



ICAO

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

LHD HOT SPOT ANALYSIS REPORT

(Presented by China RMA)

SUMMARY

This paper presents the progress of Large Height Deviation (LHD) events occurred within Chinese RVSM airspace or on the border from 2014 to 2019. In these years, China Regional Monitoring Agency (China RMA) has made much effort on the solution of LHD Hot Spots, and has greatly reduced the LHD events in Chinese airspace. China RMA suggests removing the resolved Hot Spots in this meeting.

1. INTRODUCTION

1.1 China has been implementing RVSM since 21 November 2007. In April 2008, the China Regional Monitoring Agency (China RMA) was approved and established by the CAAC, recognized by the stakeholders, as the official RMA responsible for safety oversight and compliance monitoring of the regional airspace. In these years, China RMA is making efforts to establish and maintain RVSM approval database, conduct aircraft long-term monitoring plan, provide safety assessment report to ICAO and Chinese authority, and provide technical support to CAAC.

1.2 Reduced Vertical Separation Minimum (RVSM) Large Height Deviation (LHD) is defined as any vertical deviation of 300 feet (90 m) or more from the flight level expected to be occupied by the flight. LHD does not solely serve as an important data resource for RVSM airspace safety assessment, but also a reflection on actual operation problems. Since the LHD Workshop meeting held in 2011, the LHD data collection mechanism within the Chinese regional Air Traffic Management Bureau (ATMB) and operators registered in China have been in operation for over a decade. In these years, China RMA has made great efforts to strengthen the LHD report, including conducting field investigations, establishing a Scrutiny Group meeting mechanism, and cooperating with relevant organizations.

1.3 China RMA has identified a few operational problems from the LHD reports, which turned relevant areas into Hot Spots. The table below shows the LHD Hot Spots list in RASMAG/24. In order to fix the Hot Spots, China RMA not only conducted the investigation into the LHDs timely but also explored the solutions actively, and coordinated with other RMAs and stakeholders.

Hot Spot	Involved FIRs	Identified	Remarks
A1	Kolkata/Dhaka – Yangon;	2015	LHDs increased, risk bearing
A2	Chennai – Kuala Lumpur	2015	LHDs reduced
B	Incheon	2015	AKARA Corridor
C	Hong Kong – Guangzhou	2015	Potential non-hot spot
D	Manila – all adjacent FIRs	2015	Increase of LHDs to Fukuoka
E	Lahore – Urumqi	2015	Potential non-hot spot
F	Mogadishu – Mumbai	2015	Potential non-hot spot
G	Sana’a/Muscat – Mumbai	2015	LHDs increasing (Cat. E)
H	Guangzhou – Wuhan	2015	Hong Kong/Sanya reduction
I	Karachi – Kabul	2018	Potential non-hot spot
J	Jakarta – Singapore/Kota Kinabalu	2018	Minor, Cat. E LHDs
K	Jakarta – Ujung Pandang	2018	Potential non-hot spot
L	Fukuoka – Khabarovsk	2018	Potential non-hot spot
M	Colombo - Melbourne	2019	New; Cat. A, B and E LHDs
N	Oakland USA – Hawaii CEP	2019	New; Cat. A, B and D LHDs

Table 1: List of Remaining Hot Spots

1.4 This paper sums up the solution of LHD events and Hot Spots within Chinese airspace by China RMA and presents the progress. Most of these Hot Spots have been solved and China RMA suggests removing them in this meeting.

2. DISCUSSION

LHD Events: Beijing FIR interface with Ulaanbaatar FIR

2.1 Since 2014, some LHD events led by coordination errors were reported between Ulaanbaatar ACC and Beijing ACC. China RMA started its coordination with Beijing ACC in 2014 to handle this issue. The investigation demonstrates that most of the events were due to late revision from the Beijing side. Beijing ACC soon took measures to reduce the LHDs in this area, and began to provide further training to all controllers and refine the work flow in September 2015. In October 2015, the members of China RMA attended the China-Mongolia ATM Coordination Meeting in Beijing. During the meeting, the LHD event issues were solved with the efforts of both parties. As a result, Beijing ACC and Ulaanbaatar ACC established LHD data exchange mechanism to tackle with the issue.

2.2 It should be noticed that the area between Ulaanbaatar FIR and Beijing FIR is no longer a Hot Spot, since some remedial actions has been taken and the number of category E LHD events near the border has been reduced since 2015. China RMA also has not received any category E events in this area since 2018.

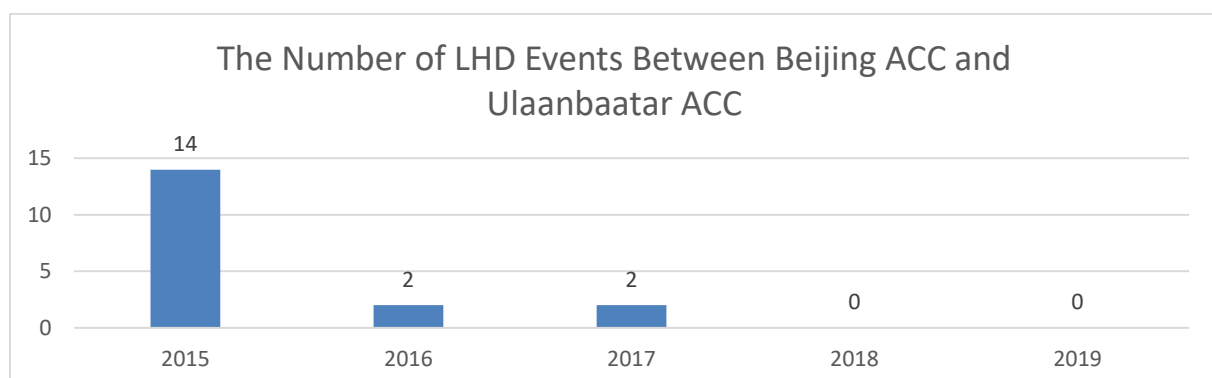


Figure 1: Number of LHDs Between Beijing and Ulaanbaatar

LHD Hot Spot: Incheon FIR AKARA Corridor interface with Shanghai/Fukuoka/Taipei FIRs (Hot Spot B)

2.3 The area Incheon FIR AKARA Corridor interface with Shanghai/Fukuoka/Taipei FIRs had been identified by RASMAG/20 as an LHD Hot Spot. PARMO, MAAR, JASMA, and China RMA were assigned to the task. In RASMAG/24 meeting, PARMO, JASMA and China RMA confirmed that the parties should share safety reports in the area to confirm the category E events together.

2.4 Most events received from JASMA or Shanghai ATC were category E events, and the causes of the events were the late coordination and lack of altitude revision between ATS units. It should also be clarified that the duration of most events was 0 sec. Both sides could confirm the transfer information before the aircraft pass the transfer point.

2.5 China RMA has also established event confirmation mechanism with JASMA, both parties will share and confirm the events in this area as soon as possible to prevent the event. China RMA will continue to track all the LHD events in AKARA Corridor and do our best to guarantee the safety in this area.

LHD Hot Spot: Hong Kong - Guangzhou (Hot Spot C)

2.6 The area of Hong Kong FIR interface with Guangzhou/Sanya FIRs has been identified as a Hot Spot since 2015. The category E LHDs reported in this area were mainly due to late revision of time or altitude in this area.

2.7 China RMA took remedial actions to reduce the events and coordinated with other RMAs to further the work. The South China Sea Scrutiny Group meeting for Large Height Deviations was held in Haikou July 2015. The ATC delegations from Hong Kong, Guangzhou, Zhan Jiang, Sanya and Shanghai attended the meeting.

2.8 During the meeting, the delegations had a discussion on the possible reasons leading to Category E/F LHDs, remedial actions to improve data sharing as well as investigation, and to reduce coordination errors in the region. Hong Kong, Guangzhou, Zhan Jiang, Sanya and Shanghai ATC all assigned a point of contact for LHD reporting and established LHD data exchanging mechanism to confirm the events. Guangzhou, Zhan Jiang, Sanya and Shanghai ATC also refined their internal procedures for LHD reporting, especially coordination errors, after the scrutiny group meeting. The aim is to establish a quick investigation and response mechanism for LHD occurrences, and then to reduce the events.

2.9 By the efforts of China RMA and all participating parties, the number of category E/F events in this area has greatly reduced from 2015 to 2019. This Hot Spot has been remarked as non-Hot Spot in the Hot Spot list above and there is no LHD reports in this area since 2018, so China RMA suggest reviewing and removing the Hot Spot C in this meeting.

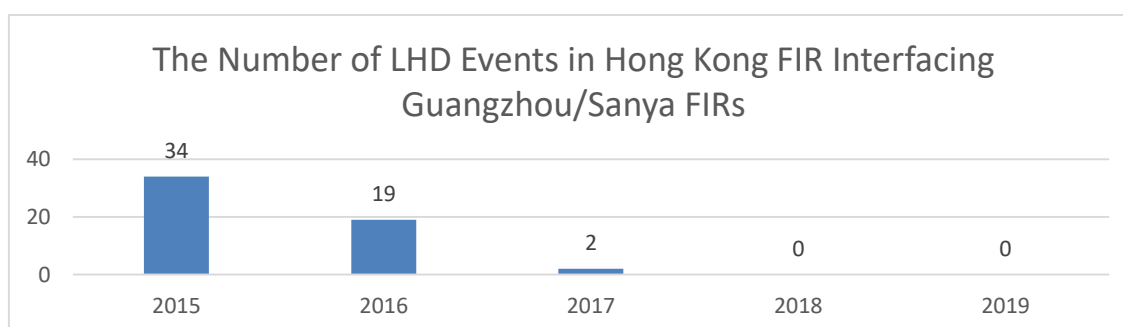


Figure 2: The Number of LHDs in Hong Kong FIR Interface with Guangzhou/Sanya FIRs

LHD Hot Spot: Lahore -Urumqi (Hot Spot E)

2.10 In 2012, China RMA received 16 LHD reports on events that occurred near the border of China and Pakistan. The key problem leading to those LHDs is due to the limit of communication and surveillance performance.

2.11 In July 2014, the eighteenth meeting of the CNS Sub-group of APANPIRG reviewed the reported deficiency on the ATS direct speech circuit and COM/SUR facilities between Pakistan and China. In order to address the issue and develop a solution to the identified communication deficiencies between China and Pakistan, the Communication Coordination Meeting between China and Pakistan hosted by ICAO Regional Office was held in May 2015 at headquarters of the ATMB, Beijing, China.

2.12 After that, Xinjiang regional ATMB has established a Very High Frequency (VHF) station with 2 channels and an ADS-B station at Taxkorgan in 2015 and an ADS-B station at Shache airport in 2017. Now the signal coverage for PURPA of communication and surveillance has been greatly enhanced.

2.13 In July 2019, ICAO Regional Office held another Communication Coordination Meeting between China and Pakistan. Both Urumqi and Lahore FIR has confirmed that the communication and surveillance ability has been enhanced and the number of LHDs is reducing year by year. There was only one LHD reported due to coordination error occurred in 2018 and 2019.

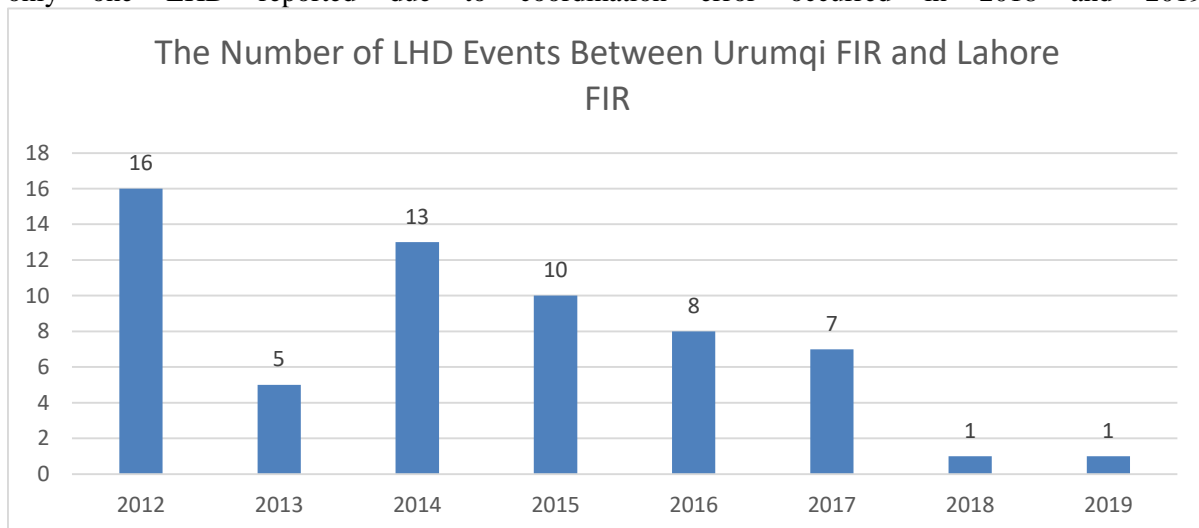


Figure 3: The Number of LHDs Between Urumqi FIR and Lahore FIR

2.14 The ATS units of Urumqi will continue to collaborate with Lahore ACC to improve the surveillance and communication situation in this area in the future, and China RMA will continue to track and analyze the events concerning the area. Moreover, both sides have enhanced the communication ability and there is just few LHD events occurred in the area for two consecutive years. So it should no longer be recognized as a Hot Spot. China RMA suggests reviewing and removing the Hot Spot in this meeting.

LHD Hot Spot: Guangzhou-Wuhan (Hot Spot H)

2.15 From the end of 2016, communication failure events became a growing contributor to the RVSM airspace risk in China. Reasons of why quite a number of events reported to China RMA were because that flight crews were unable to establish normal air-ground communications with the responsible ATS unit in South Central China, which is the reason that the area has been identified as a Hot Spot since 2017.

2.16 In order to address this issue and propose remedial actions, China RMA has conducted a number of investigations and a series of Scrutiny Group meetings with representatives from China RMA, ATMB, regional ATMBs, and China Airline Pilots Association in the last two years. CAAC issued CCAR-129R1 on 18 December 2017, adding the mandatory requirement for foreign flight crews to keep monitoring the VHF emergency frequency 121.5MHz. Moreover, China RMA is cooperating with IATA and has established an investigation mechanism for foreign airlines.

2.17 With the work has done from 2016 to 2019, the number of communication failure events have greatly reduced, especially the long duration events (longer than 10 minutes).

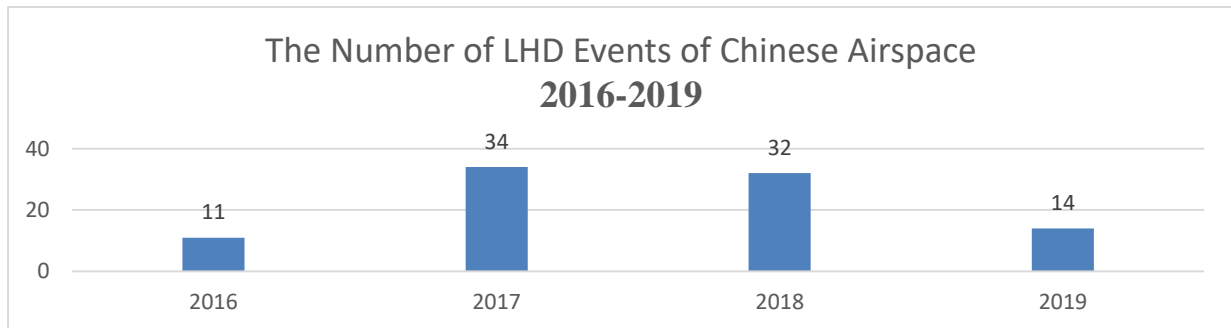


Figure 4: The Number of LHDs Between Guangzhou FIR and Wuhan FIR

2.18 As discussed in the RASMAG MAWG/6 meeting, there was no measurable vertical or horizontal risk associated with communication failure incidents if communication failure procedures have been executed correctly, and such events should not be counted as LHD.

2.19 China RMA suggested reviewing and removing the Hot Spot considering the mitigation measures taken. However, these events will actually cause trouble and increase the workload of the controllers, and impose a negative influence on RVSM airspace safety as well. So, China RMA will keep tracking the event report and seeking preventative measures.

3. CONCLUSION

3.1 In order to improve the operational safety of its responsible airspace, China RMA, with the supports from related partner RMAs, has been making efforts to explore and optimize possible solutions. China RMA appreciates the kind assistance from all the other RMAs, especially from MAAR, PARMO and JASMA, who played major roles in dealing with the above difficulties. With the contribution of all parts concerned, China RMA has significantly reduced the category E LHD events occurrences due to the resolution of the Hot Spots.

3.2 The Hot Spot between Beijing FIR and Ulaanbaatar FIR was removed. The other Hot Spots from the Hot Spot list have been remarked as “potential non-Hot Spots”.

Hot Spot	Involved FIRs	Identified	Remarks
C	Hong Kong-Guangzhou	2015	Potential non-Hot Spot
E	Lahore-Urumqi	2015	Potential non-Hot Spot
H	Guangzhou-Wuhan	2015	Hong Kong/Sanya reduction

Table 1: Extracted China RMA-relevant Hot Spots information

3.3 Since the LHD reports have significantly reduced and a lot of mitigation measures have been taken in these Hot Spots area, China RMA suggests RASMAG meeting reviewing and removing the Hot Spot C (Hong Kong-Guangzhou), E (Lahore-Urumqi) and H (Guangzhou-Wuhan). In the future, China RMA will further enhance the mechanism of LHD reporting and keep tracking the incidents to guarantee the safety of RVSM airspace.

4. ACTION BY THE MEETING

- a) The meeting is invited to: review and discuss the suggestion in paragraph 3.3;
and
- b) note the information contained in this paper.

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