Ministry of Land, Infrastructure, Transport and Tourism

JAPAN CIVIL AVIATION BUREAU

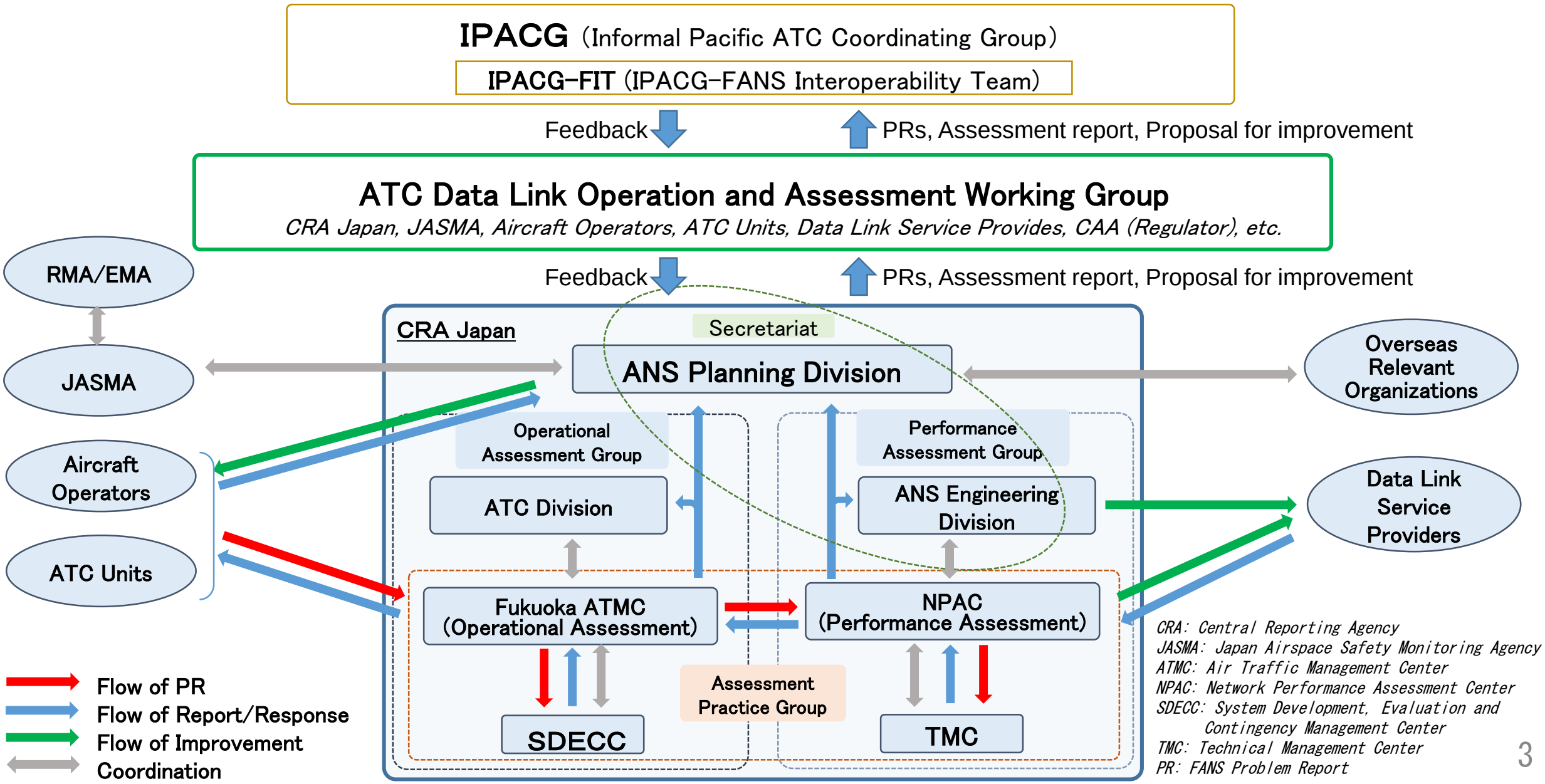
PBCS analysis and corrective action in Japan

Prepared by CRA Japan & JASMA

Topics

- PBCS Framework in Japan
- Remind of Conclusion RASMAG/25-1
- Case Study (Work in Progress)

PBCS Framework in Japan



Remind of Conclusion RASMAG/25-1

- Revised PBCS Non-Compliance Report Form Template
  - At RASMAG/25, it was agreed to use the revised PBCS Non-Compliance Report Form Template.
  - The PBCS Non-Compliance Report templates are intended for ANSPs to inform the relevant Monitoring Agency of aircraft/aircraft operators where data link performance did not comply with specifications.

Final report of RASMAG/25

2.15 PBCS non-compliance report templates were intended for ANSPs to inform the relevant Regional Monitoring Agency (RMA) of aircraft/aircraft operators where data link performance did not comply with specifications. A revised non-compliance report form template was proposed to FIT-Asia/10 in order to include additional information, to harmonize with the template already adopted in the North Atlantic (NAT) Region, and to use MS Excel format to facilitate data handling by the RMA. RASMAG/25 agreed to the following Conclusion developed by the FIT-Asia/10:

Conclusion RASMAG/25-1: Revised PBCS Non-Compliance Report Form Template

That, the PBCS Non-Compliance Report Form Template at **Appendix C to the Report** be uploaded to the Asia/Pacific Regional Office website, to replace the previous template.

Remind of Conclusion RASMAG/25-1

- Revised PBCS Non-Compliance Report Form Template

RASMAG/25
Appendix C to the Report

PBCS ANSP Non-compliance Report

Report Date	10/30/2020
Period of observed non-compliance	
Reporting Air Navigation Service Provider (ANSP)	
Contact email address(es) at Reporting ANSP	
Reporting to Regional Monitoring Agency (RMA)	NAT CMA
Was P2 filed in item 10 during this period? (Y/N)	Y
Was RSP180 filed in item 18 SUR/ during this period?	Y
List of Non-Compliant Operators/IGA Aircraft	
	Oper X
	Oper Y

RASMAG/25
Appendix C to the Report

PBCS ANSP Non-compliance Report Form

Report Date:	10/30/2020
Period of observed non-compliance:	
Reporting Air Navigation Service Provider (ANSP):	
Contact email address(es) at Reporting ANSP:	
Reporting to Regional Monitoring Agency (RMA):	NAT CMA
ICAO CODE:	
Airline Operator:	
State of Operator/Registry:	

PBCS Data

FIR	4-letter ICAO Aircraft Type	Registration	ADS-C downlink Message Counts	95% RSP 180 Benchmark ASP <=90 sec	CPDLC Transaction Counts	95% RCP 240 benchmark ACP <=180 sec	Issue code
KZNY	B772	Reg 1	410	93.41%	25	96.00%	(*1)(*3)
KZNY	B772	Reg 2	290	94.48%	21	95.24%	(*1)

https://www.icao.int/APAC/Meetings/Pages/2020-RASMAG25.aspx

Case Study: B789 in Reykjavik FIR

- Trigger
  - NATCMA provided the PBCS Non-Compliance Report submitted by Isavia ANS to JASMA in February 2023.
  - The report showed poor performance of several B789s operated by some Japanese aircraft operator in Reykjavik FIR (BIRD) from November 2022 to January 2023.
  - The reason was that “Delayed reports due to Inmarsat satellite to satellite transition (aircraft) or satellite problems (network).”

PBCS ATSP Non-Compliance Report Form

Report Date	Feb2023
Period of observed non-compliance:	Nov2022-Jan2023
Reporting Air Traffic Service Provider (ATSP):	ISAVIA ANS (BIRD)
Contact email address(es) at Reporting ATSP:	
Reporting to Regional Monitoring Agency (RMA):	NATCMA
ICAO CODE:	***
Airline Operator:	
State of Operator/Registry:	

PBCS Data

FIR	4-letter ICAO Aircraft Type	Registration	ADS-C downlink Message Counts	95% RSP180 Benchmark ASP <=90 sec	CPDLC Transaction Counts	95% RCP240 benchmark ACP <=180 sec	Issue code
BIRD	B789	JA8xxJ	157	93.63%	15	100.00%	(*3)
BIRD	B789	JA8xxJ	171	90.64%	12	91.67%	(*3)
BIRD	B789	JA8xxJ	141	92.91%	12	100.00%	(*3)
BIRD	B789	JA8xxJ	114	94.74%	17	100.00%	(*3)

PBCS Non-Compliance Report from NATCMA to JASMA

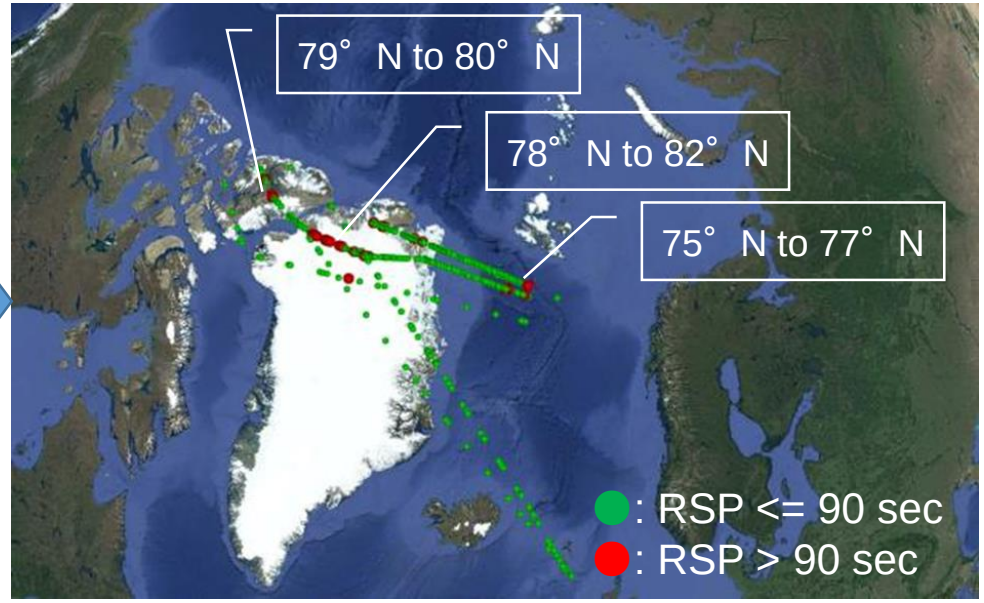
- Initial Actions
  - JASMA forwarded the PBCS Non-Compliance Report to CRA Japan.
  - CRA Japan informed the status of PBCS Non-Compliance to the operator.
  - JASMA responded to NATCMA that the PBCS performance of the operator’s airframes was compliant in Fukuoka FIR.
  - JASMA requested Isavia ANS to provide detailed data, including time stamps, position(Lat/Long), ground station ID, ASP, media type, FOM, etc.

Case Study: B789 in Reykjavik FIR

- Second Actions
  - JASMA shared the detailed data provided by Isavia ANS with CRA Japan, then the CRA Japan secretariat asked NPAC to analyze the data.
  - As a result of plotting and analysis of NPAC, it was identified that the points/locations confirmed poor PBCS performance data were around 75° N to 82° N where some flights were operated by the Japanese aircraft operator and the areas were the edge of coverage of Inmarsat.

	D	E	F	G	H	I	J	K	L	M	N	O	P
1	send_time	ground_station	flight_id	lat	lon	report_type	operator	actype	registration	ASP (message delivery time)	operator_actype	media_type	media_ty
2	2022-11-06 23:20:04	AME1	529369	80.03111	-81.1004	7		B789		140.629		SAT	INMARSAT
3	2022-11-06 23:47:13	EUA2	529369	80.00399	-59.9648	20		B789		1371.824		SAT	INMARSAT
4	2022-11-06 23:47:48	EUA2	529369	80.01446	-59.509	7		B789		1395.201		SAT	INMARSAT
5	2022-11-09 00:37:59	EUA1	530128	80.14887	-29.9072	7		B789		90.086		SAT	INMARSAT
6	2022-11-09 01:26:49	EUA1	530128	76.99493	0.023518	20		B789		155.969		SAT	INMARSAT
7	2022-11-14 00:44:23	EUA1	531835	80.13308	-53.2605	7		B789		722.279		SAT	INMARSAT
8	2022-11-14 01:58:41	EUA1	531835	76.99528	0.022659	20		B789		160.407		SAT	INMARSAT
9	2022-11-17 23:38:47	AME1	533403	80.0045	-80.069	7		B789		110.99		SAT	INMARSAT
10	2022-11-17 23:38:55	AME1	533403	80.00364	-79.9685	20		B789		116.802		SAT	INMARSAT
11	2022-11-18 00:51:21	AME1	533410	80.00364	-80.0074	7		B789		100.307		SAT	INMARSAT
12	2022-11-18 00:51:25	AME1	533410	80.00347	-79.9566	20		B789		123.021		SAT	INMARSAT
13	2022-11-18 01:32:57	EUA1	533410	80.14595	-48.5908	7		B789		260.438		SAT	INMARSAT
14	2022-11-18 23:35:46	AME1	533900	80.00382	-79.9707	20		B789		101.709		SAT	INMARSAT
15	2022-11-19 00:02:47	AME1	533900	80.0215	-59.2577	7		B789		114.699		SAT	INMARSAT
16	2022-11-21 00:09:02	AME1	534913	80.00433	-59.98	20		B789		127.542		SAT	INMARSAT
17	2022-11-21 00:11:11	EUA1	534913	80.04639	-58.3156	7		B789		790.256		SAT	INMARSAT
18	2022-11-21 00:33:37	EUA1	534913	80.00982	-40.3267	19		B789		109.696		SAT	INMARSAT
19	2022-11-21 00:34:04	EUA1	534913	80.0057	-39.9633	20		B789		153.817		SAT	INMARSAT
20	2022-11-21 00:35:37	EUA1	534913	80.0366	-38.6944	19		B789		119.437		SAT	INMARSAT
21	2022-11-24 23:53:35	AME2	536286	80.0045	-59.9605	20		B789		149.752		SAT	INMARSAT
22	2022-11-26 00:24:00	EUA1	536676	80.11145	-55.0413	7		B789		631.798		SAT	INMARSAT
23	2022-11-27 00:06:07	EUA1	537060	80.11299	-54.9294	7		B789		963.756		SAT	INMARSAT
24	2022-11-27 00:19:59	EUA1	537060	80.09668	-44.0576	7		B789		145.762		SAT	INMARSAT
25	2022-11-27 01:28:15	EUA1	537060	76.99545	0.020943	20		B789		185.808		SAT	INMARSAT
26	2022-11-27 01:29:19	EUA1	537060	76.89726	0.463829	7		B789		154.713		SAT	INMARSAT
27	2022-11-28 00:15:08	EUA1	537490	80.14887	-49.6579	7		B789		1288.278		SAT	INMARSAT
28	2022-11-28 01:30:16	EUA1	537490	76.99459	0.024891	20		B789		127.448		SAT	INMARSAT
29	2022-11-28 01:38:25	EUA1	537490	76.20358	3.354263	7		B789		273.209		SAT	INMARSAT
30	2022-12-02 00:55:00	EUA1	538817	78.52461	-43.194	7		B789		131.71		SAT	INMARSAT
31	2022-12-02 23:08:22	AME2	539097	80.13908	-87.4146	7		B789		714.826		SAT	INMARSAT
32	2022-12-02 23:18:21	AME2	539097	80.00433	-79.9554	20		B789		142.869		SAT	INMARSAT
33	2022-12-02 23:49:58	EUA1	539097	80.12037	-54.3937	7		B789		545.713		SAT	INMARSAT
34	2022-12-23 01:10:07	EUA1	545619	81.87183	-35.2847	7		B789		267.233		SAT	INMARSAT
35	2022-12-30 00:27:17	EUA2	548096	81.99921	-39.9657	20		B789		139.16		SAT	INMARSAT

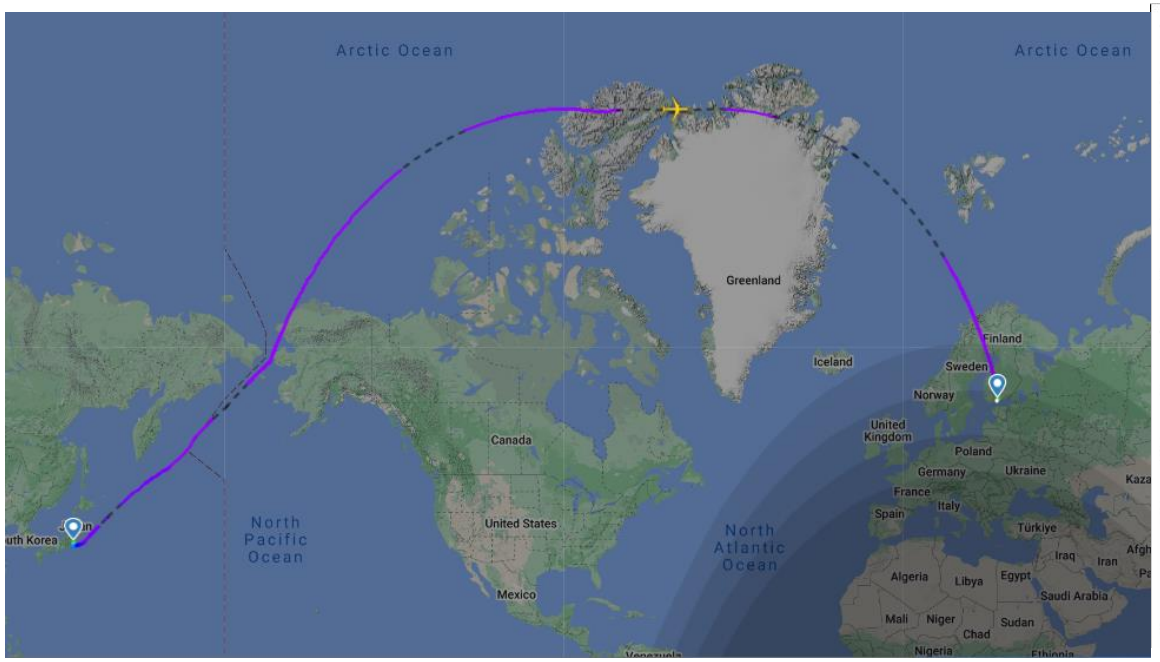
Detailed data provided by Isavia ANS



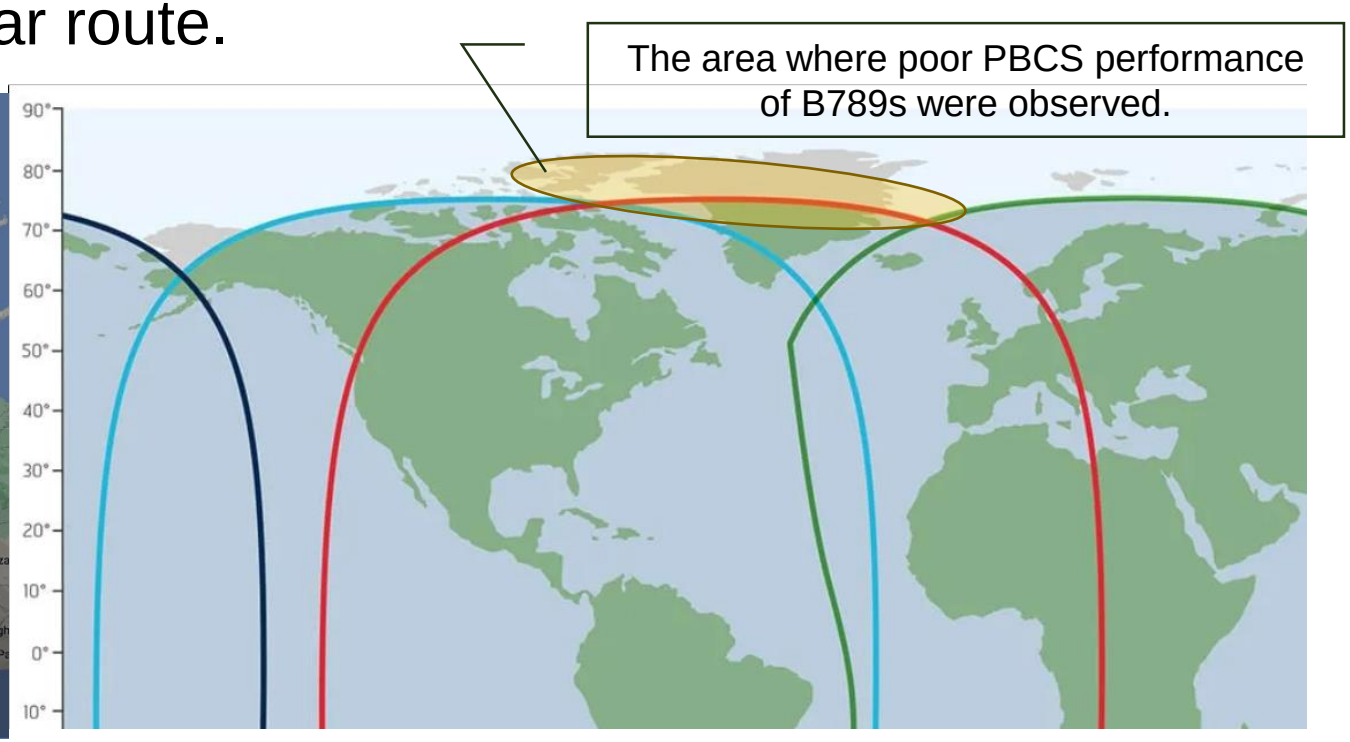
Result of plotting and analysis by NPAC

Case Study: B789 in Reykjavik FIR

- Third Actions
  - CRA Japan explained the result of the analysis to the Japanese aircraft operator and asked the operator whether they could file more southern routes.
  - The operator responded that filing southern routes was unacceptable since current routes were the most rational and beneficial routes in the situation where they had to choose the Polar route.



Example of flight route in Polar route



Coverage of Inmarsat

Case Study: B789 in Reykjavik FIR

- Considerations
  - The airframes only have a satellite capability of Inmarsat.
    →If B789s were upgraded to use other satellite that covers the Polar route, such as Iridium, the poor performance of B789s would be improved with keeping the Polar route.
    →Equipping other satellite capabilities requires the aircraft operator to spend additional costs.
  - Southern routes within Inmarsat coverage
    →Taking southern routes would need additional costs for the aircraft operator.
    →Taking southern routes would also require additional flight time. The aircraft operator might have to consider fatigue management for flight crews.

In the current situation where some aircraft operators have to choose the Polar route, whose area is the edge of Inmarsat coverage, additional costs to comply with PBCS compliance would not be acceptable for the operators.

Case Study: B789 in Reykjavik FIR

- Next Actions (Work in progress)
  - To confirm whether similar cases of non-Japanese aircraft operators exist, JASMA will request Isavia ANS to provide information on whether other aircraft operators flying the Polar route are observed poor PBCS performance on the same routes.
  - To confirm whether seasonal characteristics or airframe difference exists, JASMA will request Isavia ANS to provide the latest data on PBCS performance for all B789s operated by the Japanese aircraft operator in the area.
  - Above information and data provided by Isavia ANS will be shared with the Japanese aircraft operator struggling with the Polar route operation.

CRA JAPAN

Central Reporting Agency in Japan

https://www.cra-japan.jp/

JASMA

https://www.jasma.jp/

Thank you for your attention!