

Summary of problem report

IPACG FIT/33
October 2020





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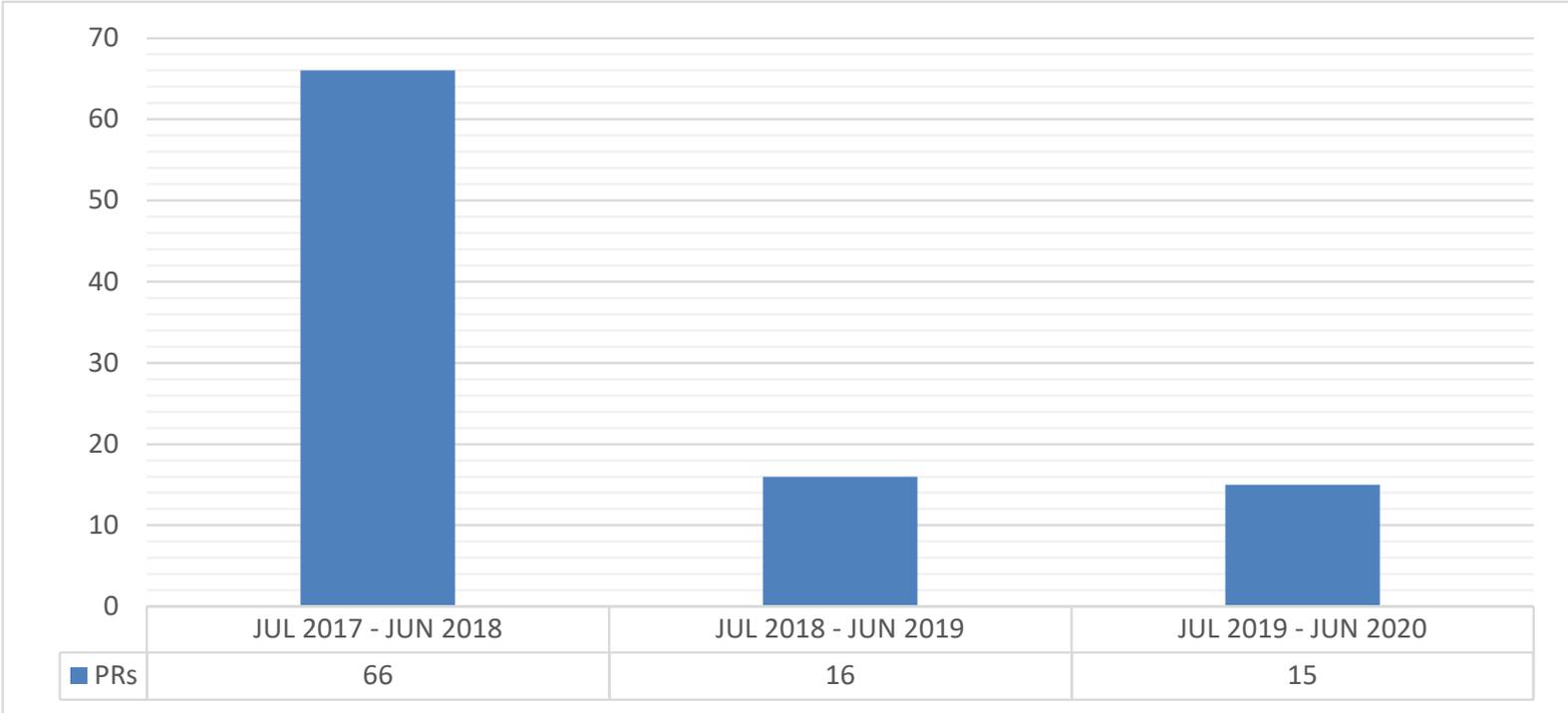
Outline of FANS Problem Reports



Number of Problem Reports

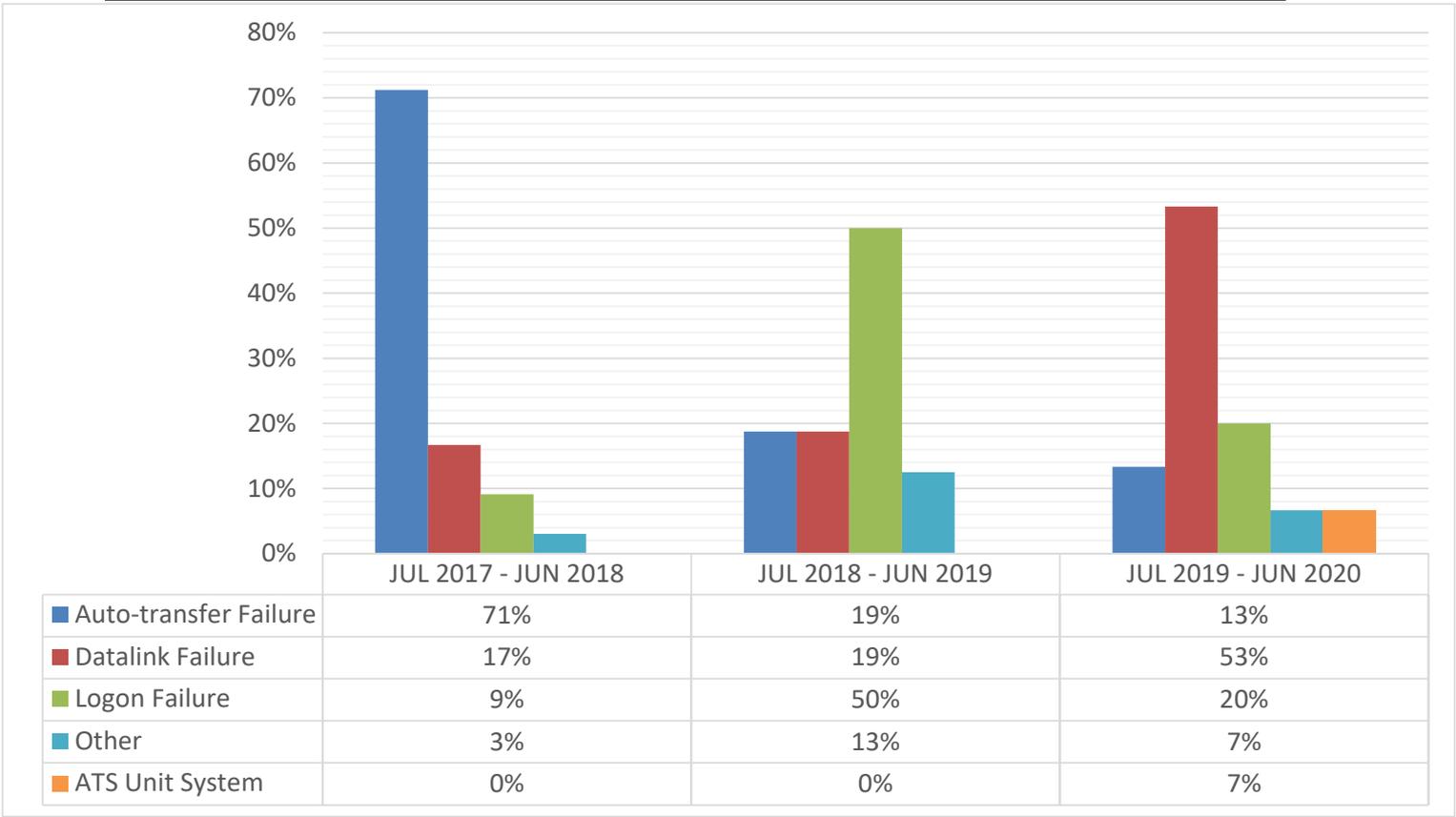
From July 2019 to June 2020, 15 Problem Reports were submitted to the CRA Japan.

13 of the 15 PRs are from airline operators, and the rest are from ANSP.



Problem classifications of PRs

Problem Classifications	Number	%
Auto-Transfer Failure	2	13%
Datalink Failure	8	53%
Logon Failure	3	20%
Other	1	7%
ATS Unit System	1	7%
TOTAL	15	100%





PRs by aircraft type

TYPE	Problem Classifications	SubTTL	TTL	%
B744	Other	1	1	7%
B748	Logon Failure	3	3	20%
B763	Auto-transfer Failure	1	3	20%
	Datalink Failure	1		
	Logon Failure	1		
B77W	Auto-transfer Failure	1	3	20%
	Datalink Failure	1		
	Logon Failure	1		
B789	Logon Failure	3	4	27%
	Datalink Failure	1		
Other	ATS Unit System	1	1	7%
GRAND TOTAL		15		100%



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Examples of new PRs

(1) Auto-Transfer Failure (#1347)

Reported by : Operator
Aircraft type : B763

We confirmed that NEXT CTR was “RJJJ” when we were in Oakland FIR. However, when entering Fukuoka FIR, Auto-transfer from Oakland to Fukuoka ATMC was not conducted. We initiated manual log off and log on to RJJJ, and then we could use CPDLC with Fukuoka ATMC.

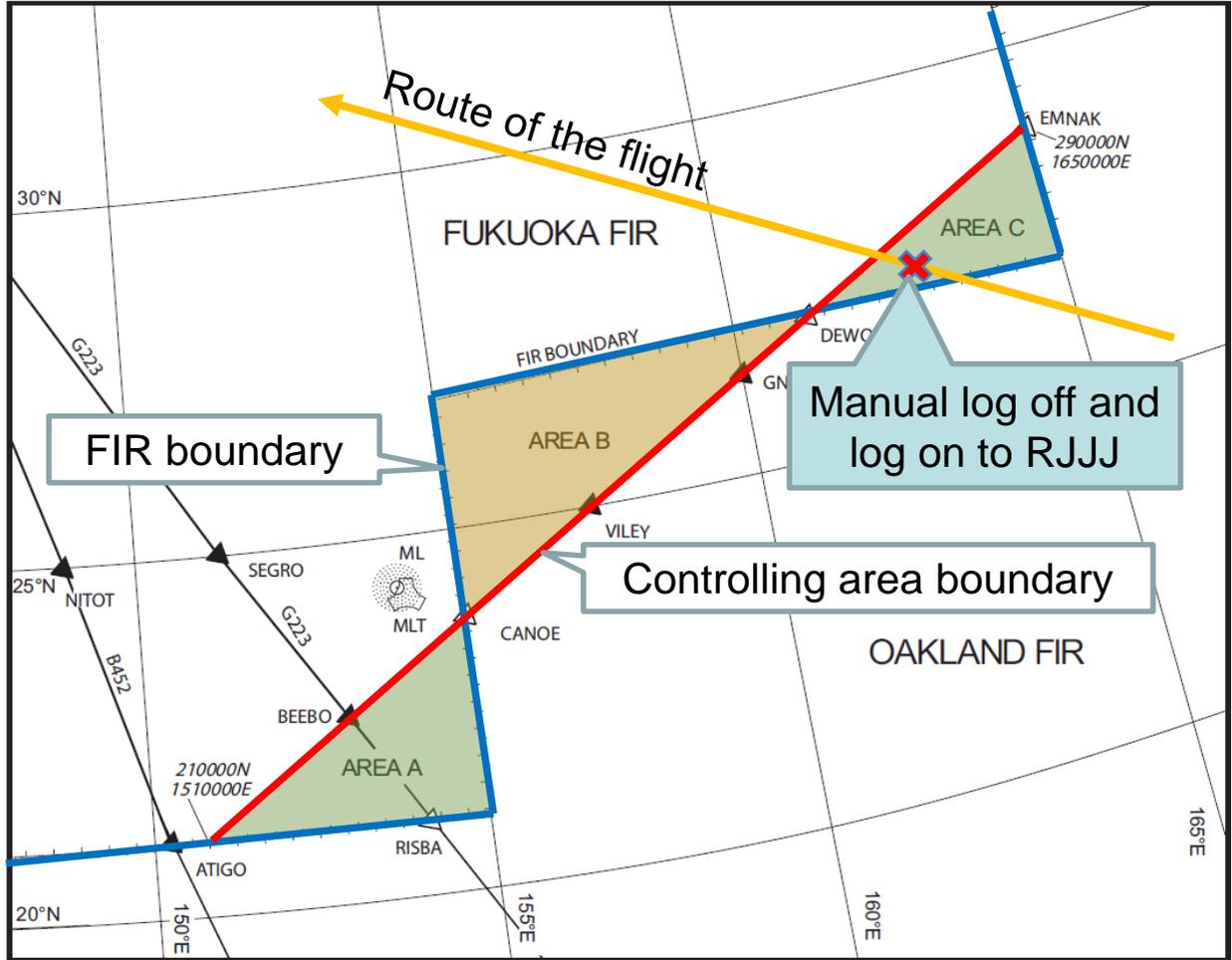
◆ STATUS : CLOSE

◆ Analysis :

- 40 minutes before the manual log off, the aircraft and Fukuoka ATMC established inactive CPDLC connection by address forwarding from Oakland ARTCC.
- The manual log off and log on to RJJJ was initiated after entering Fukuoka FIR. However, it was still in a controlling area of Oakland ARTCC.

(1) Auto-Transfer Failure (#1347)

The area involved in the transfer of ATS responsibility (AIP JAPAN ENR 2.2)



AREA A and C
Oakland ARTCC
provides ATC services
in Fukuoka FIR.

AREA B
Fukuoka ATMC
provides ATC services
in Oakland FIR.

Transfer of voice communication and current data authority is initiated at the controlling area boundary.

(1) Auto-Transfer Failure (#1347)



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- Transfer of voice communication and current data authority (i.e. END SERVICE from transferring ATS unit) is initiated at the controlling area boundary. (not at FIR boundary)
- END SERVICE message is sent from transferring ATS unit just before leaving its controlling airspace. Therefore, if manual log off was not initiated by the flight crew, the auto-transfer seemed to succeed.
- Note that transfer of current data authority is initiated at the controlling area boundary. Flight crews should keep a CPDLC connection with transferring ATS unit until the controlling area boundary. If RJJJ is not the active center, flight crews shall, within 3 minutes after crossing the controlling area boundary, terminate the CPDLC connection and log on to RJJJ.

(2) ATS unit system error (#1351)

Reported by : ATS unit

The cases where ground system sent “ERROR INVALID DATA” message (UM159) as a response to CPDLC position report (DM48) were found. The CPDLC position reports were composed with correct format. The number of the cases of each month in 2020 are as follows.

Jan-2020	57	May-2020	17
Feb-2020	29	Jun-2020	11
Mar-2020	58	Jul-2020	13
Apr-2020	10	Aug-2020	15

STATUS : OPEN

◆ Analysis :

- In JCAB system, “ERROR INVALID DATA” message is sent, when a ground end system detects a decode error in receiving CPDLC message.

(2) ATS unit system error (#1351)



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- From our investigation, a software problem of ground end system in which the ground system handles specific DM48 as decode error incorrectly was found.
- When the ground end system receives DM48 meeting following condition, “ERROR INVALID DATA” is sent due to the software problem.
 - Latitude and/or Longitude in “position current” parameter*¹ in the DM48 does not have “minutes” parameter *². (e.g. 4859.4N160E 49N15755.9E)
 - *¹ The “position current” parameter indicates current position, not reported waypoint.
 - *² The “minutes” parameter is optional item. When the minutes of latitude or longitude is equal to “00.0”, the aircraft system does not set the “minutes” parameter.
- CPDLC down link message which is detected decode error by ground system is discarded without indicating to controllers.
- When “ERROR INVALID DATA” is received as a response to CPDLC position report, reedit and resend the CPDLC position report. (Possibility of a recurrence is low, because the current position is changed by reedit.)
- This software problem will be fixed by March 2021.

(3) Misidentification of uplink message (#1352)

Reported by : ATS unit
Aircraft type: B744

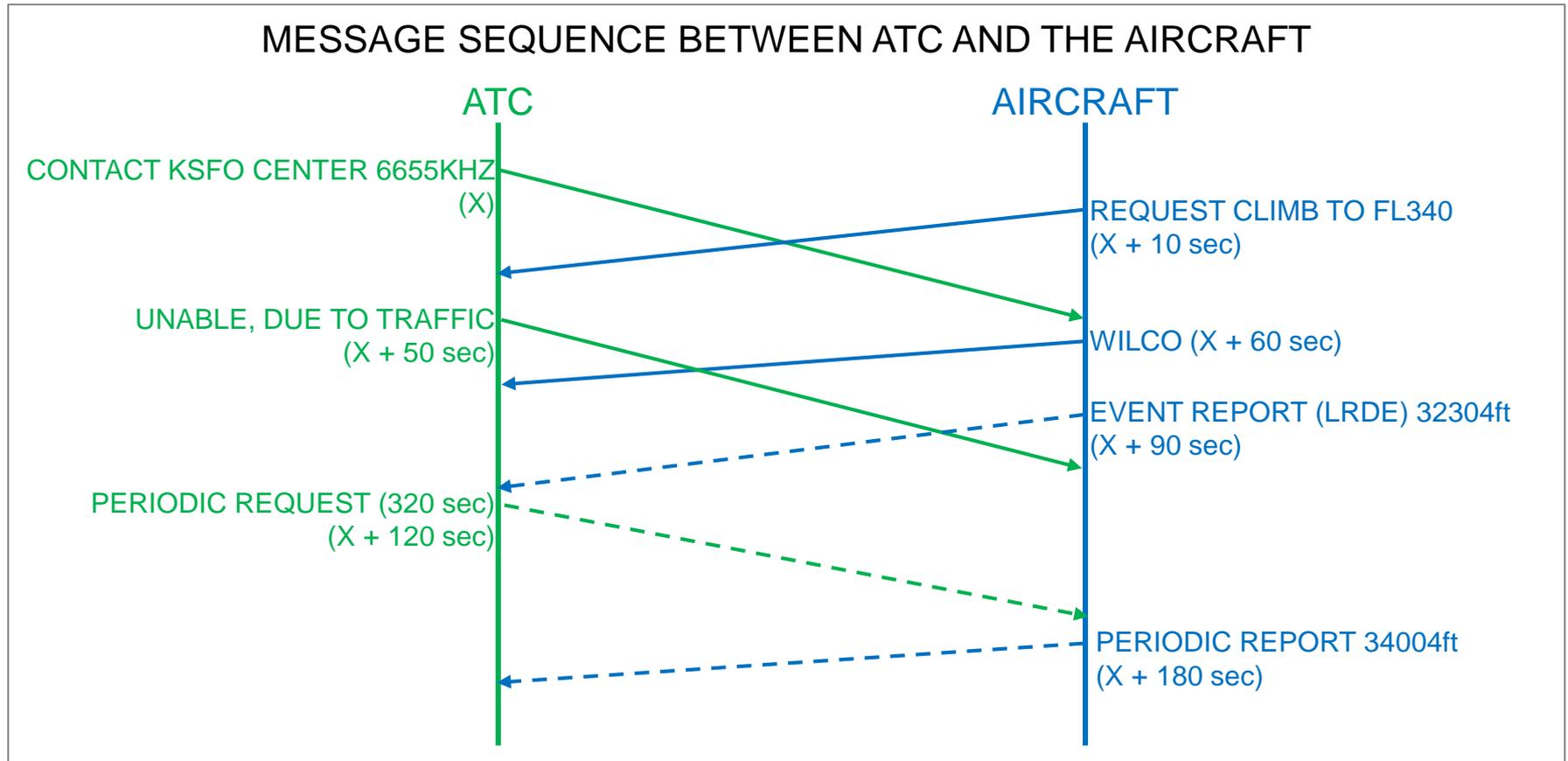
Controller received a request to climb to FL340 from aircraft entering Anchorage FIR immediately before FIR boundary. The controller respond to the request with “UNABLE” due to traffic. However, soon after that, the controller found that the aircraft were climbing by ADS-C report.

◆ STATUS : CLOSE

◆ Analysis :

- Just before receiving the request from the aircraft, a CPDLC message to contact San Francisco radio was sent to the aircraft from ground system.
- The flight crew misidentified the contact message as a climb clearance to FL340. Therefore, the flight crew commenced climb after sending WILCO to the contact message.

(3) Misidentification of uplink message (#1352)



- The misidentification was caused by receiving a CPDLC uplink message with response options “ACCEPT” and “REJECT” just after sending climb request. (Expectation Bias)

(3) Misidentification of uplink message (#1352)



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- Both flight crews and controllers should consider the difference between direct voice communication and CPDLC. All CPDLC messages take time to reach, unlike direct voice communication.
- To prevent a human error, cross check in flight crew members should be initiated when they receive CPDLC uplink message and respond to it.

ICAO Doc10037 (GOLD Manual)

Chapter 4 FLIGHT CREW PROCEDURES

4.1.2.3 Each flight crew member (e.g. pilot flying and pilot monitoring) should individually review each CPDLC uplink message prior to responding to and/or executing any clearance, and individually review each CPDLC downlink message prior to transmission. Reading a message individually is a key element to ensuring that each flight crew member does not infer any preconceived intent different from what is intended or appropriate. Reading the message aloud would bias the other flight crew member and could lead to the error of 'reading' what was read aloud as opposed to what was actually displayed.

4.1.2.4 Some uplink messages, such as complex or conditional clearances, require special attention to prevent the flight crew from responding to a clearance with RSPD-1 WILCO, but not complying with that clearance. To minimize errors, when responding to a clearance with RSPD-1 WILCO, each flight crew member should read the uplink message individually (silently) before initiating a discussion about whether and how to act on the message.



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Reporting address of PRs

E-mail : **cab-atmc-cra@gxb.mlit.go.jp**
(changed on January 2, 2020)

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JCAB Air Traffic Management Center