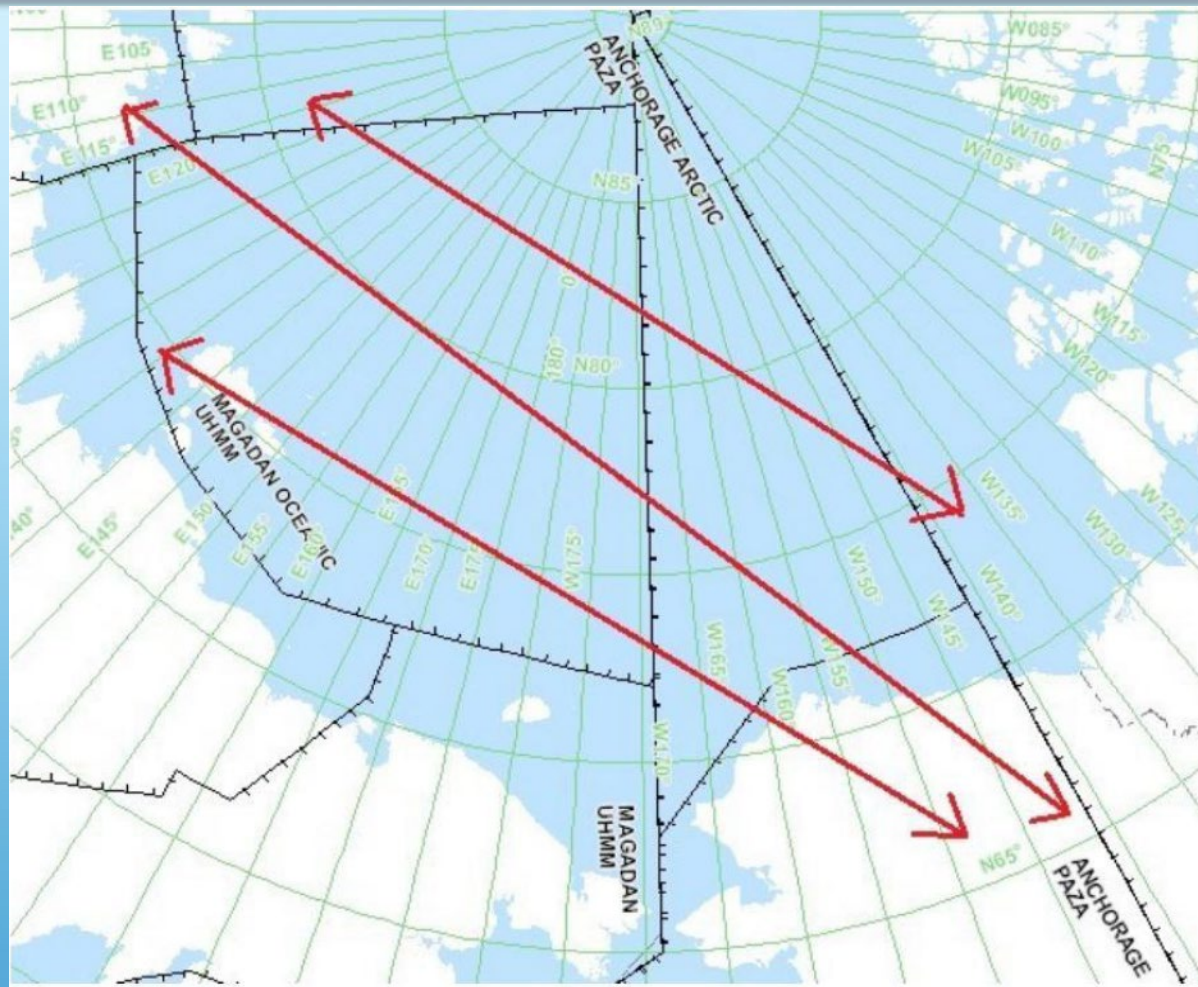


Planning and performing of flights between left coast of the USA and India are the future oriented areas for extended range of flights within the Magadan ACC Oceanic sector.



Magadan UPR The Advanced Features

The United Airline has been exploring the advanced features of UPR for flights to India via the Arctic Ocean airspace. They are also considering the possibilities to use the route from left coast of the USA to India for two-way flights.





The Advantages and Benefits of FRA

As the global experience demonstrates, the introduction of free route airspace contributes to the general increase in traffic intensity and the air navigation charges collected through the increased level of air traffic service. The airspace users certainly come out winners as the modern air fleet has all appropriate equipment to perform FRA flights. The cost reduction through saving fuel and life condition of aircraft during the flights via more favorable routes is obvious whereas no extra upgrading investments are required.

The attractiveness of the free route airspace is obvious!



THANK YOU!
