International Civil Aviation Organization

Twenty-Eighth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/28)

Bangkok, Thailand, 21 – 24 August 2023

Agenda Item 5: Airspace Safety Monitoring Activities/Requirements in the Asia/Pacific Region

JASMA LLD STANDARD FOR 23 NM LATERAL SEPARATION

(Presented by JASMA)

SUMMARY

This paper presents the consideration of a new Large Lateral Deviation (LLD) standard for implementing 23 NM lateral separation minima which is applied to the Required Navigation Performance (RNP) 4, the Required Surveillance Performance (RSP) 180 and the Required Communication Performance (RCP) 240 approved aircraft.

1. INTRODUCTION

1.1 The International Civil Aviation Organization (ICAO) published the ICAO Doc 4444, Procedures for Air Traffic Management (PANS-ATM), including a new 23 NM lateral separation minima that aircraft needed to meet the requirement of the Required Navigation Performance (RNP) 4, the Required Surveillance Performance (RSP) 180 and the Required Communication Performance (RCP) 240, in November 2016.

1.2 The Federal Aviation Administration (FAA) and the Japan Civil Aviation Bureau (JCAB) have been considering and discussing the implementation of the 23 NM lateral separation minima in the Pacific Ocean airspace of Anchorage and Oakland oceanic flight information region (FIR) and Fukuoka FIR through the Informal Pacific Air Traffic Control Coordinating Group (IPACG)

1.3 One of the purposes of implementing 23 NM lateral separation minima is to redesign the North Pacific (NOPAC) route, which had five RNAV10 (RNP10) routes separated at least 50 NM from each other. The redesign project is called “NOPAC Redesign,” FAA and JCAB have been working on the project that the NOPAC route would consist of two existing RNAV10 (RNP10) routes and two RNP4 routes eventually and the routes would be separated at least 23 NM, actually 25 NM from each other.

2. DISCUSSION

Background

2.1 23 NM lateral separation minima has been implemented in the Pacific Ocean airspace of Fukuoka FIR as a trial since 15 June 2023.

2.2 The Japan Airspace Safety Monitoring Agency (JASMA) has started consideration and study on whether the current 10 NM definition of the Large Lateral Deviation (LLD) for 30 NM lateral separation minima is also suitable for 23 NM lateral separation minima since 2022.

2.3 **Figure 1** shows an example in the airspace applying 30 NM lateral separation minima that two aircraft are deviating up to 10 NM and approaching each other without reporting and requesting to the Air Traffic Control (ATC) unit. In that case, there would be a 10 NM Lateral distance between the two aircraft, although it does not meet the standard of the 30 NM lateral separation minima.

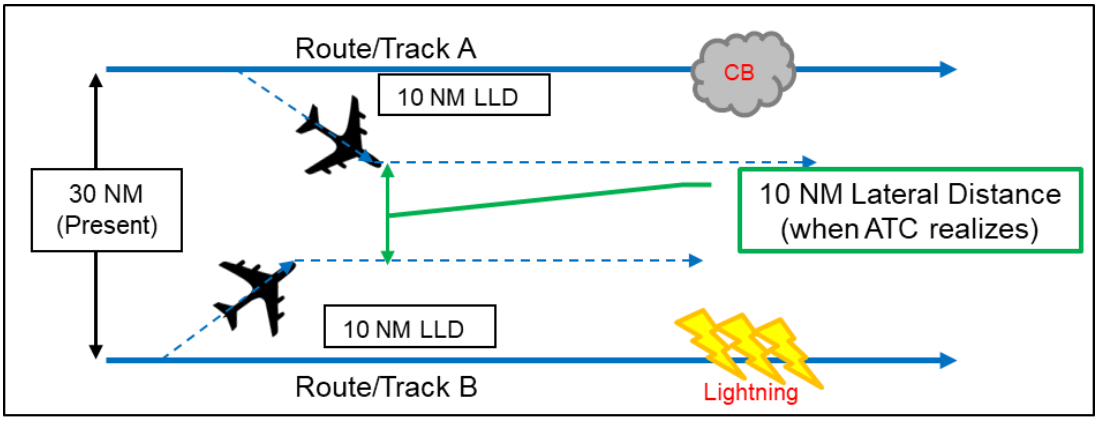

Figure 1: Example of 30 NM lateral separation minima

2.4 **Figure 2** shows an example in the airspace applying 23 NM lateral separation minima that two aircraft are deviating up to 10 NM and approaching each other without reporting and requesting to the ATC unit. In that case, there would be only a 3 NM Lateral distance between the two aircraft.

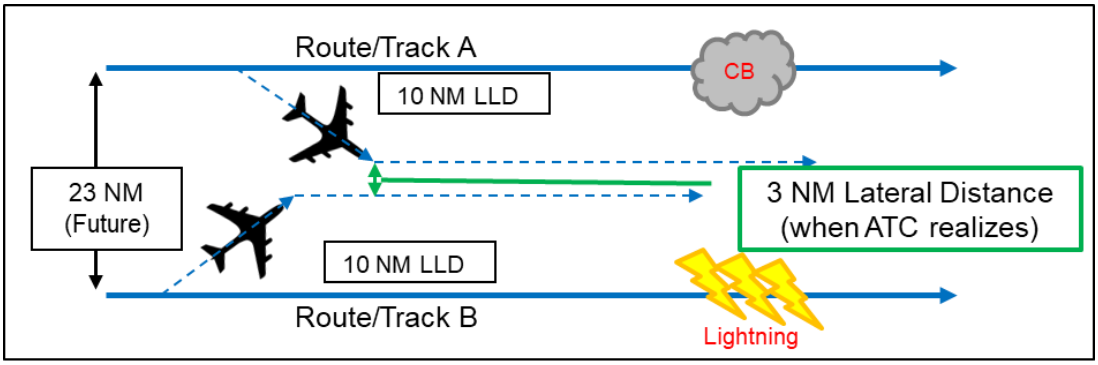

Figure 2: Example of 23 NM lateral separation minima with 10 NM LLD definition

RASMAG/MAWG/10 Meeting

2.5 JASMA presented the proposal of a new LLD standard for implementing 23 NM lateral separation minima, which was 5 NM at the Tenth Meeting of the Regional Airspace Safety Monitoring Advisory Group Monitoring Agency Working Group (RASMAG/MAWG/10).

2.6 The rationale of the 5 NM is that conformance monitoring shall be ensured by establishing the Automatic Dependent Surveillance Contract (ADSC) downlink report when lateral deviation change is 5 NM or more as an additional requirement to apply 23 NM lateral separation minima, as shown in **Figure 3** which is Table 5-2 on the ICAO Doc 4444, PANS-ATM.

5.4.1.2.1.6 *Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes.* Within designated airspace or on designated routes, lateral separation between aircraft operating on parallel or non-intersecting tracks or ATS routes shall be established in accordance with Table 5-2:

Table 5-2. Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes

Minimum Spacing Between Tracks		*Performance Requirements*			*Additional Requirements*
Airspace where SLOP is not authorized, or is only authorized up to 0.5 NM	*Airspace where SLOP up to 2 NM is authorized*	*Navigation*	*Communication*	*Surveillance*	
93 km (50 NM)	93 km (50 NM)	RNAV 10 (RNP 10) RNP 4 RNP 2	Types of communication other than direct controller-pilot VHF voice		
37 km (20 NM)	42.6 km (23 NM)	RNP 4 RNP 2	RCP 240	RSP 180	Conformance monitoring shall be ensured by establishing an ADS-C event contract specifying a lateral deviation change event with a maximum of 5 NM threshold and a waypoint change event
37 km (20 NM)	42.6 km (23 NM)	RNP 2 or GNSS equipage	Types of communication other than direct controller-pilot VHF voice		While one aircraft climbs/descends through the level of another aircraft remaining in level flight
27.8 km (15 NM)	33.4 km (18 NM)	RNP 2 or GNSS equipage	Direct controller-pilot VHF voice communications		
16.7 km (9 NM)	22.3 km (12 NM)	RNP 4 RNP 2	RCP 240	RSP 180	While one aircraft climbs/descends through the level of another aircraft remaining in level flight
13 km (7 NM)	19 km (10 NM)	RNP 2 or GNSS equipage	Direct controller-pilot VHF voice communications		While one aircraft climbs/descends through the level of another aircraft remaining in level flight

Figure 3: Table 5-2 on ICAO Doc 4444, PANS-ATM

2.7 ICAO commented that the new 5 NM LLD standard should not be original and unique in the Asia Pacific (APAC) Region. In response to ICAO's concern, JASMA responded that a similar working paper of RASMAG/MAWG/10 would be submitted and presented at the Eighteenth Meeting of the Regional Monitoring Agencies Coordination Group (RMACG/18) in April 2023 to share the proposal of the new LLD standard with the Regional Monitoring Agencies (RMAs) in other regions.

RMACG/18 meeting

2.8 JASMA presented the proposal for the new 5NM LLD standard at the RMACG/18 meeting. The **Attachment** is the working paper submitted by JASMA at the meeting.

2.9 The meeting agreed with the rationale used by JASMA for the change to the LLD standard in the APAC region. However, it was also agreed that, with due consideration to the differing approaches to defining and monitoring LLDs in other regions, a uniform, global LLD definition of 5 NM was not required at this time.

2.10 The North Atlantic Central Monitoring Agency (NAT CMA) informed that NAT CMA had also made consideration if the LLD threshold could be changed to 5 NM. Still, the conclusion was to be continuous use of a 10 NM threshold in the NAT region even if lateral separation over NAT were 23 NM based on RCP 240, RSP 180 and RNP 4 and 19 NM for the Advanced Surveillance Enhanced Procedural Separation (ASEPS).

Further Consideration

2.11 Through the discussion at the RMACG/18 meeting, JASMA determined further consideration and discussion would be needed before implementing new LLD standard in the APAC region since the new LLD standard should be covered other lateral separations in the Oceanic airspace, such as ASEPS.

2.12 Therefore, it would be encouraged that States/Administrations inform the implementation plan of the reduced lateral separation minima such as 23 NM lateral separation minima and ASEPS to designated monitoring agencies.

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.

…….

Attachment

RMACG/18-WP/04
01/02/2023

International Civil Aviation Organization

WORKING PAPER

EIGHTEENTH REGIONAL MONITORING AGENCIES COORDINATION GROUP (RMACG/18):

ICAO HQ, Montreal, Canada

3 to 6 April, 2023

Agenda Item 9: Any other business

NEW LLD STANDARD FOR 23 NM LATERAL SEPARATION IN APAC REGION

(Presented by JASMA)

SUMMARY

This paper presents the progress of defining a new Large Lateral Deviation (LLD) standard in the Asia Pacific (APAC) region for implementing 23 NM lateral separation minima, which is applied to the Required Navigation Performance (RNP) 4, the Required Surveillance Performance (RSP) 180 and the Required Communication Performance (RCP) 240 approved aircraft.

1. INTRODUCTION

1.1. The International Civil Aviation Organization (ICAO) published the ICAO Doc 4444, Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM), including establishment of a new 23 NM lateral separation minima that aircraft needed to meet the requirement of the Required Navigation Performance (RNP) 4, the Required Surveillance Performance (RSP) 180 and the Required Communication Performance (RCP) 240, in November 2016.

1.2. The Federal Aviation Administration (FAA) and the Japan Civil Aviation Bureau (JCAB) have been considering and discussing the implementation of the 23 NM lateral separation minima in the Pacific Ocean airspace of Anchorage and Oakland Oceanic Flight Information Regions (FIRs) and Fukuoka FIR.

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1.3. One of the purposes of the consideration and discussion is to redesign the North Pacific (NOPAC) route, which currently has five Required Navigation RNAV/RNP10 routes separated at least 50 NM from each other. FAA and JCAB have the plan to conduct the redesign project that the NOPAC route would consist of two existing RNAV/RNP10 routes and two RNP4 routes eventually, and the routes would be separated at least 23 NM from each other.

1.4. The NOPAC redesign project has been implemented with a phased approach, Phase 1a, Phase 1b, Phase 2 and Phase 3, and Phase 1b is the current status. The outline of the NOPAC redesign project was informed and presented by FAA and JCAB as IP/06 at the ninth meeting of the Air Traffic Management Sub-Group (ATM/SG) *.
* https://www.icao.int/APAC/Meetings/Pages/2021-ATM-SG-9.aspx

2. DISCUSSION

2.1. JCAB plans to implement the 23 NM lateral separation minima for RNP4, RSP180 and RCP240 approved aircraft in the Pacific Ocean airspace within Fukuoka FIR entirely in June 2023. The Japan Airspace Safety Monitoring Agency (JASMA) supports the implementation.

2.2. In the current 30 NM lateral separation minima, 10 NM is a standard and definition for Large Lateral Deviation (LLD) that Air Traffic Control (ATC) units report an LLD occurrence to the designated En-route Monitoring Agency (EMA).

2.3. **Figure 1** shows an example in the airspace applying 30 NM lateral separation minima that two aircraft are deviating up to 10 NM and approaching each other without reporting and requesting to the ATC unit. In that case, there would be 10 NM Lateral distance between the two aircraft, although it does not meet the standard of the 30 NM lateral separation minima.

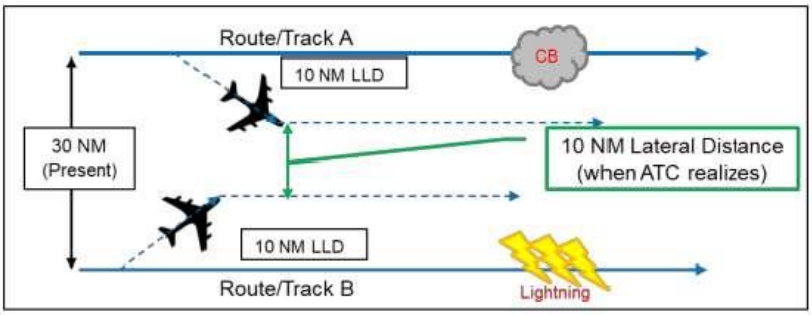

Figure 1: Example case of 30 NM lateral separation minima

2.4. **Figure 2** shows an example in the airspace applying 23 NM lateral separation minima that two aircraft are deviating up to 10 NM and approaching each other without reporting and requesting to the ATC unit. In that case, there would be only 3 NM Lateral distance between the two aircraft.

RMACG/18-WP/XX

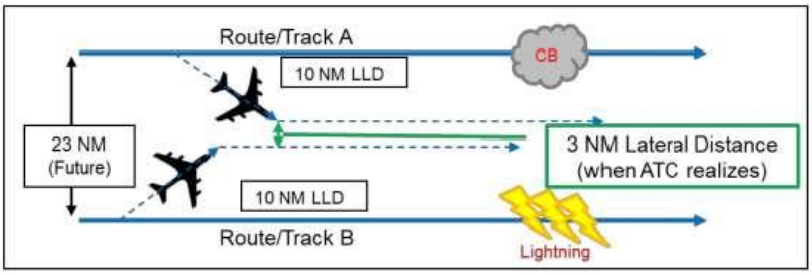

Figure 2: Example of 23 NM lateral separation minima with 10 NM LLD definition

2.5. It means that 10 NM LLD definition might not be appropriate and a new LLD definition would be required in the airspace implementing 23 NM lateral separation minima to calculate accurate risk estimates and conduct a precise safety assessment of the airspace.

2.6. **Figure 3** presents a part of the ICAO Doc 4444, PANS-ATM. Conformance monitoring is an additional requirement for applying 23 NM lateral separation minima, and it ensures ATC units to obtain ADS-C downlink reports if the aircraft deviate 5 NM or more.

5.4.1.2.1.6 *Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes.* Within designated airspace or on designated routes, lateral separation between aircraft operating on parallel or non-intersecting tracks or ATS routes shall be established in accordance with Table 5-2:

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Figure 3: Table 5-2 on ICAO Doc 4444, PANS-ATM

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2.7. **Figure 4** shows an example in the airspace applying 23 NM lateral separation minima that two aircraft are deviating up to 5 NM and approaching each other without reporting and requesting to the ATC units. In that case, there would be 13 NM Lateral distance between the two aircraft since controllers can detect the deviation by the conformance monitoring.

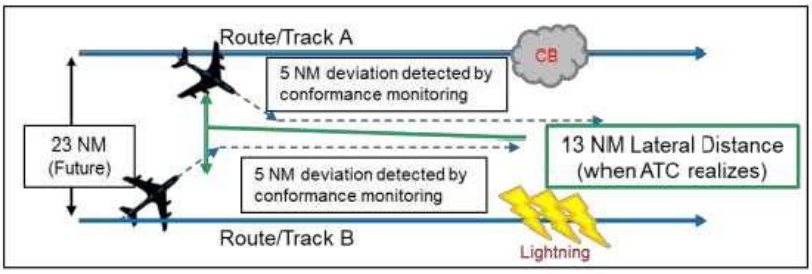

Figure 4: Example of 23 NM lateral separation minima with conformance monitoring

2.8. The Trajectorized Oceanic Traffic Data Processing System (TOPS), JCAB's Oceanic ATC system, has a function to show an alert on display to inform the aircraft's lateral deviation to controllers when the aircraft deviated from its original route without ATC clearance.

2.9. TOPS has the parameter of the deviation alert, and it allows to set of flexible values. JASMA asked JCAB to change the parameter from 10 NM to 5 NM as a trial. In the trial, controllers can detect a lateral deviation occurring without ATC clearance, which is 5 NM or more. They also submit an LLD report to JASMA if the deviation is expanded to 10 NM or more.

2.10. In the trial, any issues have not been reported to JCAB and JASMA. Therefore, JASMA proposed 5 NM as a new LLD standard and definition in the Asia Pacific (APAC) region for 23 NM lateral separation minima at the 10th Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG) Monitoring Agency Working Group (MAWG/10), which was held virtually in February 2023,

2.11. It means that the 10 NM LLD standard is still remained and applied for the airspace implementing 30 NM lateral separation minima, and a new 5 NM LLD standard is applied for the airspace implementing 23 NM lateral separation minima.

2.12. Since Regional Monitoring Agencies (RMAs) and EMAs in the APAC region agreed with the JASMA's proposal in paragraphs 2.9 to 2.10 at the RAMSAG-MAWG/10 meeting, JASMA will formally propose the new 5 NM LLD definition of the APAC region as the Draft Conclusion at the next RASMAG/28 meeting which will be held in July 2023.

2.13. JASMA informs and shares RMAs in other regions that 5 NM will be agreed upon and defined as a new LLD standard for 23 NM lateral separation minima in the APAC region. Additionally, it would be preferable that 5 NM is adopted as a common LLD standard for 23 NM lateral separation minima in all regions since conformance monitoring is defined as an additional requirement on PANS-ATM.

RMACG/18-WP/XX

3. ACTION BY THE MEETING

3.1. The Meeting is invited to:

(a) note the contents of this working paper;

(b) discuss to define a common LLD standard in paragraph 2.12; and

(c) discuss any relevant matters as appropriate.

— END —

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