



ICAO

International Civil Aviation Organization

**Twelfth Meeting of the Air Traffic Management Sub-Group
(ATM/SG/12) of APANPIRG**

Bangkok, Thailand, 23 – 27 September 2024

Agenda Item 6: ATM Coordination (Meetings, Route Development, Contingency Planning)

CONTINGENCY PLAN FOR VOLCANIC ASH AT MOUNT RUANG - INDONESIA

(Presented by Indonesia)

SUMMARY

This paper presents that the eruption of Mount Ruang in North Sulawesi - Indonesia had significant implications for aviation operations in North Sulawesi, resulting in temporary airport closures and disruptions to air traffic. The situation was managed through coordination with aviation authorities and prompt response measures. The resumption of normal operations and the downgrade of the volcanic alert level signify progress in returning to standard activities.

1. INTRODUCTION

1.1 On April 16, 2024, Mount Ruang in North Sulawesi erupted, releasing a significant volume of volcanic ash into the atmosphere. This eruption impacted aviation operations across the region, highlighting the need for an effective contingency plan to manage the associated risks and ensure safety.



2. DISCUSSION

Event Overview

2.1 Volcanic Eruption Details:

- a. Initial Eruption: Mount Ruang began its explosive eruption on April 16, 2024, at 21:45 WITA (Central Indonesia Time) / 01:45 UTC. A weak eruption was observed with thick white ash emissions. The eruption was characterized by a low intensity, with ash clouds appearing dense but relatively confined
- b. Subsequent Eruptions: The volcanic activity continued with additional eruptions on April 17, 2024, at 01:08 WITA (05:08 UTC-16 April 2024), 05:05 WITA (09:05 UTC-16 April 2024), 18:00 WITA (10.00 UTC), and 20:15 WITA (12: 15 UTC).
- c. Alert Level Increase: Due to the ongoing activity, the alert level for Mount Ruang was raised to Level IV (Awat – Danger) starting from 21:00 WITA (1.00 UTC) on April 16, 2024.
 - April 16, 21:45 WITA: An explosive eruption occurred, with an estimated eruption column height reaching 2,000 meters above the summit. The eruption produced significant ash clouds and was accompanied by noticeable explosive activity.
 - April 16, 2024, 21:45 WITA: An explosive eruption occurred, with an estimated eruption column height reaching 2,000 meters above the summit. The eruption produced significant ash clouds and was accompanied by noticeable explosive activity.
 - April 17, 2024, 01:08 WITA: Another eruption took place, with the column of ash estimated to reach 2,500 meters above the summit. This event was marked by rumbling sounds and loud explosions.
 - April 17, 2024, 05:05 WITA: A further eruption was observed with an estimated column height of 1,800 meters above the summit. This eruption was less intense compared to the previous events but still notable.
 - April 17, 2024, 18:00 WITA: The eruption at this time had a column height reaching 2,500 meters above the summit. This event was followed by another explosive eruption.
 - April 17, 2024, 20:15 WITA: A significant explosive eruption occurred, with the eruption column observed to be gray to black in color, reaching an estimated height of 3,000 meters above the summit. This eruption was accompanied by intense rumbling noises and was felt as seismic tremors at the PGA Ruang monitoring post.

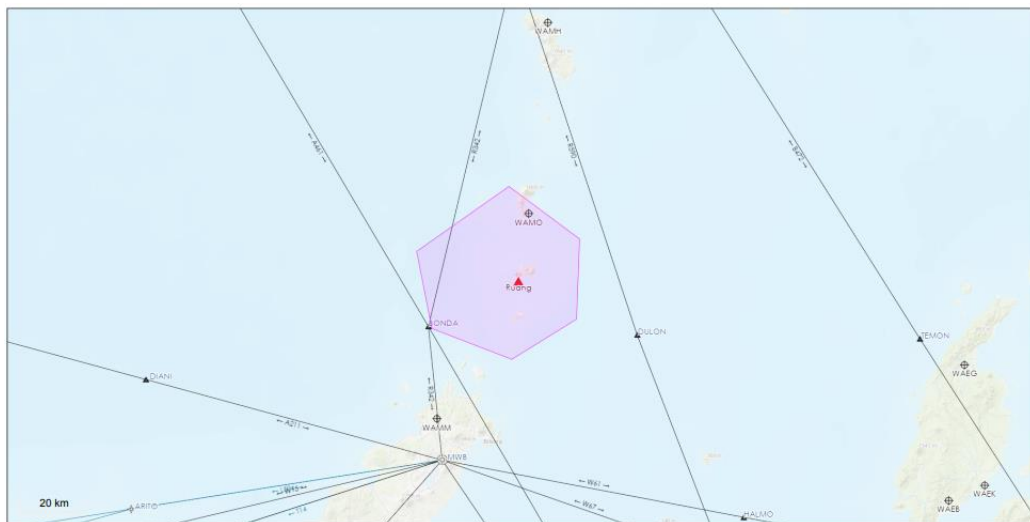
ATS Route Closures:

2.2 ATS Routes closed due to volcanic ash eruption from Mount Ruang, all traffic should avoid the affected routes as follows:

- **A461 Segment:** NITIP - BANDA - AMN VOR/DME
- **R342 Segment:** PEDNO - BONDA - MWB VOR/DME

- **R590 Segment:** DULON - PEDNO
- **A211 Segment:** GARUT - DIANI - MWB VOR/DME
- **L504 Segment:** ARITO - MWB VOR/DME
- **W15 Segment:** GOTSA - MWB VOR/DME
- **W51 Segment:** GONTA - MWB VOR/DME
- **T9 Segment:** ARITO - MWB VOR/DME
- **T14 Segment:** GONTA - MWB VOR/DME

This closure was announced via NOTAM A0996/24 NOTAMR A0995/24



Airport Closure

2.3 Sam Ratulangi International Airport Closure: In response to the volcanic ash cloud, Sam Ratulangi International Airport in Manado was closed on April 18, 2024, at 08:00 WITA (00:00 UTC). This closure was announced via NOTAM A0998/24 NOTAMN.

2.4 Changes in Volcanic Activity and Airport Operations:

- Alert Level Downgrade: The activity level of Mount Ruang was downgraded to Level III (Siaga – Alert) on April 22, 2024, at 09:00 WITA/01:00 UTC.
- Airport Reopening: Following the downgrade, Sam Ratulangi International Airport resumed normal operations on April 22, 2024, at 12:01 WITA/04:00 UTC, as indicated by NOTAM A1054/24 and NOTAMC A1041/24.

2.5 Impact on Air Traffic:

- Departures Affected: A total of 80 departure flights were impacted by the volcanic activity.
- Arrivals Affected: A total of 67 arrival flights were affected.

- **Total Traffic Affected:** The total number of flights impacted by the eruption was **147**.

Contingency Plan Overview:

2.6 Ash Cloud Monitoring and Forecasting:

Collaboration: Coordination with the Volcanic Ash Advisory Center (VAAC) and meteorological services to monitor the ash cloud's progression and predict its movement.

2.7 Airspace Management:

- **Temporary Restrictions:** Implementation of temporary airspace restrictions in areas heavily affected by the ash cloud to ensure aircraft safety.
- **Alternative Routing:** Establishment of alternative flight paths to circumvent affected airspace and reduce disruptions to air traffic.

2.8 Communication Protocols:

Information Dissemination: Regular updates to airlines, air traffic control centers, ATS adjacent state, and other relevant stakeholders about the ash cloud's status and operational impacts.

2.9 Operational Procedures:

Flight Guidelines: Issuance of guidelines for airlines on operating aircraft in volcanic ash conditions, including recommended altitude adjustments and flight path alterations.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information contained in this paper regarding the ATM Contingency Plan Volcanic Ash at Gunung Ruang.

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