International Civil Aviation Organization

Thirtieth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/30)

Bangkok, Thailand, 14 – 17 July 2025

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 2024 to December 2024.

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 **Attachment 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 2024 to December 2024.

Table 1: North Pacific Ocean Airspace Horizontal Risk Estimates

North Pacific Ocean Airspace – estimated annual flying hours = 135,324 hours *(note: estimated hours based on Dec 2024 traffic sample data)*			
Source of Risk	**Risk Estimation**	**TLS**	**Remarks**
RASMAG 29 50 NM Lateral Risk	*1.16×10^{-9}*	*5.0×10^{-9}*	*Below TLS*

North Pacific Ocean Airspace – estimated annual flying hours = 135,324 hours *(note: estimated hours based on Dec 2024 traffic sample data)*			
Source of Risk	**Risk Estimation**	**TLS**	**Remarks**
RASMAG 29 10 MIN Time-Based Longitudinal Risk	*10.01 x 10^{-9}*	*5.0 x 10^{-9}*	*Above TLS*
RASMAG 29 30 NM Distance-based Longitudinal Risk	*0.003 x 10^{-9}*	*5.0 x 10^{-9}*	*Below TLS*
50 NM lateral Risk	**2.25 x 10^{-9}**	5.0 x 10^{-9}	**Below TLS**
25 NM lateral Risk	**0.78 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	**0.016 x 10^{-9}**	5.0 x 10^{-9}	**Below TLS**

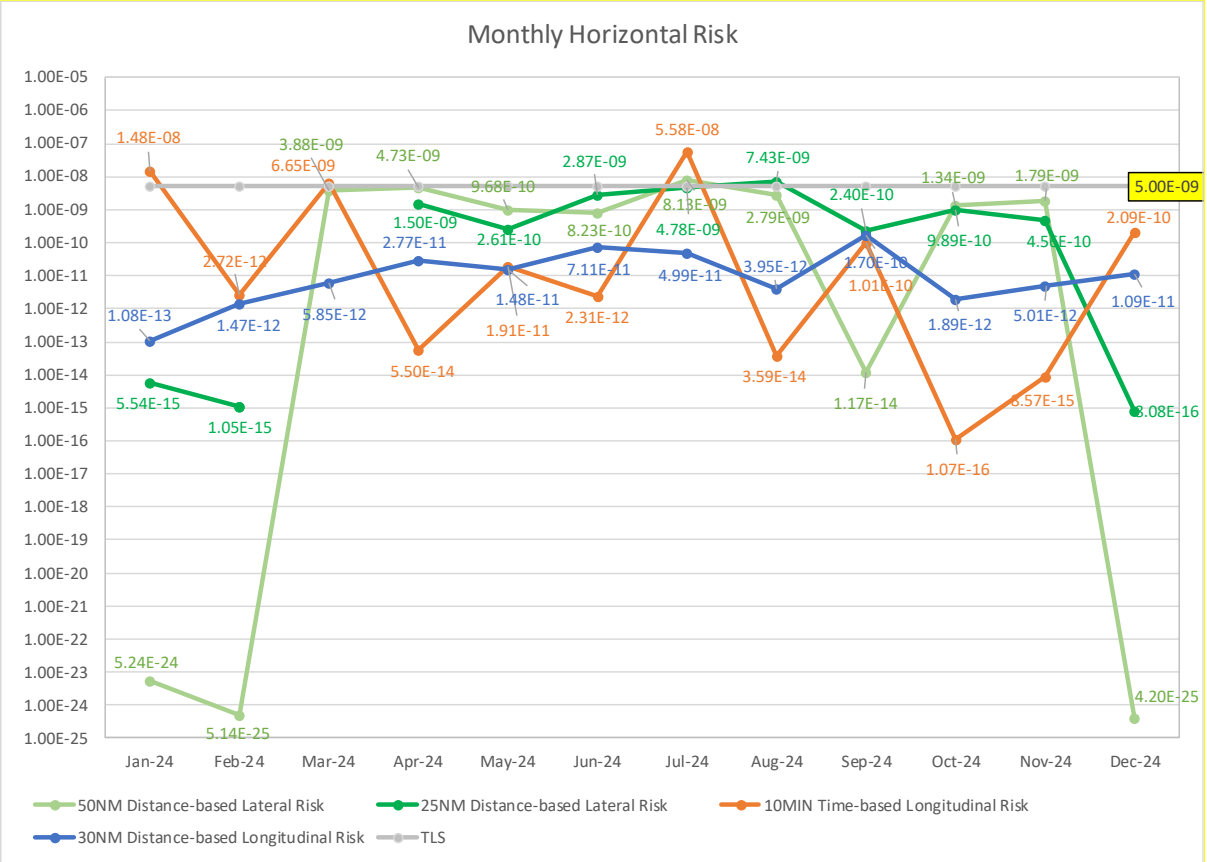

Figure 1: North Pacific Ocean Airspace Horizontal Risk Estimate

(* The reason why the value of "25NM Distance-based Lateral Risk" for March is missing is that the M523 route was out of service from 21 February 2024 to 2 April 2024 due to a data link failure.)

2.3 **Table 2** contains a summary of Large Lateral Deviation (LLD) and Large Longitudinal Error (LLE) received by JASMA for the North Pacific Ocean airspace in Fukuoka FIR from January 2024 until December 2024.

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	2
B	Flight crew incorrect operation or interpretation of airborne equipment	8
C	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	5
D	ATC system loop error	1
E	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues	2
F	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of equipment outage or technical issues	1
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	7
I	An aircraft was provided with reduced horizontal separation minima but did not meet the RNP/RSP/RCP specification	0
J	Others	1
Total		27

2.4 Category B, “Flight crew incorrect operation or interpretation of airborne equipment” was the top contributor during the calendar year 2024.

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 the duration of LLD or LLE is 50 seconds or more, and the size of circle is proportionally large according to the deviation time.

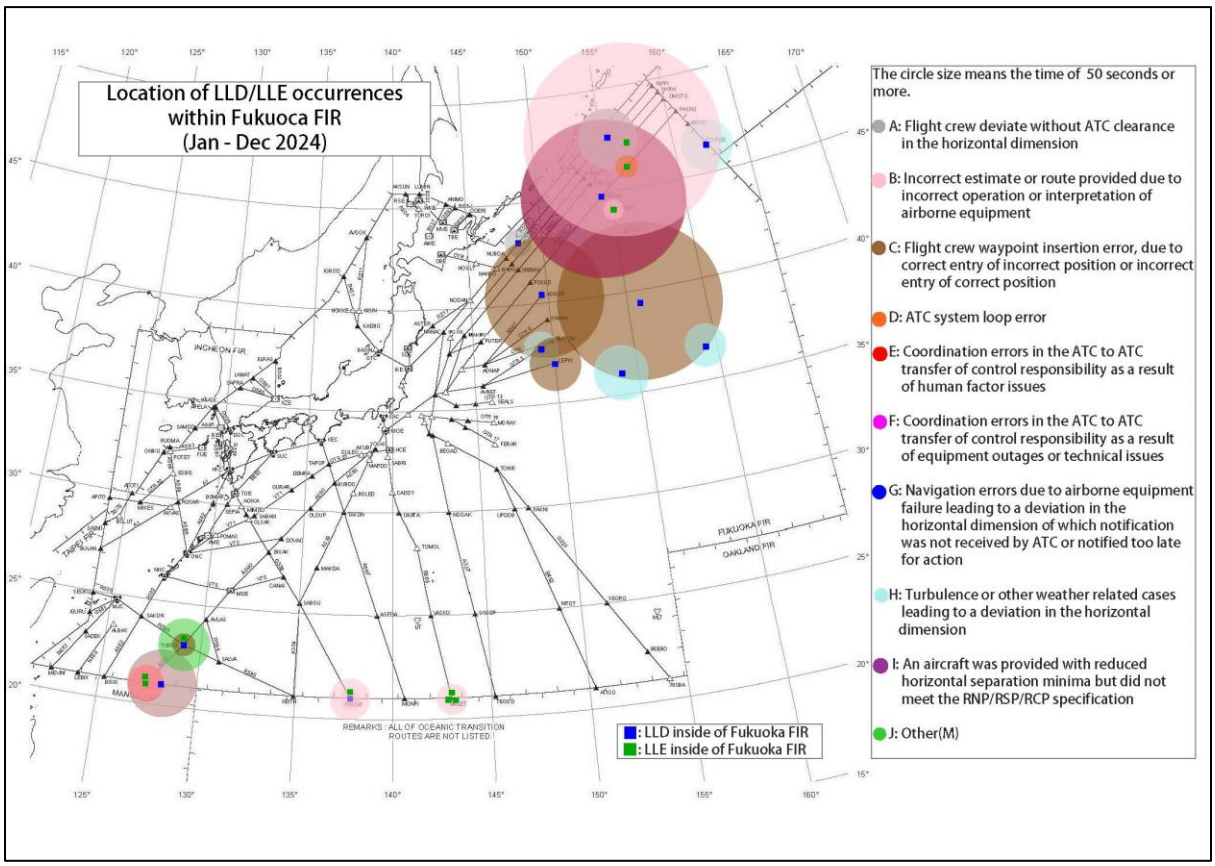

Figure 2: Geographical Location of LLDs &LLEs within Fukuoka FIR

2.6 To enhance airspace capacity in the Pacific Ocean airspace, 23 NM lateral separation minima based on PBCS and RNP4 has already been implemented in the airspace of Fukuoka FIR entirely since 15 June 2023 as an operational trial.

2.7 Current RNAV10 (RNP10) routes and the Pacific Organized Track System (PACOTS) in the airspace are established by using 50 NM lateral distance. A new RNP4 route named M523 of NOPAC has started operation on 25 January 2024. The aircraft are required PBCS and RNP4 for flying on M523. The new route is established separating at least 23 NM from other neighboring ATS routes.

2.8 The M523 route was out of service from 21 February 2024 to 2 April 2024 due to data link failure. Therefore, the 25NM Distance-based Lateral Risk during March was “0”.

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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Attachment A

1. COLLISION RISK FOR 25NM / 50NM 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 2024, 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		5605.4				NOGAL - NIPPI		5721.6			
						1468.0						1584.0
R580	ONEMU - OPULO	5063.6					OPURO - OMOTO	4587.7				
				46.0						37.0		
A590	POXED - PUGAL	17338.2					PUGAL - PASRO	17443.4				
				24.0		241.0				19.5		441.0
(R591)	ADGOR - AGEDI	2363.5	2633.7				AGEDI - AKISU	2098.1	1347.3			
				0.0		20.0				0.0	0.0	27.0
(G344)	KALNA - KALIG	1616.0	722.0				KALIG - CUTEE	1530.8	709.5			

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

1.7 25 NM section of NOPAC Passing Frequencies are shown in **Table 2**. The M523 route was out of service from 21 February 2024 to 2 April 2024 due to a data link failure.

		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		29435.5				NOGAL - NIPPI		28602.9			
					15.0						29.0	
M523	ISMAV - IGPAK		2305.4				IGPAK - HARKI		2294.8			
						156.5						226.5
R580	ONEMU - OPULO	2413.8					OPULO - OMOTO	2838.1				

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

1.8 Traffic on the westbound route has been about 6 times higher on the 25NM section of the R220 route than on the 50NM section since the M523 route was newly established. However, traffic volume on the newly established M523 is low, only about 8% of that on R220. Therefore, Passing Frequencies are lower on the 25NM section than on the 50NM section.

1.9 Traffic on the eastbound route is about twice as heavy on the 50NM section of R580 as on the 25NM section. However, the majority of eastbound traffic uses A590. The traffic volume on A590 is more than twice as heavy as traffic on R580.

1.10 Both westbound and eastbound sections of the former R591 are also relatively heavily used, and the Passing Frequencies between A590 and the former R591 have also increased compared to 2023.

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 for the lower risk value in the 25NM segment compared to the 50NM segment may be due to the lower traffic volume on the newly constructed M523 because M523 operations were suspended due to data link failure for about one month.

Source of Risk	Risk Estimation
N_{ay} (same)	0.17×10^{-9}
N_{ay} (opposite)	2.08×10^{-9}
N_{ay} (total)	2.25×10^{-9}

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

Source of Risk	Risk Estimation
N_{ay} (same)	0.17×10^{-9}
N_{ay} (opposite)	0.61×10^{-9}
N_{ay} (total)	0.78×10^{-9}

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

2. Consideration for LLDs and LLEs

2.1 **Appendix A** 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 B** contains the details of the 1 LLD that occurred in the Pacific Ocean airspace outside of Fukuoka FIR, which were reported to JASMA during the assessment period.

2.3 **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 2024. 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 the duration of LLD or LLE is 50 seconds or more, and the size of circle is proportionally large according to the deviation time.

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	0.796	JASMA (2024)
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	0.0367 nm	JASMA (TSD of NOPAC in 2024)
λy	Average aircraft width	0.0341 nm	JASMA (TSD of NOPAC in 2024)
λz	Average aircraft height	0.0098 nm	JASMA (TSD of NOPAC in 2024)
T	The average time to fly the segment.	4.57 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:

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

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

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

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 RNP10 based 50NM 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	0.0367 nm	JASMA (TSD of NOPAC in 2024)
λy	Average aircraft width	0.0341 nm	JASMA (TSD of NOPAC in 2024)
λz	Average aircraft height	0.0098 nm	JASMA (TSD of NOPAC in 2024)
N_x(same)	The passing frequency of aircraft pair assigned to the adjacent flight levels under the same direction traffic	3.75×10^{-3}	ICAP data (NOPAC, 2024)
N_x(opp)	The passing frequency of aircraft pair assigned to the adjacent flight levels under the opposite direction traffic	1.12×10^{-1}	ICAP data (NOPAC, 2024)
$P_z(0)$	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	3.22×10^{-8}	DDE Normal model (2024)

Table 6: Estimates of the parameters in the CRM (50NM)

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 RNP4 based 25NM 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	0.0367 nm	JASMA (TSD of NOPAC in 2024)
λy	Average aircraft width	0.0341 nm	JASMA (TSD of NOPAC in 2024)
λz	Average aircraft height	0.0098 nm	JASMA (TSD of NOPAC in 2024)

N_x(same)	The passing frequency of aircraft pair assigned to the adjacent flight levels under the same direction traffic	1.30×10^{-3}	ICAP data (NOPAC, 2024)
N_x(opp)	The passing frequency of aircraft pair assigned to the adjacent flight levels under the opposite direction traffic	0.11×10^{-1}	ICAP data (NOPAC, 2024)
$P_z(0)$	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	9.38×10^{-8}	DDE Normal model (2024)

Table 7: Estimates of the parameters in the CRM (25NM)

Appendix A

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	3-Mar-2024	LLD	Fukuoka ATMC	AVBET	B77L	FL310	66NM (Right)	46	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
2	3-Mar-2024	LLD	Fukuoka ATMC	LEPKI	GLF5	FL410	40NM (Right)	19	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
3	25-May-2024	LLD	Fukuoka ATMC	NOGAL	B77W	FL350	12NM (Right)	12	Flight crew deviates without ATC clearance in the horizontal dimension	A	
4	30-Jun-2024	LLD	Fukuoka ACC	4253N 14804E	A339	FL370	12NM (Right)	7	Flight crew deviates without ATC clearance in the horizontal dimension	A	
5	7-Jul-2024	LLD	Fukuoka ACC	GURAG	B77W	FL350	13NM (Left)	14	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	D1
6	8-Jul-2024	LLE	Fukuoka ACC	OPULO	B350	FL300	15MIN (Longitudinal)	69	Flight crew incorrect operation or interpretation of airborne equipment	B	
7	10-Jul-2024	LLE	Fukuoka ACC	GURAG	C130	FL270	18MIN (Longitudinal)	16	Flight crew incorrect operation or interpretation of airborne equipment	B	D1
8	14-Jul-2024	LLE	Fukuoka ACC	OMLET	B350	FL250	18MIN (Longitudinal)	2	Flight crew incorrect operation or interpretation of airborne equipment	B	
9	17-Jul-2024	LLE	Fukuoka ACC	OMLET	BE20	FL230	10MIN (Longitudinal)	4	Flight crew incorrect operation or interpretation of airborne equipment	B	

	Occurrence Date	LLD/ LLE	Reporter	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
10	28-Jul-2024	LLD	Fukuoka ACC	PUGAL	A332	FL350	50NM (Left)	48	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
11	30-Jul-2024	LLD	Fukuoka ACC	3743N 14914E	B77W	FL330	14NM (Right)	18	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	
12	5-Aug-2024	LLD	Fukuoka ACC	36N154E	A388	FL400	33NM (Right)	21	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	
13	13-Aug-2024	LLD	Fukuoka ACC	ADGOR	K35R	FL300	70NM (Left)	29	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
14	14-Aug-2024	LLE	Fukuoka ACC	TUNTO	K35R	FL350	90MIN (Longitudinal)	5	Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position	C	
15	15-Aug-2024	LLD	Fukuoka ACC	CUTEE	A359	FL350	40NM (Right)	14	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	
16	1-Oct-2024	LLE	Fukuoka ACC	AGEDI	B1	FL200 B210	24MIN (Longitudinal)	3	Flight crew incorrect operation or interpretation of airborne equipment	B	
17	14-Oct-2024	LLE	Fukuoka ACC	PAKDO	B738	FL370	10 MIN (Longitudinal)	10	Flight crew incorrect operation or interpretation of airborne equipment	B	
18	15-Oct-2024	LLD	Fukuoka ACC	PAKDO	B744	FL360	13NM (Left)	4	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	
19	19-Oct-2024	LLE	Fukuoka ACC	GURAG	B788	FL380	10 MIN (Longitudinal)	-	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues	E	D1

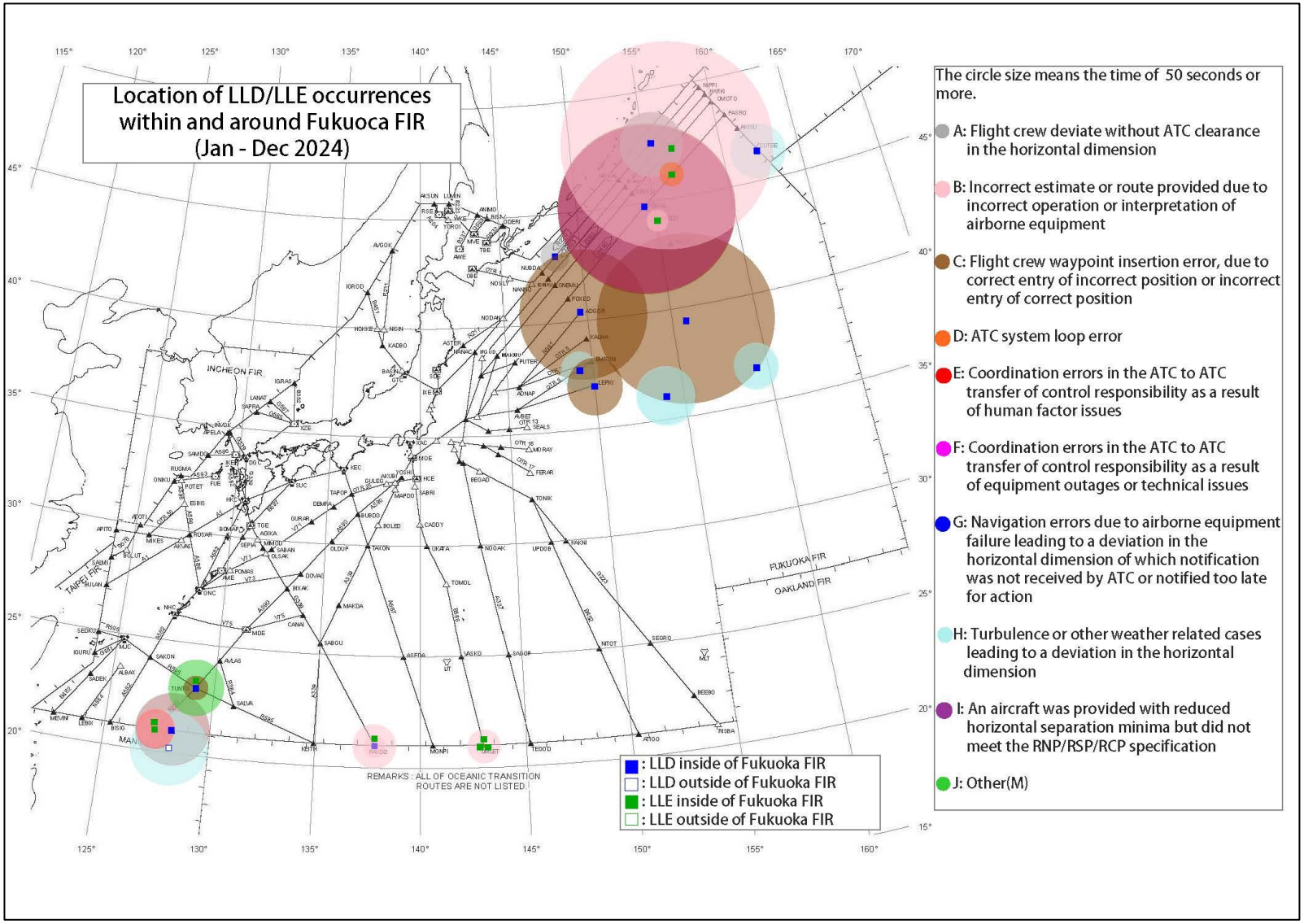
	Occurrence Date	LLD/ LLE	Reporter	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
20	23-Oct-2024	LLD	Fukuoka ACC	TUNTO	B763	FL350	30NM (Right)	12	Others	J	
21	19-Nov-2024	LLD	Fukuoka ACC	PAKDO	C5M	FL330	50NM (Left)	3	Flight crew incorrect operation or interpretation of airborne equipment	B	
22	28-Nov-2024	LLD	Fukuoka ACC	3652N 15920E	B763	FL350	30NM (Right)	9	Turbulence or other weather related causes (other than approved) leading to a deviation in the horizontal dimension	H	
23	1-Dec-2024	LLE	Fukuoka ACC	PUGAL	B788	FL370	245 MIN (Longitudinal)	6	ATC system loop error	D	
24	20-Dec-2024	LLE	Fukuoka ACC	OMLET	B190	FL190	12 MIN (Longitudinal)	1	Flight crew incorrect operation or interpretation of airborne equipment	B	

Appendix B

LLDs/LLEs occurred outside of Fukuoka FIR

	Occurrence Date	LLD/ LLE	Relevant ATC Unit	Location	ACFT Type	ALT	Deviation (NM/MIN)	Duration (Minutes)	Cause	CAT Code	Hot Spot
1	7-Jul-2024	LLD	Fukuoka ACC	GURAG	A20N	FL390	23NM (Right)	18	Flight crew incorrect operation or interpretation of airborne equipment	H	D1

Appendix C


Location of LLD/LLE occurrences within and around Fukuoca FIR (Jan - Dec 2024)
The circle size means the time of 50 seconds or more.
A: Flight crew deviate without ATC clearance in the horizontal dimension
B: Incorrect estimate or route provided due to incorrect operation or interpretation of airborne equipment
C: Flight crew waypoint insertion error, due to correct entry of incorrect position or incorrect entry of correct position
D: ATC system loop error
E: Coordination errors in the ATC to ATC transfer of control responsibility as a result of human factor issues
F: Coordination errors in the ATC to ATC transfer of control responsibility as a result of equipment outages or technical issues
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
H: Turbulence or other weather related cases leading to a deviation in the horizontal dimension
I: An aircraft was provided with reduced horizontal separation minima but did not meet the RNP/RSP/RCP specification
J: Other(M)
: LLD inside of Fukuoka FIR
: LLD outside of Fukuoka FIR
: LLE inside of Fukuoka FIR
: LLE outside of Fukuoka FIR
REMARKS : ALL OF OCEANIC TRANSITION ROUTES ARE NOT LISTED
INCHEON FIR
TAIPEI FIR
FUKUOKA FIR
OAKLAND FIR