

# Overview of datalink communication and CRA Scheme in Fukuoka FIR

Presented by: SAITO Masahiro



Japan Civil Aviation Bureau (JCAB)  
Ministry of Land, Infrastructure, Transport and Tourism  
Japan (MLIT)

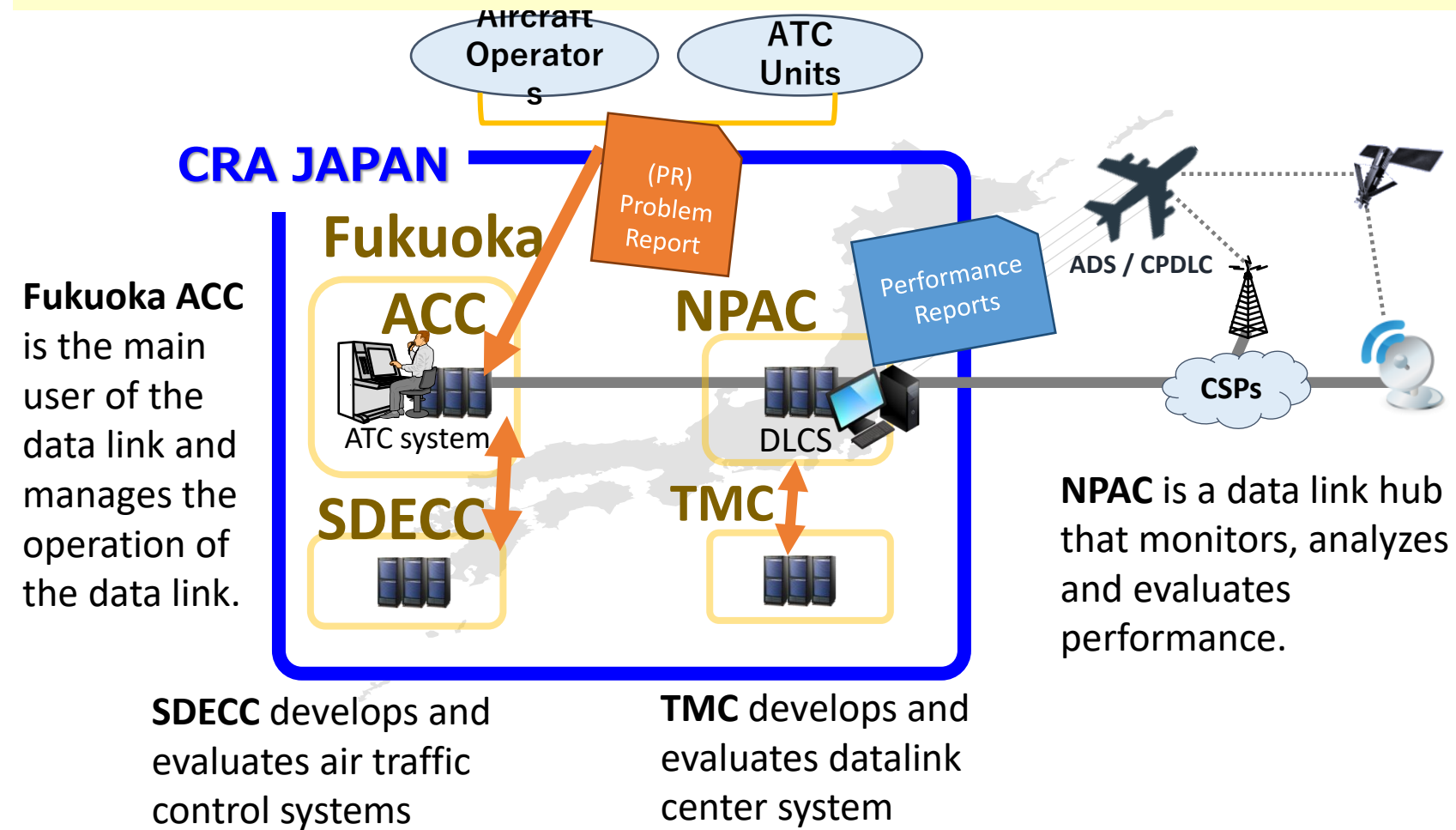
FIT-Asia15  
26 June, 2025

# CRA JAPAN

Japan operates its own  
CRA

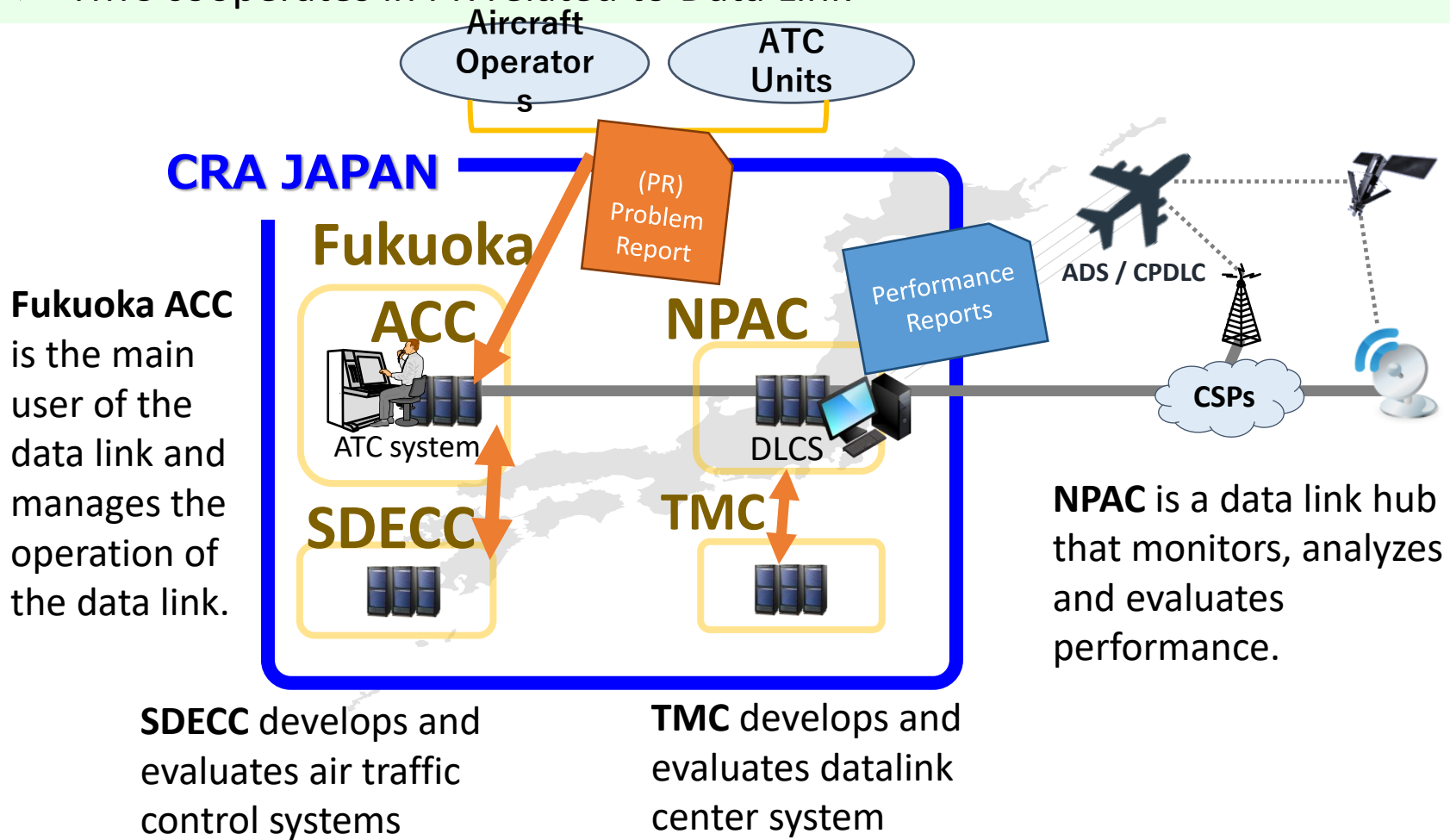
# Scheme of CRA JAPAN

- Organization responsible for evaluating data link operations in the Fukuoka FIR under the PBCS Manual.
- The secretariat is located in the Air Navigation Services Department of JCAB.



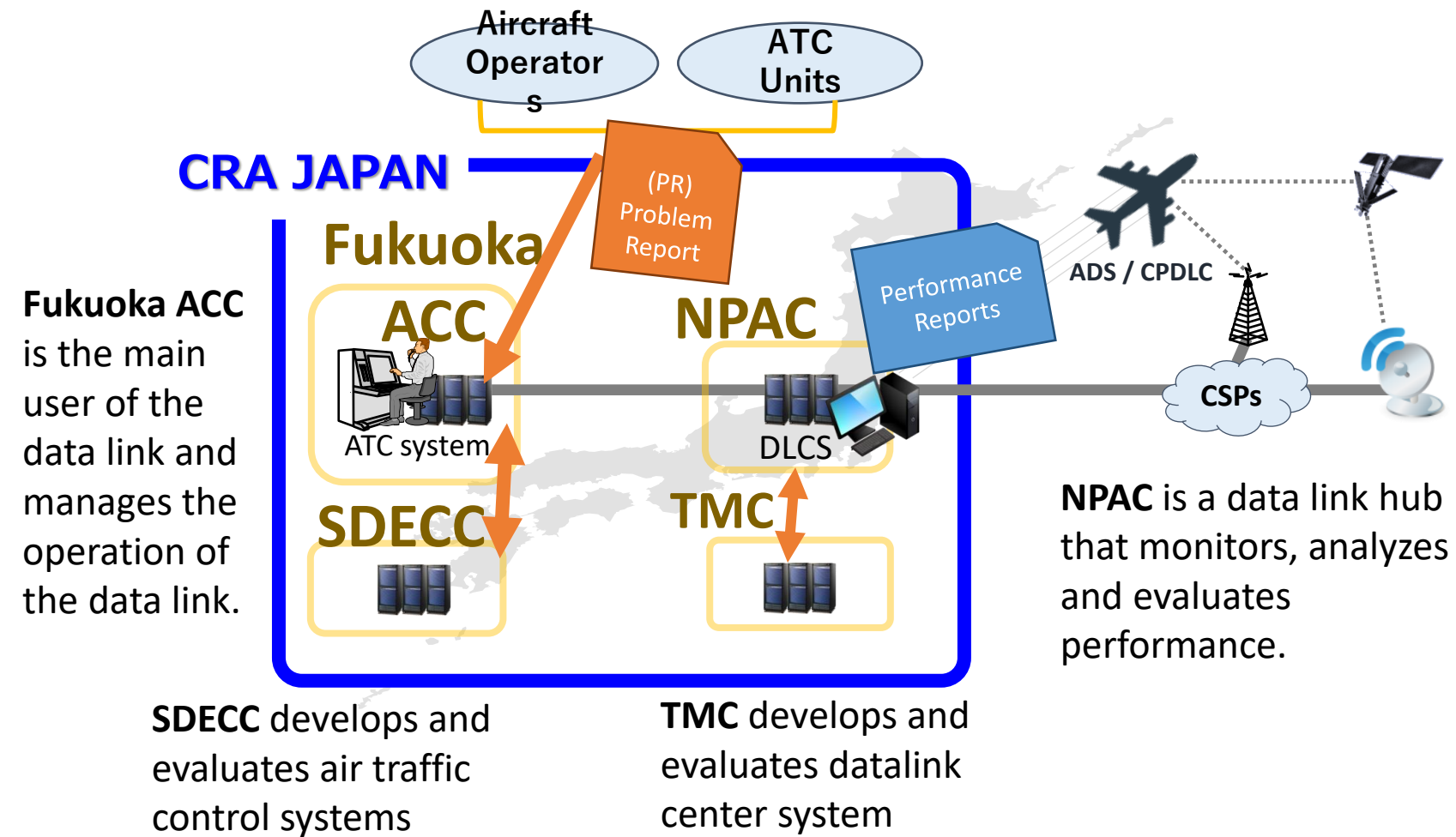
# Scheme of CRA JAPAN

- ATC operation evaluation is conducted by Fukuoka ACC and communication performance evaluation by NPAC.
- SDECC cooperates in PR related to ATC system
- TMC cooperates in PR related to Data Link



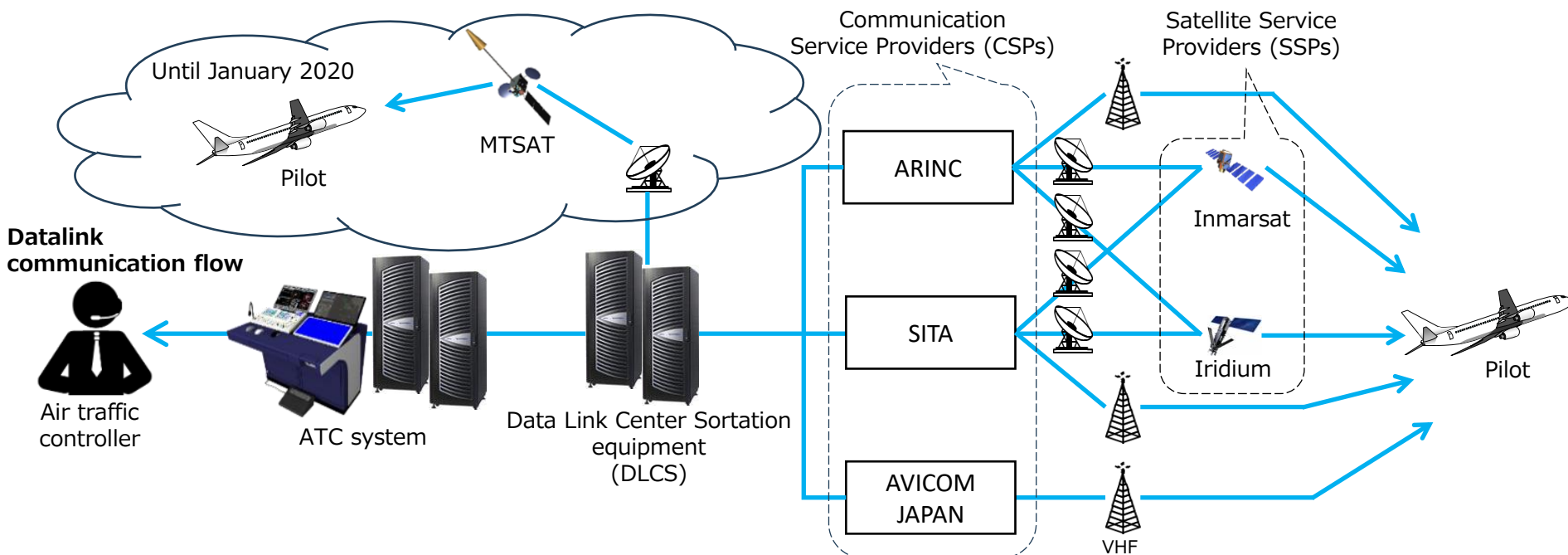
# Scheme of CRA JAPAN

PRs received by CRA JAPAN are investigated, and any necessary inquiries to CSPs, aircraft manufacturers, etc. are necessary in the process, they are made within the framework of the **PBCS Charter**.



## WHY WE OPERATE OWN CRA ■ ■ ■

- Individually connected to 3 CSPs (ARINC, SITA and AVICOM JAPAN)
- ATC system and DLCS are manufactured by JCAB with specifications
- 〈 HISTORY 〉 MTSAT was operated by JCAB until January 2020, with JCAB itself serving as the provider.



# Domestic CPDLC in Fukuoka FIR (Formal Operation : March 2023 – )

## CPDLC

### Domestic CPDLC

- Communication transfer instructions
- ATC transponder code designation
- Microphone check

en-route  
(Domestic high-altitude airspace)

**33,500ft**

en-route  
(Domestic low-altitude airspace)

- Using message : Non time-critical
- Altitude : **Unlimited** (except terminal airspace)

Terminal  
(Departure)

Terminal  
(Arrival)

### Oceanic CPDLC

- Communication transfer instructions
- ATC transponder code designation
- Altitude change instructions
- Route change instructions
- Designation of specific point passing time

en-route  
(Oceanic)

DOMESTIC DATA LINK  
AIRSPACE

OCEANIC DATA LINK  
AIRSPACE

# CASE STUDY 1



# CRA JAPAN Case Study (as reported at IPACG/FIT35)

NAT CMA

JASMA

CRA JAPAN

PBCS Non-Compliance Report

## 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 | CPDLC Transaction Counts | 95% RCP240 benchmark | Issue code |
|------|-----------------------------|--------------|-------------------------------|----------------------|--------------------------|----------------------|------------|
|      |                             |              |                               | ASP                  |                          | ACP                  |            |
|      |                             |              |                               | <=90 sec             |                          | <=180 sec            |            |
| BIRD | B789                        | JA****       | 157                           | 93.63%               | 15                       | 100.00%              | (*3)       |
| BIRD | B789                        | JA****       | 171                           | 90.64%               | 12                       | 91.67%               | (*3)       |
| BIRD | B789                        | JA****       | 141                           | 92.91%               | 12                       | 100.00%              | (*3)       |
| BIRD | B789                        | JA****       | 114                           | 94.74%               | 17                       | 100.00%              | (*3)       |

Submitted by



**ISAVIA ANS**  
Air Navigation Services

# CRA JAPAN Case Study (as reported at IPACG/FIT35)

**CRA JAPAN**

Confirming data in Fukuoka FIR during the same period.

Observed Performance by Operator Fukuoka FIR

01 November 2022 - 31 November 2022

| OP CODE | TYPE | Tail Number | ADS-C - RSP180 |           |             | CPDLC (oceanic) - RCP240 |          |            |         |           |          |            |
|---------|------|-------------|----------------|-----------|-------------|--------------------------|----------|------------|---------|-----------|----------|------------|
|         |      |             | Count of ADS-C | ADS-C 95% | ADS-C 99.9% | Count of CPDLC           | ACTP 95% | ACTP 99.9% | ACP 95% | ACP 99.9% | PORT 95% | PORT 99.9% |
| xxx     | B789 | JA****      | 634            | 99.05%    | 100.00%     | 38                       | 100.00%  | 100.00%    | 100.00% | 100.00%   | 100.00%  | 100.00%    |
| xxx     | B789 | JA****      | 767            | 99.22%    | 100.00%     | 46                       | 100.00%  | 100.00%    | 100.00% | 100.00%   | 100.00%  | 100.00%    |
| xxx     | B789 | JA****      | 699            | 99.00%    | 100.00%     | 46                       | 100.00%  | 100.00%    | 100.00% | 100.00%   | 100.00%  | 100.00%    |
| xxx     | B789 | JA****      | 713            | 98.60%    | 100.00%     | 47                       | 100.00%  | 100.00%    | 100.00% | 100.00%   | 100.00%  | 100.00%    |

Observed Performance by Operator Fukuoka FIR

01 December 2022 - 31 December 2022

| OP CODE | TYPE | Tail Number | ADS-C - RSP180 |           |             | CPDLC (oceanic) - RCP240 |          |            |         |           |          |            |
|---------|------|-------------|----------------|-----------|-------------|--------------------------|----------|------------|---------|-----------|----------|------------|
|         |      |             | Count of ADS-C | ADS-C 95% | ADS-C 99.9% | Count of CPDLC           | ACTP 95% | ACTP 99.9% | ACP 95% | ACP 99.9% | PORT 95% | PORT 99.9% |
| xxx     | B789 | JA****      | 847            | 98.82%    | 99.65%      | 51                       | 100.00%  | 100.00%    | 100.00% | 100.00%   | 100.00%  | 100.00%    |
| xxx     | B789 | JA****      | 650            | 97.38%    | 99.54%      | 42                       | 100.00%  | 100.00%    | 100.00% | 100.00%   | 97.62%   | 97.62%     |
| xxx     | B789 | JA****      | 739            | 98.65%    | 100.00%     | 45                       | 100.00%  | 100.00%    | 100.00% | 100.00%   | 100.00%  | 100.00%    |
| xxx     | B789 | JA****      | 842            | 98.69%    | 100.00%     | 58                       | 100.00%  | 100.00%    | 100.00% | 100.00%   | 100.00%  | 100.00%    |

In addition to the above, 01 January 2023 - 31 January 2023



Request for detailed data

No abnormalities in  
data within Fukuoka FIR

# CRA JAPAN Case Study (as reported at IPACG/FIT35)



Request for Analysis

JASMA

CRA JAPAN



detail data

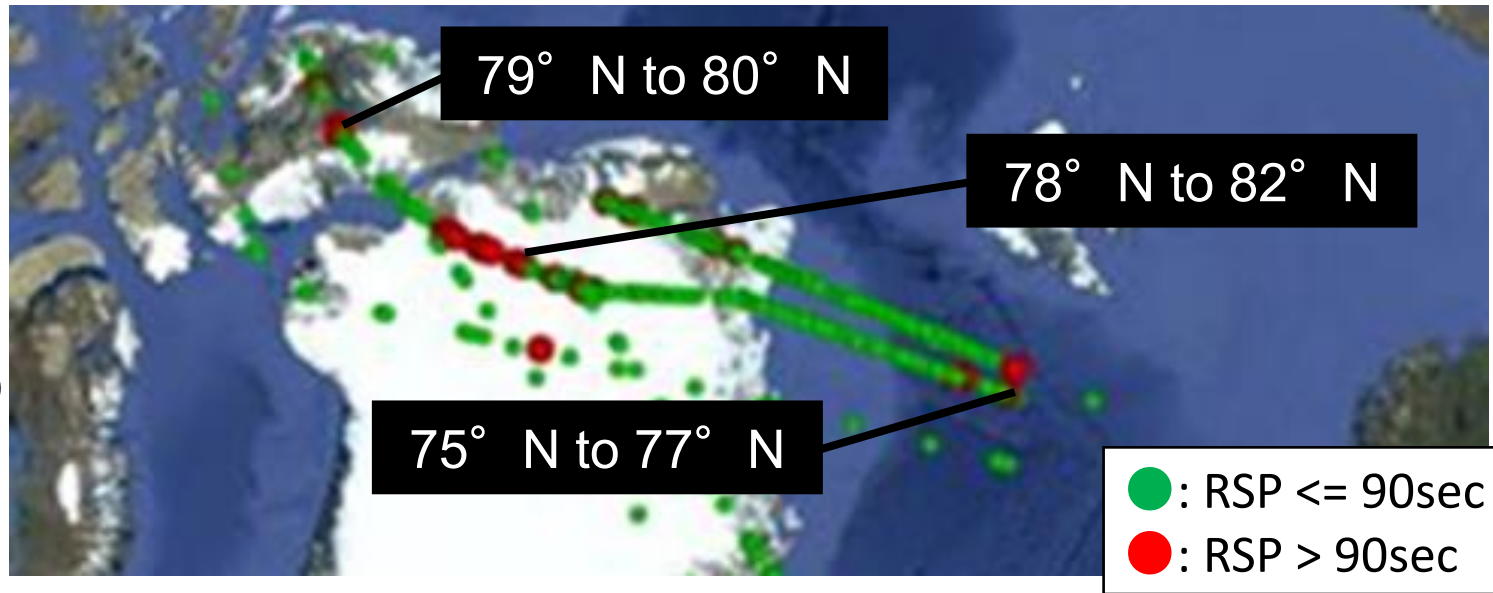
| elem text            |          |          |        |       |        | msg text                                  |                      |          |          |            |          | rcv_time       |          | send_time  |          | ground_station |
|----------------------|----------|----------|--------|-------|--------|-------------------------------------------|----------------------|----------|----------|------------|----------|----------------|----------|------------|----------|----------------|
| 80.893879/-90.965939 | 35000 ft | XX:32:50 | TCAS 1 | FOM 6 | NAVR 1 | TYP ACK : Contract 2ACK : Contract 1BASC: | 80.893879/-90.965939 | 35000 ft | XX:32:50 | 2022-11-01 | 09:32:59 | 2022-11-01     | 09:32:50 | AME1       |          |                |
| 80.628319/-79.935150 | 35000 ft | XX:46:42 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.628319/-79.935150            | 35000 ft             | XX:46:42 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 09:46:57 | 2022-11-01 | 09:46:42 | AME1           |
| 80.144920/-91.653099 | 39000 ft | XX:47:26 | TCAS 1 | FOM 7 | NAVR 1 | TYP ACK : Contract 2ACK : Contract 1BASC: | 80.144920/-91.653099 | 39000 ft | XX:47:26 | 2022-11-01 | 09:47:36 | 2022-11-01     | 09:47:26 | AME1       |          |                |
| 80.592957/-79.086800 | 35000 ft | XX:47:49 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.592957/-79.086800            | 35000 ft             | XX:47:49 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 09:48:12 | 2022-11-01 | 09:47:49 | AME1           |
| 80.148010/-90.804920 | 35000 ft | XX:57:53 | TCAS 1 | FOM 6 | NAVR 1 | TYP ACK : Contract 2ACK : Contract 1BASC: | 80.148010/-90.804920 | 35000 ft | XX:57:53 | 2022-11-01 | 09:58:00 | 2022-11-01     | 09:57:53 | AME1       |          |                |
| 80.148869/-90.308647 | 35000 ft | XX:58:32 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.148869/-90.308647            | 35000 ft             | XX:58:32 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 09:58:53 | 2022-11-01 | 09:58:32 | AME1           |
| 80.053425/-69.938107 | 34996 ft | XX:00:35 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.053425/-69.938107            | 34996 ft             | XX:00:35 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:00:42 | 2022-11-01 | 10:00:35 | AME1           |
| 80.031109/-81.094723 | 38996 ft | XX:01:18 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 80.031109/-81.094723            | 38996 ft             | XX:01:18 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:01:24 | 2022-11-01 | 10:01:18 | AME1           |
| 80.009480/-69.222450 | 35004 ft | XX:01:37 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.009480/-69.222450            | 35004 ft             | XX:01:37 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:02:25 | 2022-11-01 | 10:01:37 | AME1           |
| 80.003815/-79.959869 | 39000 ft | XX:02:49 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 80.003815/-79.959869            | 39000 ft             | XX:02:49 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:03:09 | 2022-11-01 | 10:02:49 | AME1           |
| 80.236244/-80.182343 | 34996 ft | XX:11:45 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.236244/-80.182343            | 34996 ft             | XX:11:45 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:11:51 | 2022-11-01 | 10:11:45 | AME1           |
| 80.003471/-59.984665 | 35004 ft | XX:13:49 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.003471/-59.984665            | 35004 ft             | XX:13:49 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:14:01 | 2022-11-01 | 10:13:49 | AME1           |
| 80.014629/-59.503670 | 35000 ft | XX:14:27 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.014629/-59.503670            | 35000 ft             | XX:14:27 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:14:33 | 2022-11-01 | 10:14:27 | AME1           |
| 80.018406/-70.563297 | 39004 ft | XX:15:10 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 80.018406/-70.563297            | 39004 ft             | XX:15:10 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:15:24 | 2022-11-01 | 10:15:10 | AME1           |
| 80.002613/-69.211464 | 38996 ft | XX:16:57 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 80.002613/-69.211464            | 38996 ft             | XX:16:57 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:17:17 | 2022-11-01 | 10:16:57 | AME1           |
| 80.014458/-69.629803 | 35000 ft | XX:25:37 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.014458/-69.629803            | 35000 ft             | XX:25:37 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:25:44 | 2022-11-01 | 10:25:37 | AME1           |
| 80.003986/-69.229317 | 35000 ft | XX:26:09 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.003986/-69.229317            | 35000 ft             | XX:26:09 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:26:39 | 2022-11-01 | 10:26:09 | AME1           |
| 80.146637/-48.733635 | 35004 ft | XX:28:19 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.146637/-48.733635            | 35004 ft             | XX:28:19 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:28:26 | 2022-11-01 | 10:28:19 | AME1           |
| 80.004158/-59.982605 | 38996 ft | XX:28:55 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 80.004158/-59.982605            | 38996 ft             | XX:28:55 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:29:01 | 2022-11-01 | 10:28:55 | AME1           |
| 80.005188/-59.891624 | 38996 ft | XX:29:02 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 80.005188/-59.891624            | 38996 ft             | XX:29:02 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:29:15 | 2022-11-01 | 10:29:02 | AME1           |
| 80.071793/-57.214394 | 39008 ft | XX:32:29 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 80.071793/-57.214394            | 39008 ft             | XX:32:29 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:32:35 | 2022-11-01 | 10:32:29 | AME1           |
| 80.105095/-44.555397 | 35000 ft | XX:33:45 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.105095/-44.555397            | 35000 ft             | XX:33:45 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:33:52 | 2022-11-01 | 10:33:45 | AME1           |
| 80.029392/-63.299103 | 35000 ft | XX:33:53 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 80.029392/-63.299103            | 35000 ft             | XX:33:53 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:34:00 | 2022-11-01 | 10:33:53 | AME1           |
| 79.930172/-60.068092 | 35000 ft | XX:38:14 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 79.930172/-60.068092            | 35000 ft             | XX:38:14 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:38:20 | 2022-11-01 | 10:38:14 | AME1           |
| 79.698257/-41.501884 | 35000 ft | XX:39:08 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 79.698257/-41.501884            | 35000 ft             | XX:39:08 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:39:30 | 2022-11-01 | 10:39:08 | AME1           |
| 79.892750/-59.149532 | 35000 ft | XX:39:30 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 79.892750/-59.149532            | 35000 ft             | XX:39:30 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:39:36 | 2022-11-01 | 10:39:30 | AME1           |
| 79.443340/-39.926376 | 35000 ft | XX:42:11 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 79.443340/-39.926376            | 35000 ft             | XX:42:11 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:42:18 | 2022-11-01 | 10:42:11 | AME1           |
| 79.693794/-49.662495 | 38992 ft | XX:42:54 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 79.693794/-49.662495            | 38992 ft             | XX:42:54 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:43:00 | 2022-11-01 | 10:42:54 | AME1           |
| 79.324722/-49.586105 | 35000 ft | XX:53:22 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 79.324722/-49.586105            | 35000 ft             | XX:53:22 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:53:28 | 2022-11-01 | 10:53:22 | AME1           |
| 79.117184/-42.658539 | 39000 ft | XX:53:36 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 79.117184/-42.658539            | 39000 ft             | XX:53:36 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:53:42 | 2022-11-01 | 10:53:36 | AME1           |
| 78.186951/-33.614902 | 35000 ft | XX:56:04 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 78.186951/-33.614902            | 35000 ft             | XX:56:04 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 10:56:10 | 2022-11-01 | 10:56:04 | AME1           |
| 78.917370/-40.732327 | 38996 ft | XX:56:46 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 78.917370/-40.732327            | 38996 ft             | XX:56:46 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 10:56:52 | 2022-11-01 | 10:56:46 | AME1           |
| 78.796520/-43.815193 | 35000 ft | XX:02:45 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 78.796520/-43.815193            | 35000 ft             | XX:02:45 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 11:02:58 | 2022-11-01 | 11:02:45 | AME1           |
| 78.508987/-41.265507 | 35000 ft | XX:07:14 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 78.508987/-41.265507            | 35000 ft             | XX:07:14 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 11:07:21 | 2022-11-01 | 11:07:14 | AME1           |
| 76.781044/-28.429356 | 35000 ft | XX:09:56 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 76.781044/-28.429356            | 35000 ft             | XX:09:56 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 11:10:03 | 2022-11-01 | 11:09:56 | AME1           |
| 77.904739/-33.062325 | 39000 ft | XX:10:38 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 77.904739/-33.062325            | 39000 ft             | XX:10:38 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 11:10:44 | 2022-11-01 | 11:10:38 | AME1           |
| 77.477818/-34.082336 | 35000 ft | XX:21:06 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 77.477818/-34.082336            | 35000 ft             | XX:21:06 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 11:21:13 | 2022-11-01 | 11:21:06 | AME1           |
| 75.297375/-24.266567 | 35000 ft | XX:23:48 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 75.297375/-24.266567            | 35000 ft             | XX:23:48 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 11:23:55 | 2022-11-01 | 11:23:48 | AOE6           |
| 76.723709/-26.690083 | 38996 ft | XX:24:30 | TCAS 1 | FOM 7 | NAVR 1 | TYP BASC: 76.723709/-26.690083            | 38996 ft             | XX:24:30 | TCAS 1   | FOM 7      | NAVR 1   | TYF 2022-11-01 | 11:24:36 | 2022-11-01 | 11:24:30 | AME1           |
| 76.264343/-27.959003 | 35000 ft | XX:34:59 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 76.264343/-27.959003            | 35000 ft             | XX:34:59 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 11:35:05 | 2022-11-01 | 11:34:59 | AME1           |
| 73.840656/-21.038818 | 35000 ft | XX:36:54 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 73.840656/-21.038818            | 35000 ft             | XX:36:54 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 11:37:08 | 2022-11-01 | 11:36:54 | AOE6           |
| 73.753452/-20.866642 | 35000 ft | XX:37:40 | TCAS 1 | FOM 6 | NAVR 1 | TYP BASC: 73.753452/-20.866642            | 35000 ft             | XX:37:40 | TCAS 1   | FOM 6      | NAVR 1   | TYF 2022-11-01 | 11:37:47 | 2022-11-01 | 11:37:40 | AOE6           |

Time Stamp, Location (latitude/longitude), Ground Station ID and so on.

# CRA JAPAN Case Study (as reported at IPACG/FIT35)

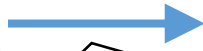


analysis



The area where poor PBCS performance of B789s were observed.





**JASMA**

Error in the PBCS under-performance processing

- FANS data link services to Inmarsat-equipped aircraft are applied south of 82N.
- PBCS-dependent separation to Inmarsat-equipped aircraft are applied at or south of 80N.
- PBCS under-performance data collection is being done for the airspace south of 82N, but it should only be done for the airspace at or south of 80N.
- Inmarsat-equipped aircraft do not need to meet PBCS performance requirements north of 80N because this airspace is too close to the limit of the Inmarsat satellite coverage and PBCS separation is not being applied to Inmarsat-equipped aircraft in this airspace. etc.

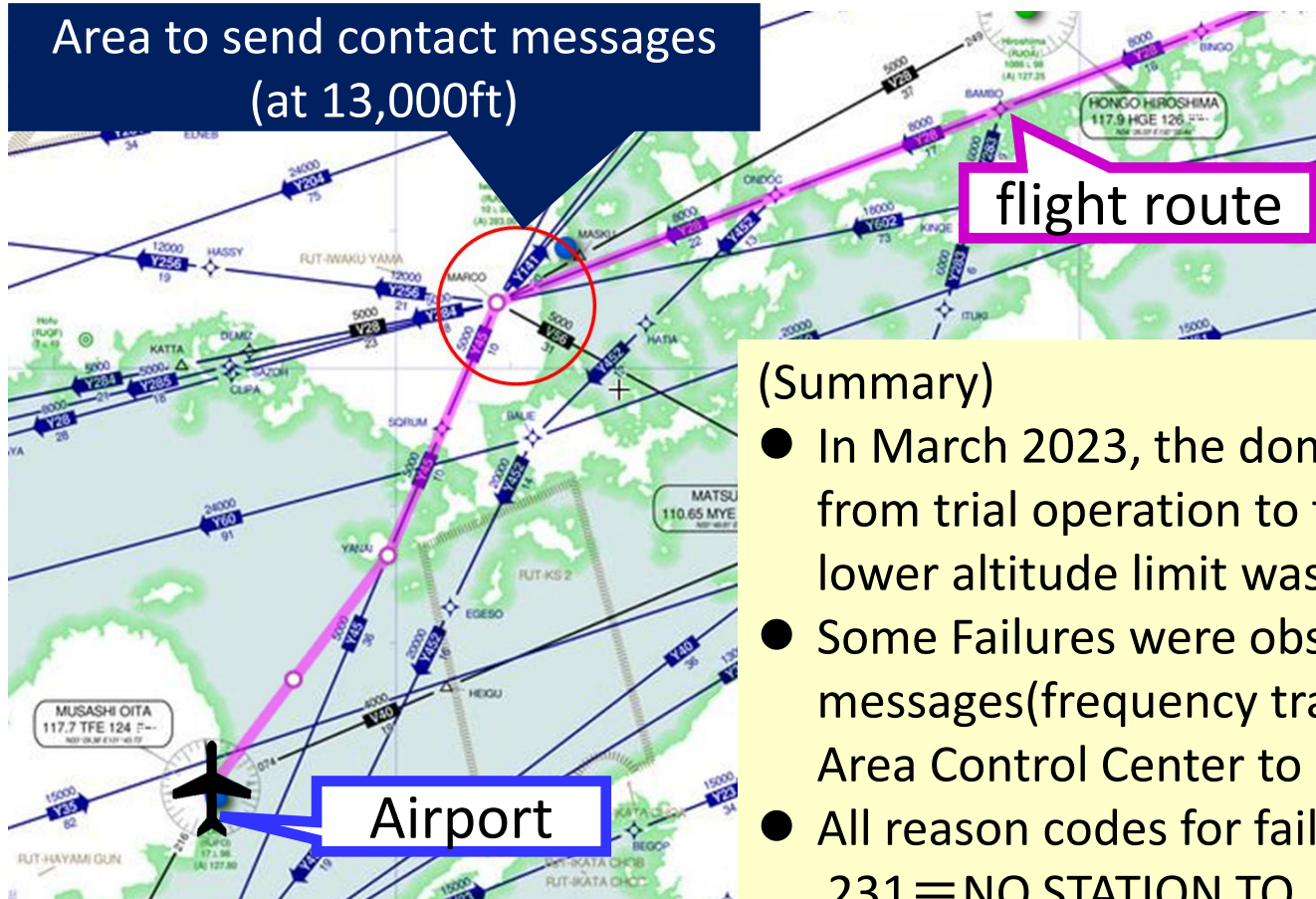
This case study shows that the PBCS Non-Compliance Report and sharing it to the designated EMA identify not only poor PBCS performance aircraft but also an error in PBCS monitoring conducted by the Air Navigation Service Providers (ANSPs).

# CASE STUDY 2



# CRA for Domestic CPDLC Case Study

Area to send contact messages  
(at 13,000ft)



## (Summary)

- In March 2023, the domestic CPDLC moved from trial operation to full operation, and the lower altitude limit was eliminated.
- Some Failures were observed in sending CPDLC messages(frequency transfer to approach) from Area Control Center to arriving aircrafts.
- All reason codes for failure are “231”  
231=NO STATION TO  
(No communicable ground station)

**CRA for Domestic CPDLC**

Request for  
Analysis





# CRA for Domestic CPDLC Case Study



Request for the grand stations data



## AVICOM JAPAN VHF Ground Stations List

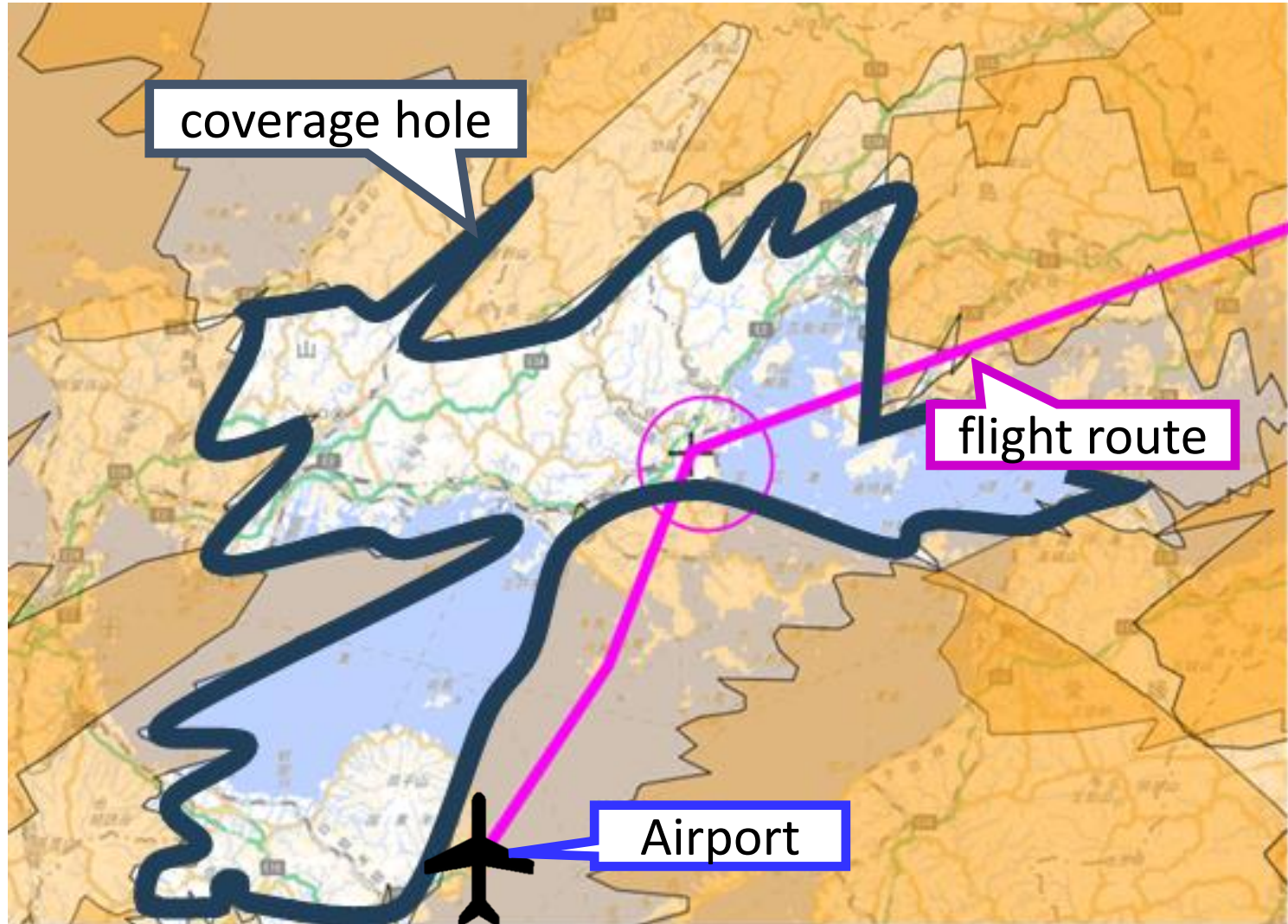
| No. | Station   | ID   | Identification Code  | Transmission Power | Frequency  | Antenna Location |    |    |          |    |    |                            |                         |
|-----|-----------|------|----------------------|--------------------|------------|------------------|----|----|----------|----|----|----------------------------|-------------------------|
|     |           |      |                      |                    | 136.975MHz | Longitude        |    |    | Latitude |    |    | height above sea level [m] | height above ground [m] |
| 11  | Yonago    | YGJV | AVICOM AIR YONAGO    | **W                | ○          | 133              | ** | ** | 35       | ** | ** | **.*                       | **.*                    |
| 12  | Izumo     | IZOV | AVICOM AIR IZUMO     | **W                | ○          | 132              | ** | ** | 35       | ** | ** | **.*                       | **.*                    |
| 13  | Kochi     | KCZV | AVICOM AIR KOCHI     | **W                | ○          | 133              | ** | ** | 33       | ** | ** | **.*                       | **.*                    |
| 14  | Fukuoka   | FUKV | AVICOM AIR FUKUOKA   | **W                | ○          | 130              | ** | ** | 33       | ** | ** | **.*                       | **.*                    |
| 15  | Fukue     | FUJV | AVICOM AIR FUKUE     | **W                | ○          | 128              | ** | ** | 32       | ** | ** | **.*                       | **.*                    |
| 16  | Miyazaki  | KMIV | AVICOM AIR MIYAZAKI  | **W                | ○          | 131              | ** | ** | 31       | ** | ** | **.*                       | **.*                    |
| 17  | Kagoshima | KOJV | AVICOM AIR KAGOSHIMA | **W                | ○          | 130              | ** | ** | 31       | ** | ** | **.*                       | **.*                    |

# CRA for Domestic CPDLC Case Study

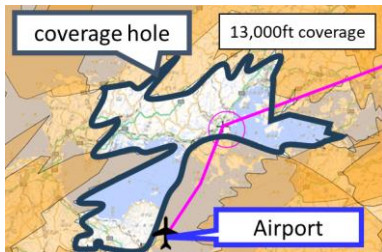


analysis

13,000ft coverage

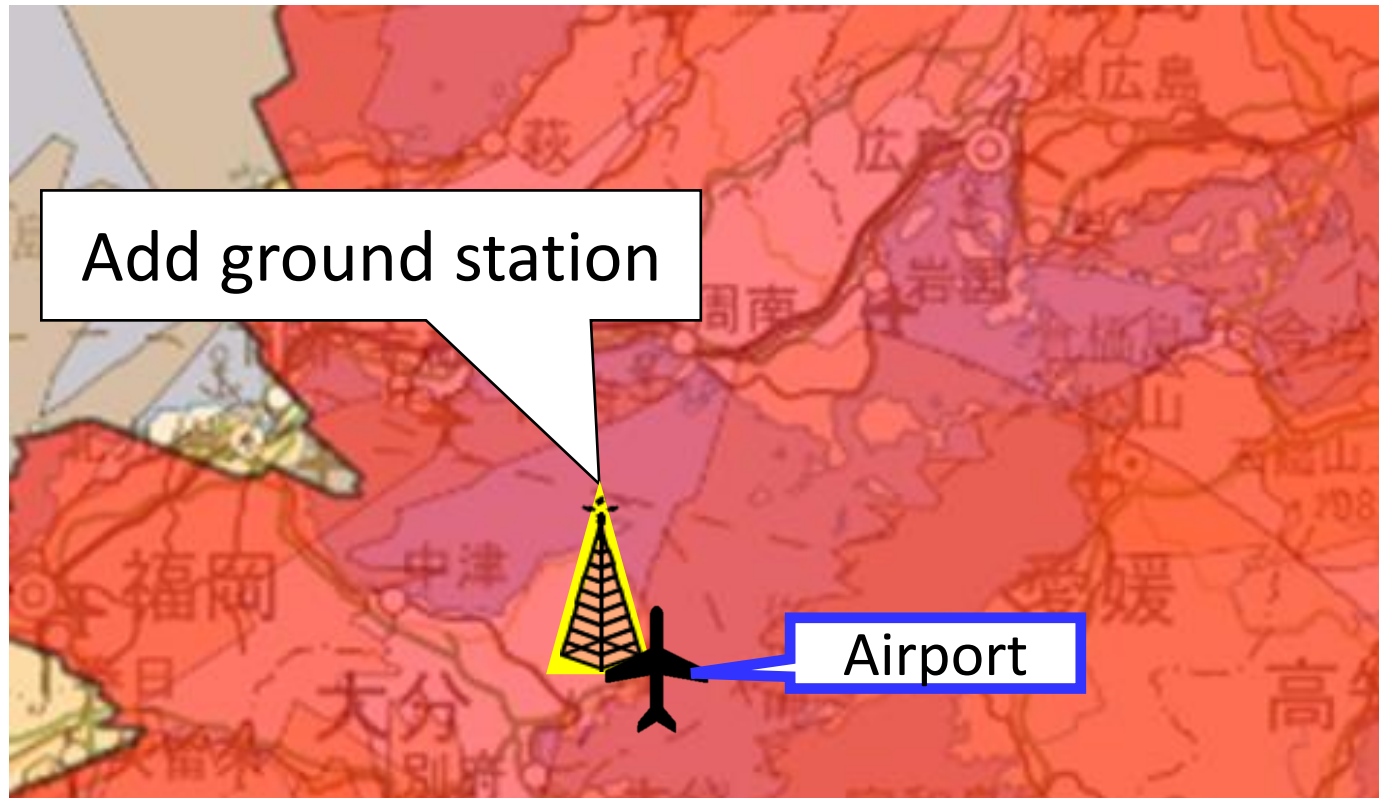


# CRA for Domestic CPDLC Case Study



**CRA for Domestic CPDLC**

consultation



Red indicates coverage of the additional ground station



# Thank you!



Technical Management  
Center



Network Performance  
Assessment Center



Fukuoka Area  
Control Center