International Civil Aviation Organization

Twenty-Ninth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/29)

Bangkok, Thailand, 19 – 22 August 2024

Agenda Item 3: Reports from Asia/Pacific RMAs and EMAs

JASMA HOT SPOT IDENTIFICATION

(Presented by JASMA)

SUMMARY

This paper presents a process to consider whether current Hot Spots relating to Fukuoka Flight Information Region (FIR) should be identified and classified as Hot Spot.

1. INTRODUCTION

1.1 It was informed that the process of identifying and monitoring the Large Height Deviation (LHD) Hot Spots had been developed informally over several years at the Twenty-Sixth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/26).

1.2 The Monitoring Agency for Asia Region (MAAR) presented a draft process for identifying, monitoring and removing LHD Hot Spots for the Regional Monitoring Agencies (RMAs) and En-route Monitoring Agencies (EMAs) in the Asia Pacific region at the Ninth Meeting of the RASMAG Monitoring Agencies Working Group (RASMAG/MAWG/9) in February 2022. Results of the experiment on the proposed Hot Spot identification process were also discussed and agreed to conduct as a trial at the meeting.

1.3 The Japan Airspace Safety Monitoring Agency (JASMA) has joined the trial and presented the result of JASMA's analysis regarding current and former Hot Spots relating to the Fukuoka Flight Information Region (FIR) at the RASMAG meetings.

2. DISCUSSION

Number of LHDs

2.1 JASMA has monitored current Hot Spots, Hot Spot B (AKARA airspace) and Hot Spot D (FIR interface between Fukuoka and Manila FIRs), cautiously.

2.2 **Figure 1** shows the trend of the number of LHDs that occurred at Hot Spot B in the AKARA airspace, relating to the Fukuoka Area Control Center (ACC) from 2019 to 2023.

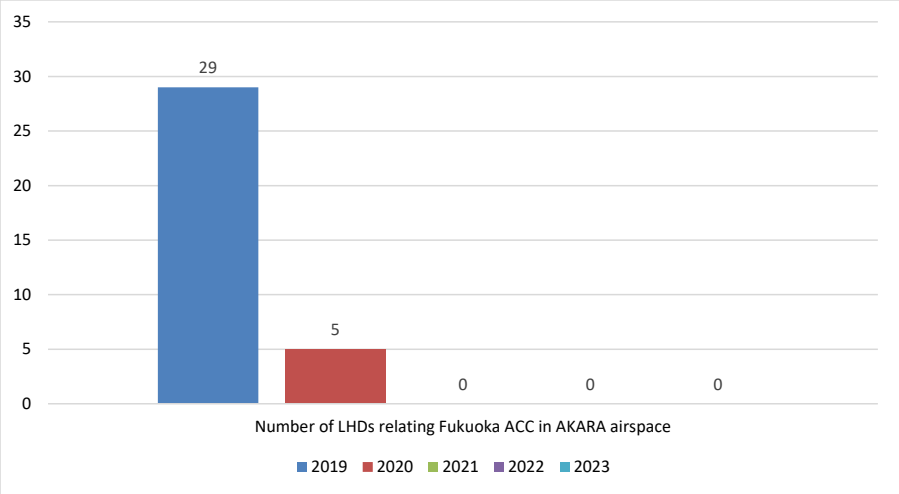

Figure 1: Number of LHDs relating to Fukuoka ACC at Hot Spot B

2.3 After Phase 1 implementation in the AKARA airspace on 25 March 2021, there has been no LHD reported to JASMA. The main reason is that transfer information has been exchanged by the ATS Interfacility Datalink Communications (AIDC) between Fukuoka ACC and Incheon ACC since Phase 1.

2.4 It was agreed to subdivide Hot Spot B into B1, B2 and B3 at the RASMAG/MAWG/11 meeting. The FIR boundary between Fukuoka and Incheon FIRs in the AKARA airspace was redefined as Hot Spot B3, and no LHD has been reported at Hot Spot B3 for more than two years since Phase 1 implementation.

2.5 **Figure 2** shows the trend of the number of LHDs that occurred at Hot Spot D, the FIR boundary between Fukuoka FIR and Manila FIR from 2019 to 2023.

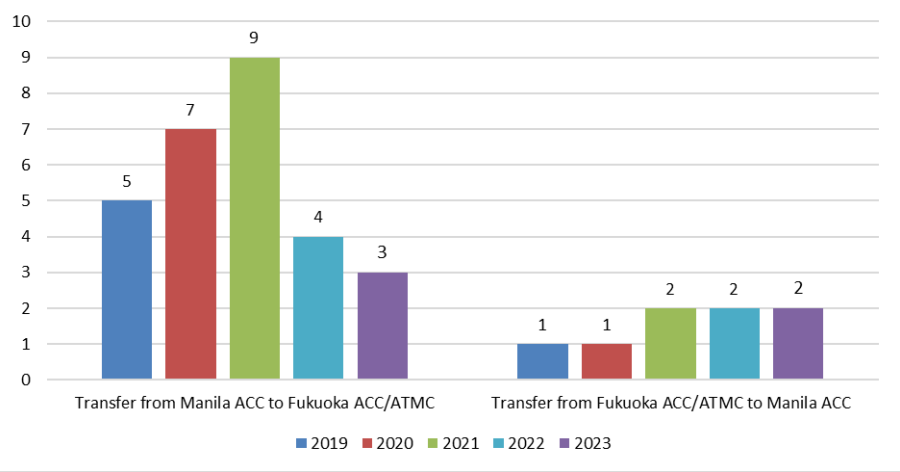

Figure 2: Number of LHDs at Hot Spot D (Fukuoka – Manila FIRs)

2.6 The number of LHD occurrences due to transfer errors from Manila ACC to Fukuoka ACC or the Fukuoka Air Traffic Management Center (ATMC) shows a decreasing trend in the recent two years. The bilateral meetings between Fukuoka and Manila ACCs, which started in December 2022, would contribute to the mitigation of transfer errors.

2.7 The number of LHDs due to transfer errors from Fukuoka ACC/ATMC to Manila ACC has kept one or two occurrences a year for the past five years. Hot Spot D is also split into D1 to D9, and the FIR interface of Fukuoka and Manila FIRs is renamed D1.

Number of Clusters

2.8 **Figure 3** through **Figure 7** show the LHD cluster maps identified in Fukuoka FIR from 2019 to 2023. The filled blue square symbols represent the LHD location in the RVSM stratum of Fukuoka FIR. The filled circle size means an LHD duration of 50 seconds or more. The circles and ellipses colored in light blue mean LHD clusters identified by JASMA.

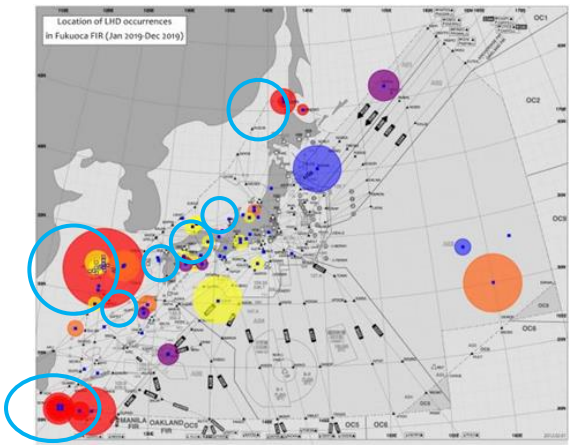

Figure 3: LHD cluster map in 2019 (7 clusters)

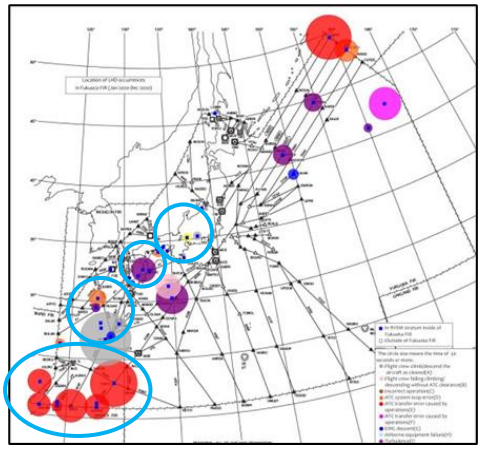

Figure 4: LHD cluster map in 2020 (4 clusters)

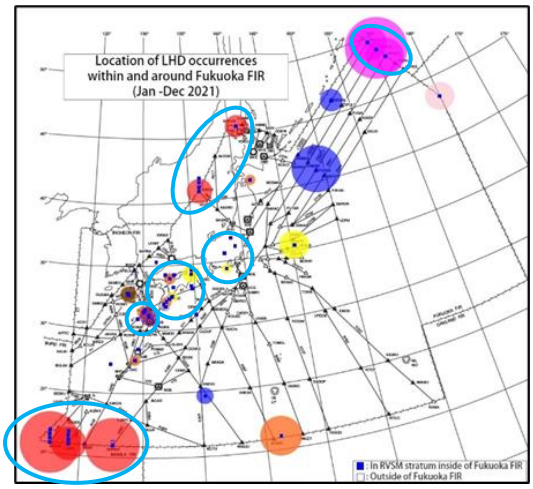

Figure 5: LHD cluster map in 2021 (6 clusters)

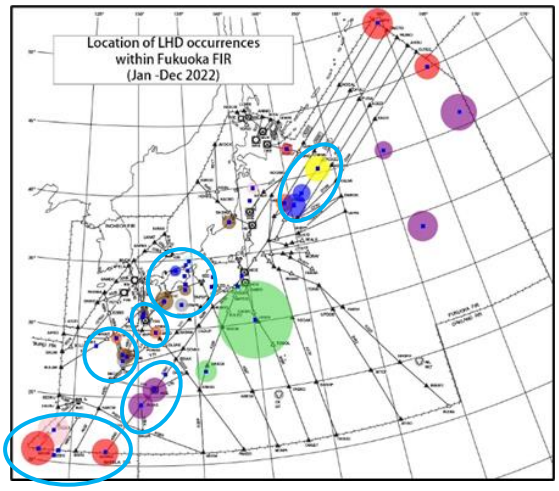

Figure 6: LHD cluster map in 2022 (6 clusters)

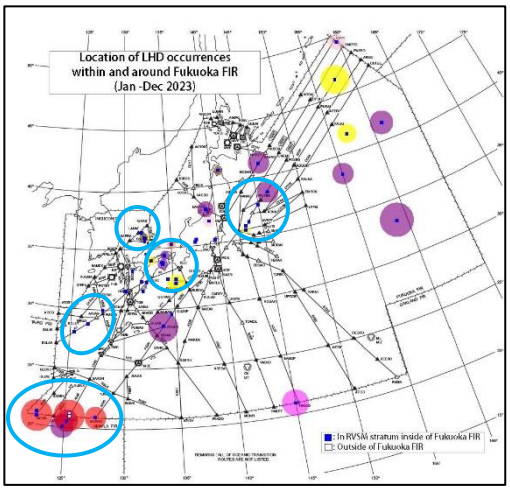

Figure 7: LHD cluster map in 2023 (5 clusters)

Hot Spot B3 Analysis

2.9 **Table 1** represents the "Number of Clusters" in **Figure 3** through **Figure 7**, "Number of LHDs" and "Operational Risk" in Fukuoka FIR from 2019 to 2023. Criteria of "Number of LHDs" and "Risk Estimates" are calculated by the draft process MAAR developed.

Fukuoka FIR	2019	2020	2021	2022	2023
Number of Clusters	7	4	6	6	5
Number of LHDs	64	42	56	45	49
Operational Risk ($x10^{-9}$ FAPFH)	11.04	11.38	9.35	4.67	2.09
Criteria: Number	8.00	8.40	8.00	6.43	8.17
Criteria: Risk Estimate ($x10^{-9}$ FAPFH)	1.38	2.28	1.34	0.67	0.35
Criteria: TLS ($x10^{-9}$ FAPFH)	5.00	5.00	5.00	5.00	5.00

Table 1: LHD profiles and Hot Spot criteria of Fukuoka FIR from 2019 to 2023

2.10 **Table 2** represents the results of the analysis and consideration for Hot Spot B3. "Negative" means under the Hot Spot criteria and "Positive" means over the criteria.

Hot Spot B3 (Fukuoka - Incheon FIRs)	2019	2020	2021	2022	2023
Number of LHDs	29	5	0	0	0
Criteria: Number	8.00	8.40	8.00	6.43	8.17
Hot Spot Risk (x10-9 FAPFH)	(Before Phase 1)	(Before Phase 1)	0.00	0.00	0.00
Criteria: Risk Estimate ($x10^{-9}$ FAPFH)	(Before Phase 1)	(Before Phase 1)	1.34	0.67	0.35
Criteria: TLS ($x10^{-9}$ FAPFH)	5.00	5.00	5.00	5.00	5.00
Result and Action by RASMAG meeting	Continue Monitoring (RASMAG/25 in 2020)	Continue Monitoring (RASMAG/26 in 2021)	Continue Monitoring (RASMAG/27 in 2022)	Continue Monitoring (RASMAG/28 in 2023)	Remove from Hot Spot list (RASMAG/29 in 2024)
			Legend:	*Positive*	*Negative*

Table 2: Results of analysis and consideration on Hot Spot B

2.11 The number of LHDs at Hot Spot B3 has kept zero since Phase 1 implementation in the AKARA airspace. Therefore, Hot Spot B3 will be removed from the Hot Spot list at this RASMAG/29 meeting.

Hot Spot D1 Analysis

2.12 **Table 3** represents the results of the analysis and consideration for Hot Spot D1, the FIR boundary between Fukuoka and Manila FIRs. The number of LHDs in 2023 did not meet the criteria. However, the Hot Spot Risk in 2023 was 0.70×10^{-9} and exceeded the criteria of 0.35×10^{-9}. JASMA's analysis shows the area should be treated and managed as Hot Spot as well as MAAR's result.

Hot Spot D1 (Fukuoka - Manila FIRs)	2019	2020	2021	2022	2023
Number of LHDs	5	7	9	4	3
Criteria: Number	8.00	8.40	8.00	6.43	8.17
Hot Spot Risk (x10-9 FAPFH)	4.70	3.85	5.95	1.70	0.70
Criteria: Risk Estimate ($x10^{-9}$ FAPFH)	1.38	2.28	1.34	0.67	0.35
Criteria: TLS ($x10^{-9}$ FAPFH)	5.00	5.00	5.00	5.00	5.00
Result and Action by RASMAG meeting	Continue Monitoring (RASMAG/25 in 2020)	Continue Monitoring (RASMAG/26 in 2021)	Continue Monitoring (RASMAG/27 in 2022)	Continue Monitoring (RASMAG/28 in 2023)	Continue Monitoring (RASMAG/29 in 2024)
			Legend:	*Positive*	*Negative*

Table 3: Results of analysis and consideration on Hot Spot D1

Review

2.13 As JASMA's results indicate, this procedure for Hot Spot analysis is beneficial for RMAs/EMAs to manage Hot Spots even though conducting detailed consideration and discussion, such as definition and standard of identifying a cluster or fluctuation of traffic volume, might be ideal.

2.14 JASMA would like to express our appreciation that MAAR developed and shared the valuable scheme for managing Hot Spots and supported JASMA's analysis and consideration.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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