International Civil Aviation Organization

Thirty-First Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/31)

Bangkok, Thailand, 29 June – 03 July 2026

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

JASMA HORIZONTAL SAFETY REPORT

(Presented by JASMA)

SUMMARY

This paper presents the results of the horizontal safety assessment of the Pacific Ocean airspace in the Fukuoka Flight Information Region (FIR) for the period January 2025 to December 2025.

1. INTRODUCTION

1.1 This paper provides the horizontal risk assessment results of the Pacific Ocean airspace of Fukuoka Flight Information Region (FIR), which was conducted by the Japan Airspace Safety Monitoring Agency (JASMA). In this paper, the risk estimation results of the following four horizontal separation standards are reported. Since 25 January 2024, additionally 23 NM lateral separation was implemented in North Pacific (NOPAC) Route System.

a) 50 NM lateral separation

b) 25 NM lateral separation

c) 10 minutes Time-based longitudinal separation (without Mach number technique)

d) 30 NM Distance-based longitudinal separation (PBCS and RNP4)

2. DISCUSSION

2.1 Regarding the calculation methods and parameters used, please refer to **Appendix A** to this paper.

Executive Summary

2.2 **Table 1** provides the North Pacific Ocean airspace horizontal risk estimates. **Figure 1** presents the lateral and longitudinal collision risk estimate trends for the North Pacific Ocean airspace of Fukuoka FIR during the period from January 2025 to December 2025.

Table 1. North Pacific Ocean Airspace Horizontal Risk Estimates

North Pacific Ocean Airspace – estimated annual flying hours = 1,884,750 hours *(note: estimated hours based on Jan 2025 to Dec 2025 traffic sample data)*			
Source of Risk	**Risk Estimation**	**TLS**	**Remarks**
RASMAG 30 50 NM Lateral Risk	*2.25×10^{-9}*	*5.0×10^{-9}*	*Below TLS*

North Pacific Ocean Airspace – estimated annual flying hours = 1,884,750 hours *(note: estimated hours based on Jan 2025 to Dec 2025 traffic sample data)*			
Source of Risk	**Risk Estimation**	**TLS**	**Remarks**
RASMAG 30 25 NM Lateral Risk	*0.78 x 10^{-9}*	*5.0 x 10^{-9}*	*Below TLS*
RASMAG 30 10 MIN Time-Based Longitudinal Risk	*0.22 x 10^{-9}*	*5.0 x 10^{-9}*	*Below TLS*
RASMAG 30 30 NM Distance-based Longitudinal Risk	*0.016 x 10^{-9}*	*5.0 x 10^{-9}*	*Below TLS*
50 NM lateral Risk	**0.26 x 10^{-9}**	5.0 x 10^{-9}	**Below TLS**
25 NM lateral Risk	**0.12 x 10^{-9}**	5.0 x 10^{-9}	**Below TLS**
10 MIN Time-based Longitudinal Risk	**0.22 x 10^{-9}**	5.0 x 10^{-9}	**Below TLS**
30 NM Distance-based Longitudinal Risk	**0.029 x 10^{-9}**	5.0 x 10^{-9}	**Below TLS**

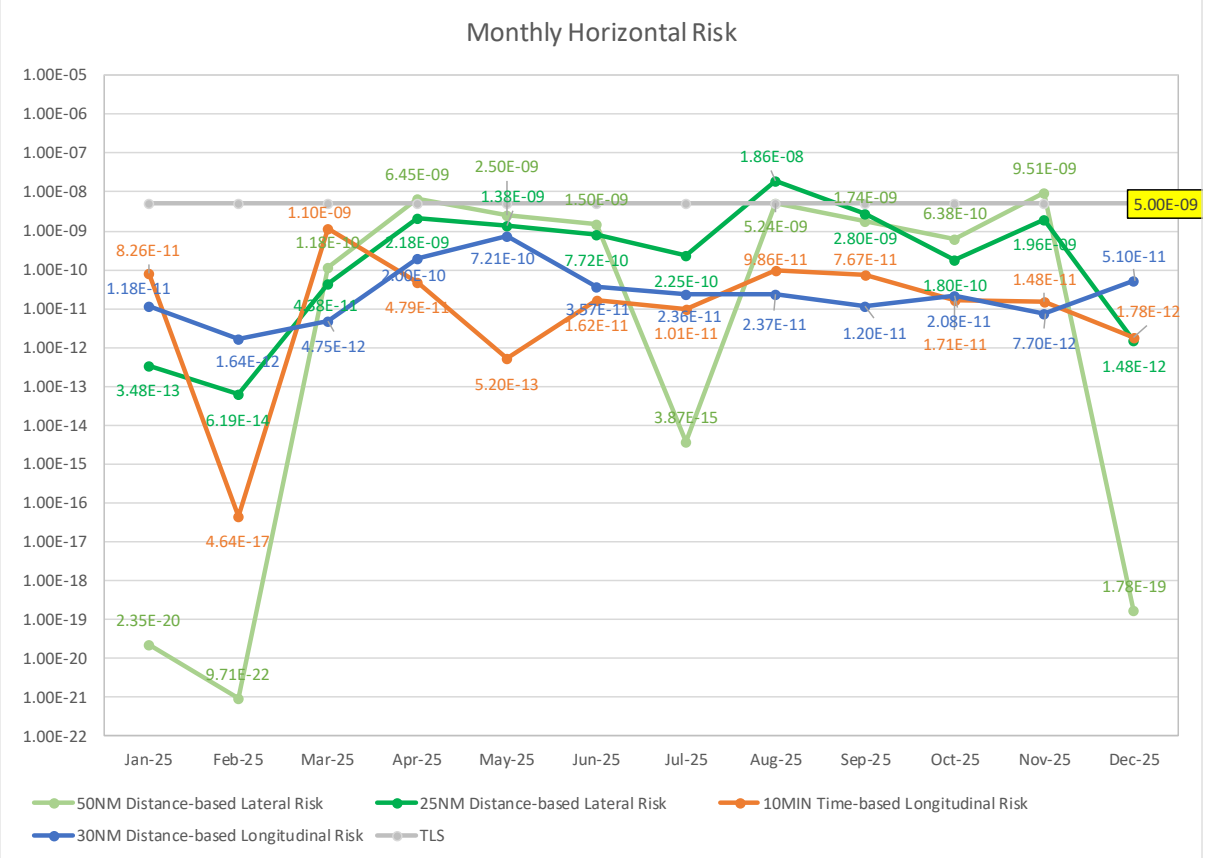

Figure 1. North Pacific Ocean Airspace Horizontal Risk Estimate

2.3 **Table 2** contains a summary of Large Lateral Deviation (LLD) and Large Longitudinal Errors (LLE) received by JASMA for the North Pacific Ocean airspace in Fukuoka FIR from January 2025 until December 2025.

Table 2. Summary of North Pacific Ocean Airspace LLD and LLE Reports

Code	Deviation Description	No.
A	Flight crew deviates without ATC clearance in the horizontal dimension	13

Code	Deviation Description		No.
B	Flight crew incorrect operation or interpretation of airborne equipment		11
C	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position		4
D	ATC system loop error		2
E	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues Sub-Category:		5
	E-NT: No Transfer or Negative Transfer	0	
	E-LT: Late Transfer	0	
	E-RI: No or Late Revision of Transfer Information	2	
	E-OT: Any Other Types	3	
F	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of equipment outage or technical issues		0
G	Navigation errors due to airborne equipment failure leading to a deviation in the horizontal dimension of which notification was not received by ATC or notified too late for action		0
H	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension;		3
I	An aircraft was provided with reduced horizontal separation minima but did not meet the RNP/RSP/RCP specification		0
J	Others		6
R	GNSS Radio Frequency Interference		0
Total			44

2.4 In 2025, Category A incidents accounted for the highest number, rising significantly from two in 2024 to 13. The number of Category B incidents, the second highest, also increased from eight in 2024 to 11. In 2025, there was an increase in operational errors by flight crew.

2.5 **Figure 2** provides the geographic location of LLD and LLE reports in the Pacific Ocean airspace within Fukuoka FIR during the assessment period. The filled blue square symbols represent the LLD location within Fukuoka FIR, and the filled green square symbols represent the LLE location within Fukuoka FIR. The circle size means an LLD or LLE duration of 50 seconds or more.

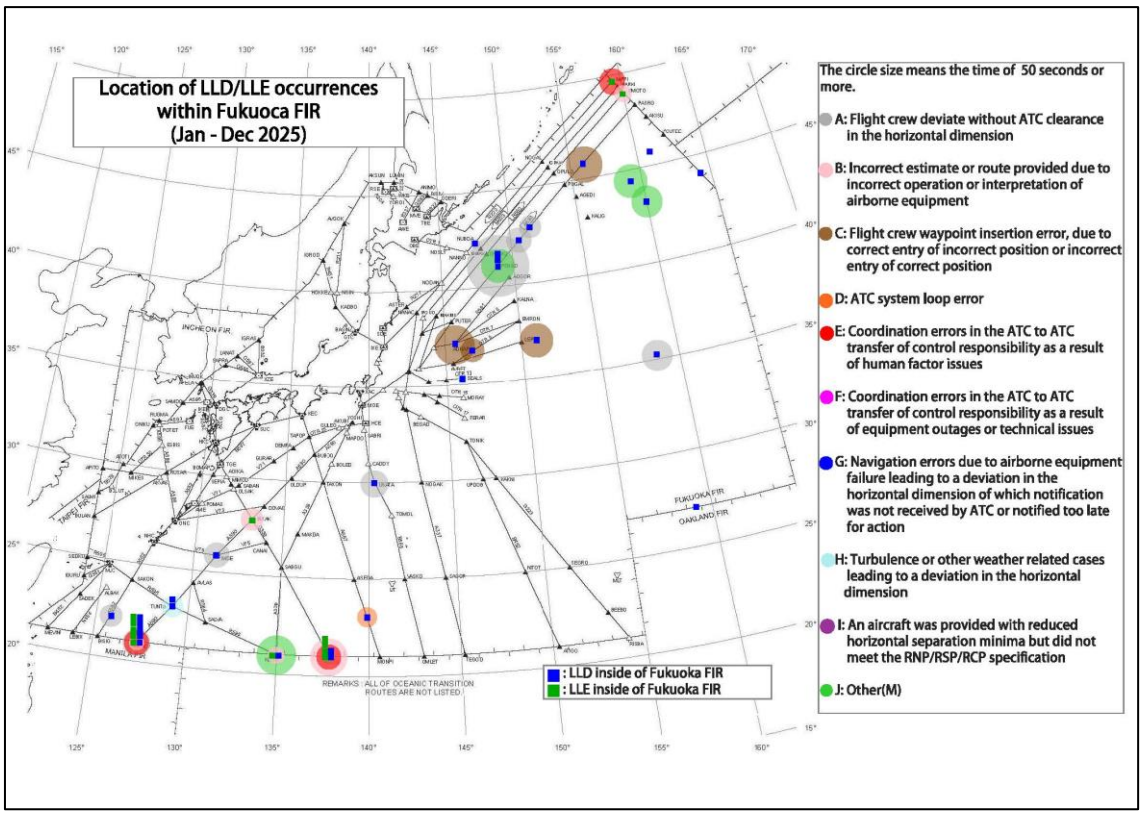

Figure 2. Geographical Location of LLDs &LLEs within Fukuoka FIR

2.6 At GURAG, which forms the boundary with the Manila FIR, there were five LLDs and five LLEs, representing an increase compared to the figures for 2024, when there were zero LLD and two LLE.

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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APPENDIX A

1. COLLISION RISK FOR 25 NM / 50 NM ATC LATERAL SEPARATION

1.1 The North Pacific (NOPAC) Route System was comprised of five Air Traffic Service (ATS) routes that transit the North Pacific between Alaska and Japan until 22 February 2023. Two ATS routes, R591 and G334 were shortened or removed on 23 February 2023.

1.2 The M523 was established on 25 January 2024 between the R220 and R580. The new M523 was established as a westbound route and R580 was changed from a westbound route to an eastbound route. The spacing between the R220 and the M523 and the spacing between the M523 and the R580 are both 25 NM.

1.3 R591 was shortened until ADGOR on 23 February 2023. However, waypoints, AGEDI and AKISU remain, and aircraft can fly those waypoints as the Pacific Organized Track System (PACOTS) route or the User Preferred Route (UPR).

1.4 G334 was also abolished on 23 February 2023, and waypoints, KALIG and CUTEE are used for PACOTS and UPR as well.

1.5 As of December 2025, the NOPAC route consists of two westbound routes, R220 and M523, and two eastbound routes, R580 and R590, for a total of four routes.

1.6 50 NM section of NOPAC Passing Frequencies are shown in **Table 1**. Since waypoints for former R591 and G344 remain and can be used, the flight hours and passing frequencies are calculated by each segment.

		Flight Hours		Passing Frequencies				Flight Hours		Passing Frequencies		
Airways	Segment	East Bounds	West Bounds	Same East Bounds	Same West Bounds	Opposite Direction	Segment	East Bounds	West Bounds	Same East Bounds	Same West Bounds	Opposite Direction
R220	NUBDA - NOGAL		6325.1				NOGAL - NIPPI		6501.2			
						2227.0						2505.0
R580	ONEMU - OPULO	6357.6					OPURO - OMOTO	5788.6				
				72.0						52.5		
A590	POXED - PUGAL	17872.3					PUGAL - PASRO	17907.8				
				29.0		398.0				18.0		723.5
(R591)	ADGOR - AGEDI	2367.0	4561.9				AGEDI - AKISU	2220.7	2348.2			
				0.0		45.0				0.0	0.0	57.0
(G344)	KALNA - KALIG	2056.7	993.4				KALIG - CUTEE	1988.3	1030.3			

Table 1. Flight Hours and Passing Frequencies (50 NM)

1.7 25 NM section of NOPAC Passing Frequencies are shown in **Table 2**.

		Flight Hours		Passing Frequencies				Flight Hours		Passing Frequencies		
Airways	Segment	East Bounds	West Bounds	Same East Bounds	Same West Bounds	Opposite Direction	Segment	East Bounds	West Bounds	Same East Bounds	Same West Bounds	Opposite Direction
R220	NUBDA - NOGAL		33033.9				NOGAL - NIPPI		31738.4			
					55.0						33.0	
M523	ISMAV - IGPAK		3438.0				IGPAK - HARKI		3369.0			
						440.0						519.0
R580	ONEMU - OPULO	3659.9					OPULO - OMOTO	4243.8				

Table 2. Flight Hours and Passing Frequencies (25NM)

1.8 On the westbound section of Route R220, traffic volume over the 25 NM section is approximately six times that of the 50NM section. Traffic volume on M523 remains low, at around 10% of that on R220. Consequently, the frequency of encounters over the 25NM section is lower than that over the 50 NM section, standing at approximately 20% of the latter.

1.9 On the eastbound section of the R580, traffic volume over a 25 NM stretch is approximately 58% of that over a 50 NM stretch. However, the majority of eastbound traffic uses the A590. Traffic volume on the A590 over a 50 NM stretch is approximately three times that of the R580.

1.10 Both the westbound and eastbound sections of the former R591 also have relatively heavy traffic, and the frequency of vehicles passing each other between A590 and the former R591 has increased compared to 2024.

1.11 **Table 3** shows the estimated lateral collision risk in the NOPAC area for the 50 NM section. **Table 4** also shows the estimated lateral collision risk in the NOPAC area for the 25 NM segment. The total risk estimates were below the TLS. The reason why the risk value for the 25 NM section was lower than that for the 50 NM section is thought to be due to the lower traffic volume on the M523.

Source of Risk	Risk Estimation
N_{ay} (same)	0.02×10^{-9}
N_{ay} (opposite)	0.25×10^{-9}
N_{ay} (total)	0.26×10^{-9}

Table 3. NOPAC Lateral Collision Risk Estimation (50 NM)

Source of Risk	Risk Estimation
N_{ay} (same)	0.02×10^{-9}
N_{ay} (opposite)	0.10×10^{-9}
N_{ay} (total)	0.12×10^{-9}

Table 4. NOPAC Lateral Collision Risk Estimation (25 NM)

2. Consideration for LLDs and LLEs

2.1 **Appendix B** contains the details of the 24 LLDs/LLEs that occurred in the Pacific Ocean airspace within Fukuoka FIR, which were reported to JASMA during the assessment period.

2.2 **Appendix C** provides the geographic location of LLD and LLE reports in the Pacific Ocean airspace within and around Fukuoka FIR during the assessment period in 2025. The filled blue square symbols represent the LLD location in Fukuoka FIR, and the hollow blue square symbols represent the LLD location outside of Fukuoka FIR. The filled green square symbols represent the LLE location in Fukuoka FIR, and the hollow green square symbols represent the LLE location outside of Fukuoka FIR. The circle size means an LLD or LLE duration of 50 seconds or more.

3. Risk Assessment

3.1 The calculation methods and parameters used are following;

1) Using the longitudinal overlapping probability, the collision risk is estimated by the following formula (1)

$$N_{ax} = P_y(0) \cdot P_z(0) \cdot \frac{2\lambda_x}{|\dot{x}|T}\left(\frac{\overline{|\dot{x}|}}{2\lambda_x} + \frac{\overline{|\dot{y}(0)|}}{2\lambda_y} + \frac{\overline{|z(0)|}}{2\lambda_z}\right)\sum E_x(t)P_x(t) \qquad (1)$$

The individual parameters for equation (1) and their definitions are given in **Table 5**.

Parameter Symbol	Parameter Definition	Parameter Value	Source for Value
Py(0)	Probability that two aircraft on the same track are in lateral overlap	0.809	JASMA (2025)
Pz(0)	Probability of vertical overlap in operational risk estimation for the aircraft flying as a same flight level	0.55	Doc 10063 Appendix F Table F-5
$\overline{\lvert\dot{y}(0)\rvert}$	The average relative speed between two aircraft, across track.	1 kt	EMA handbook
$\overline{\lvert\dot{z}(0)\rvert}$	Average vertical speed of aircraft pairs	1.5 kt	ICAO SASP safety assessment
λx	Average aircraft length	0.0366 nm	JASMA (TSD of NOPAC in 2025)
λy	Average aircraft width	0.0341 nm	JASMA (TSD of NOPAC in 2025)
λz	Average aircraft height	0.0098 nm	JASMA (TSD of NOPAC in 2025)
T	The average time to fly the segment.	0.70 h	ICAP data (NOPAC)
$E_x(t)$	The proportion of aircraft initial separation		
$P_x(t)$	The probability of the loss of longitudinal separation.		

Table 5. Parameters in Equation

2) The formulas of the lateral collision risk model used in assessing the safety of operation on NOPAC routes are:

$$N_{ay}(same) = P_z(0)P_y(S_y)\frac{2\lambda_x}{\overline{|\Delta V|}}N_x^y(same)\left[\frac{\overline{|\Delta V|}}{2\lambda_x}+\frac{\overline{|\dot{y}|}}{2\lambda_y}+\frac{\overline{|\dot{z}|}}{2\lambda_z}\right] \quad (2)$$

$$N_{ay}(opposite) = P_z(0)P_y(S_y)\frac{2\lambda_x}{2\overline{|V|}}N_x^y(opp)\left[\frac{2\overline{|V|}}{2\lambda_x}+\frac{\overline{|\dot{y}|}}{2\lambda_y}+\frac{\overline{|\dot{z}|}}{2\lambda_z}\right] \quad (3)$$

$$N_{ay} = N_{ay}(same) + N_{ay}(opposite) \quad (4)$$

3) **Table 6** summarizes the value and source material for estimating the parameter values of the following Collision Risk Model (CRM) used to conduct safety oversight for the RNP 10 based 50 NM lateral separation minimum of NOPAC routes.

Parameter Symbol	Parameter Definition	Parameter Value	Source for Value
$\overline{\lvert V\rvert}$	Individual-aircraft along track speed	480 kt	Doc 10063 Appendix F Table F-5
$\overline{\lvert\Delta V\rvert}$	Average along track speed of aircraft pairs	28.9 kt	Kushiro Air Route Surveillance Radar data (R220 of NOPAC, Apr. 1994)
$\overline{\lvert\dot{y}\rvert}$	Average cross track speed of aircraft pairs	36 kt	Doc 10063 Appendix F F.2.4
$\overline{\lvert\dot{z}\rvert}$	Average vertical speed of aircraft pairs	1.5 kt	Doc 10063 Appendix F Table F-5
λx	Average aircraft length	0.0366 nm	JASMA (TSD of NOPAC in 2025)
λy	Average aircraft width	0.0341 nm	JASMA (TSD of NOPAC in 2025)

λz	Average aircraft height	0.0098 nm	JASMA (TSD of NOPAC in 2025)
N_x(same)	The passing frequency of aircraft pair assigned to the adjacent flight levels under the same direction traffic	4.51×10^{-3}	ICAP data (NOPAC, 2025)
N_x(opp)	The passing frequency of aircraft pair assigned to the adjacent flight levels under the opposite direction traffic	1.56×10^{-1}	ICAP data (NOPAC, 2025)
$P_z(0)$	Probability of vertical overlap in operational risk estimation for the aircraft flying as a same flight level	0.55	Doc 10063 Appendix F Table F-5
$P_y(50)$	Probability that two aircraft on the same track are in lateral overlap	2.73×10^{-9}	DDE Normal model (2025)

Table 6. Estimates of the Parameters in the CRM (50 NM)

4) **Table 7** summarizes the value and source material for estimating the parameter values of the following Collision Risk Model (CRM) used to conduct safety oversight for the RNP 4 based 25 NM lateral separation minimum of NOPAC routes.

Parameter Symbol	**Parameter Definition**	**Parameter Value**	**Source for Value**
$\overline{\lvert V\rvert}$	Individual-aircraft along track speed	480 kt	Doc 10063 Appendix F Table F-5
$\overline{\lvert \Delta V\rvert}$	Average along track speed of aircraft pairs	28.9 kt	Kushiro Air Route Surveillance Radar data (R220 of NOPAC, Apr. 1994)
$\overline{\lvert \dot{y}\rvert}$	Average cross track speed of aircraft pairs	36 kt	Doc 10063 Appendix F F.2.4
$\overline{\lvert \dot{z}\rvert}$	Average vertical speed of aircraft pairs	1.5 kt	Doc 10063 Appendix F Table F-5
λx	Average aircraft length	0.0366 nm	JASMA (TSD of NOPAC in 2025)
λy	Average aircraft width	0.0341 nm	JASMA (TSD of NOPAC in 2025)
λz	Average aircraft height	0.0098 nm	JASMA (TSD of NOPAC in 2025)
N_x(same)	The passing frequency of aircraft pair assigned to the adjacent flight levels under the same direction traffic	2.21×10^{-3}	ICAP data (NOPAC, 2025)
N_x(opp)	The passing frequency of aircraft pair assigned to the adjacent flight levels under the opposite direction traffic	2.41×10^{-1}	ICAP data (NOPAC, 2025)
$P_z(0)$	Probability of vertical overlap in operational risk estimation for the aircraft flying as a same flight level	0.55	Doc 10063 Appendix F Table F-5
$P_y(25)$	Probability that two aircraft on the same track are in lateral overlap	7.33×10^{-9}	DDE Normal model (2025)

Table 7. Estimates of the Parameters in the CRM (25 NM)

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APPENDIX B

LLDS/LLES OCCURRED WITHIN FUKUOKA FIR

	Occurrence Date	LLD/ LLE	Reporter	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
1	26-Jan-2025	LLE	Fukuoka ACC	BIXAK	Q4	FL550	47MIN	5	Flight crew incorrect operation or interpretation of airborne equipment	B	
2	12-Feb-2025	LLE	Fukuoka ACC	PAKDO	B350	FL250	9MIN	5	Flight crew incorrect operation or interpretation of airborne equipment	B	
3	19-Feb-2025	LLE	Fukuoka ACC	PAKDO	B738	FL360	39MIN	8	Flight crew incorrect operation or interpretation of airborne equipment	B	
4	22-Feb-2025	LLE	Fukuoka ACC	NIPPI	B350	FL280	9MIN	13	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues: No or Late Revision of Transfer Information	E-RI	
5	26-Mar-2025	LLD	Fukuoka ACC	NUBDA	A388	FL400	10NM	1	Flight crew deviates without ATC clearance in the horizontal dimension	A	
6	6-Apr-2025	LLD	Fukuoka ACC	2201N 12618E	A333	FL320	30NM	5	Flight crew deviates without ATC clearance in the horizontal dimension	A	
7	12-Apr-2025	LLD	Fukuoka ACC	POXED	C17	FL310	5NM	41	Flight crew deviates without ATC clearance in the horizontal dimension	A	

	Occurrence Date	LLD/ LLE	Reporter	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
8	23-Apr-2025	LLD	Fukuoka ACC	4328N 15046E	B744	FL350	40NM	7	Flight crew deviates without ATC clearance in the horizontal dimension	A	
9	21-May-2025	LLD	Fukuoka ACC	POXED	B77L	FL330	25NM	11	Flight crew deviates without ATC clearance in the horizontal dimension	A	
10	27-May-2025	LLD	Fukuoka ACC	UKATA	B763	FL350	60NM	9	Flight crew deviates without ATC clearance in the horizontal dimension	A	
11	1-Jun-2025	LLD	Fukuoka ACC	4527N 16153E	B77W	FL330	15NM	0	Flight crew deviates without ATC clearance in the horizontal dimension	A	
12	16-Jun-2025	LLE	Fukuoka ACC	GURAG	A321	FL380	123MIN	0	Flight crew incorrect operation or interpretation of airborne equipment	B	D1
13	24-Jun-2025	LLD	Fukuoka ACC	4446N 15857E	B789	FL350	60NM	14	Others	J	
14	6-Jul-2025	LLE	Fukuoka ACC	PAKDO	B738	FL370	9MIN	4	Flight crew incorrect operation or interpretation of airborne equipment	B	
15	13-Jul-2025	LLE	Fukuoka ACC	4335N 16446E	B77W	FL330	305MIN	0	Others	J	

	Occurrence Date	LLD/ LLE	Reporter	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
16	15-Jul-2025	LLE	Fukuoka ACC	OMOTO	B762	FL250	17MIN	3	Flight crew incorrect operation or interpretation of airborne equipment	B	
17	19-Jul-2025	LLE	Fukuoka ACC	GURAG	A321	FL380	126MIN	0	Flight crew incorrect operation or interpretation of airborne equipment	B	D1
18	3-Aug-2025	LLD	Fukuoka ACC	2747N 15811E	MD11	FL360	40NM	11	Flight crew deviates without ATC clearance in the horizontal dimension	A	
19	4-Aug-2025	LLD	Fukuoka ACC	POXED	B744	FL330	60NM	15	Others	J	
20	9-Aug-2025	LLD	Fukuoka ACC	3516N 14643E	B77W	FL310	20NM	1	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	
21	10-Aug-2025	LLD	Fukuoka ACC	43N160E	B744	FL310	180NM	11	Others	J	
22	10-Aug-2025	LLE	Fukuoka ACC	KEITH	C30J	FL200	10MIN	3	Flight crew incorrect operation or interpretation of airborne equipment	B	
23	11-Aug-2025	LLD	Fukuoka ACC	GURAG	B788	FL390	12NM	1	Flight crew deviates without ATC clearance in the horizontal dimension	A	D1

	Occurrence Date	LLD/ LLE	Reporter	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
24	19-Aug-2025	LLD	Fukuoka ACC	MDE	A320	FL370	20NM	7	Flight crew deviates without ATC clearance in the horizontal dimension	A	
25	19-Aug-2025	LLD	Fukuoka ACC	4357N 15134E	B763	FL300	100NM	5	Flight crew deviates without ATC clearance in the horizontal dimension	A	
26	23-Aug-2025	LLE	Fukuoka ACC	GURAG	A20N	FL370	9MIN	3	Flight crew incorrect operation or interpretation of airborne equipment	B	D1
27	24-Aug-2025	LLD	Fukuoka ACC	PAKDO	B789	FL390	15NM	11	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues: No or Late Revision of Transfer Information	E-RI	
28	30-Aug-2025	LLD	Fukuoka ACC	GURAG	B77W	FL310	17NM	3	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues: No or Late Revision of Transfer Information	E-RI	D1
29	8-Sep-2025	LLD	Fukuoka ACC	MONPI	B738	FL370	50NM	4	ATC system loop error	D	
30	16-Sep-2025	LLD	Fukuoka ACC	GURAG	B77W	FL330	5NM	8	Flight crew deviates without ATC clearance in the horizontal dimension	A	D1
31	22-Sep-2025	LLD	Fukuoka ACC	GURAG	A339	FL390	60NM	5	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues: No or Late Revision of Transfer Information	E-RI	D1

	Occurrence Date	LLD/ LLE	Reporter	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
32	23-Sep-2025	LLD	Fukuoka ACC	3759N 14635E	B77L	FL350	20NM	6	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
33	24-Sep-2025	LLD	Fukuoka ACC	TUNTO	B738	FL330	15NM	1	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	
34	20-Oct-2025	LLD	Fukuoka ACC	TUNTO	A359	FL410	10NM	4	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	
35	27-Oct-2025	LLD	Fukuoka ACC	GURAG	A321	FL350	40NM	1	ATC system loop error	D	D1
36	9-Nov-2025	LLE	Fukuoka ACC	GURAG	A321	FL320	9MIN	0	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues: Any Other Types	E-OT	D1
37	11-Nov-2025	LLD	Fukuoka ACC	3723N 15137E	B789	FL350	30NM	14	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
38	16-Nov-2025	LLD	Fukuoka ACC	4537N 15611E	B748	FL330	50NM	18	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
39	16-Nov-2025	LLD	Fukuoka ACC	PAKDO	B738	FL330	10NM	1	Others	J	

	Occurrence Date	LLD/ LLE	Reporter	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
40	17-Nov-2025	LLD	Fukuoka ACC	21N135E	B744	FL410	15NM	21	Others	J	
41	20-Nov-2025	LLD	Fukuoka ACC	3502N 15746E	B77W	FL280	30NM	11	Flight crew deviates without ATC clearance in the horizontal dimension	A	
42	20-Nov-2025	LLD	Fukuoka ACC	ADNAP	B77L	FL310	144NM	20	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
43	24-Nov-2025	LLE	Fukuoka ACC	PAKDO	Q4	FL500	6MIN	0	Flight crew incorrect operation or interpretation of airborne equipment	B	
44	20-Dec-2025	LLE	Fukuoka ACC	GURAG	A321	FL350	6MIN	0	Flight crew incorrect operation or interpretation of airborne equipment	B	D1

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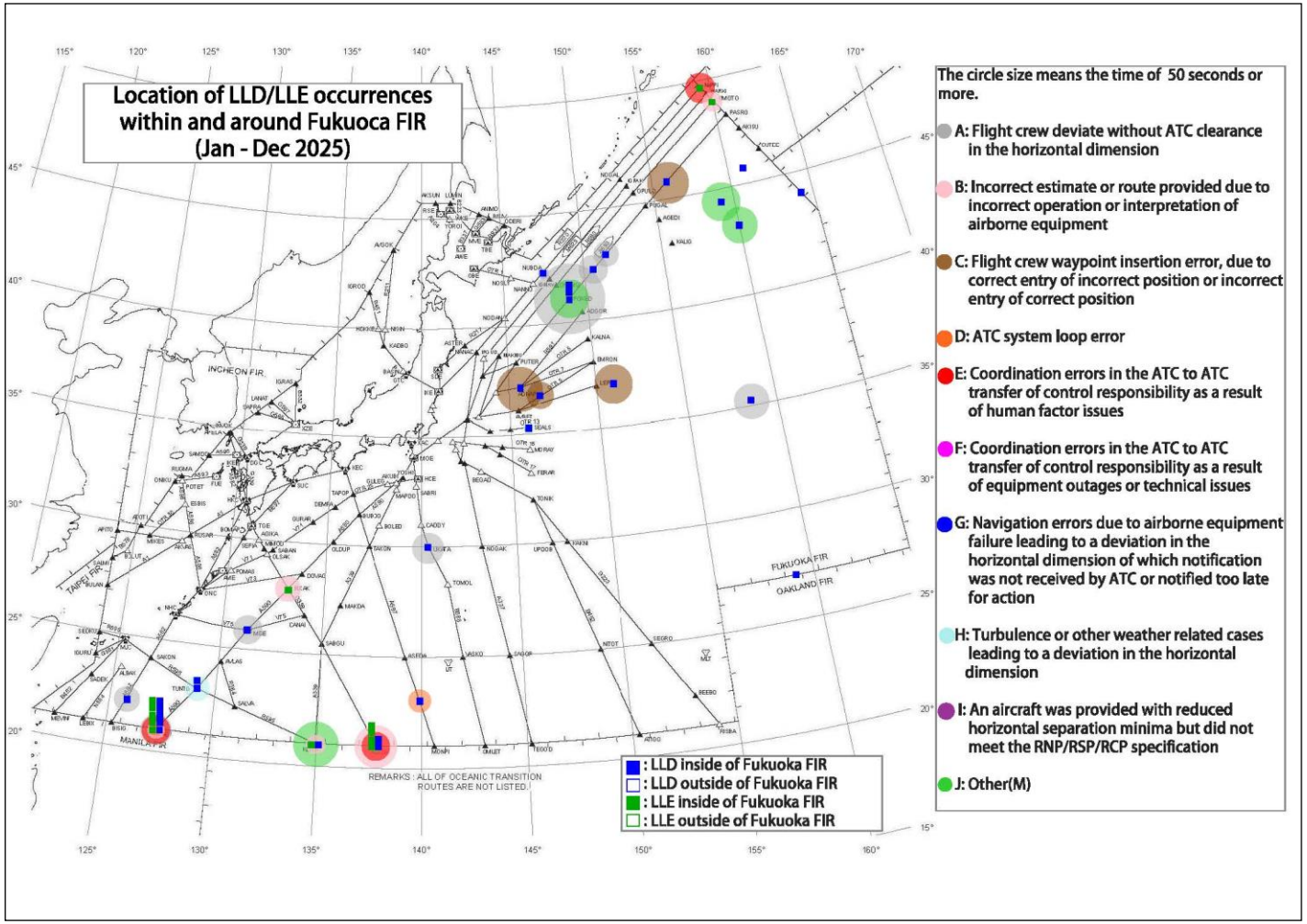
APPENDIX C



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