

*International Civil Aviation Organization*



ICAO

**WORKING PAPER**

**ICAO Asia and Pacific (APAC)**  
Twenty-Sixth Meeting of the Meteorology Sub-Group  
(MET SG/26)

Online, 1 to 5 August 2022

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**Agenda Item 3: Air navigation deficiency**

**RESOLUTION OF AP-MET-17 – INFORMATION ON VOLCANIC ACTIVITY**

(Presented by Tonga)

**SUMMARY**

This paper outlines the work done by Tonga on resolving Air Navigation Deficiency AP-MET-17. Supporting evidence is provided to show this deficiency is no longer valid and can be removed from the APANPIRG Air Navigation Deficiency register.

**1. INTRODUCTION**

1.1 APANPIRG deficiency AP-MET-17 was reported in January 2008 and states that information on volcanic activity was not being provided regularly to ATS units, MWOs and VAAC.

1.2 The Pacific Island Aviation Weather Services (PIAWS) Panel, an expert panel under the Pacific Meteorological Council, assigned a task team to develop work plans to assist Pacific States holding meteorological deficiencies to resolve them. A work plan was developed to assist Tonga in the resolution of AP-MET-17, which included the documentation of support from VAAC Wellington, following a series of volcanic ash exercises. The series of eruptions of Hunga Tonga-Hunga Ha'apai during December 2021 and January 2022 have provided further opportunity for Tonga to demonstrate the issuance of operational volcanic hazard information to VAAC Wellington/MWO Wellington and the Tonga ATS unit.

**2. DISCUSSION**

VAAC Wellington exercise series

2.1 VAAC Wellington arranged a series of exercises with Tonga Meteorological Service for a period June to August 2020, simulating different scenarios that would warrant Volcano Observatory Notice to Aviation (VONA) issuance. Several opportunities for improvement were identified during the early period of the exercises – these were implemented by the end of the exercise series, with the exercise VONA issuance working well.

ICAO APAC VOLCEX 20/02 exercise

2.2 Tonga Geological Services and Tonga Meteorological Service both participated fully in the ICAO APAC VOLCEX 20/02 exercise in July 2020. The exercise simulated the high-level eruption of Tofua, with the Tonga Geological Service working with Tonga Meteorological Service to provide regular exercise VONA to the VAAC/MWO and to ATS. The report of the exercise was presented as an appendix to [IP/02 VOLCEX 20/02 Outcomes and Follow-up](#).

Hunga Tonga-Hunga Ha’apai eruptions

2.3 The eruptions of Hunga Tonga-Hunga Ha’apai during late 2021 and early 2022 were well publicised around the world, due to the violent nature and devastating impact on the Kingdom of Tonga.

2.4 VONA were regularly issued by Tonga Geological Service, in coordination with Tonga Meteorological Service, being emailed through to VAAC Wellington/MWO Wellington and Tonga ATS, in accordance with the requirements of Annex 3.

2.5 VAAC Wellington has provided a letter of support, provided as Attachment A to this paper, outlining the excellent communication from Tonga Geological and Meteorological Services during the eruptive period, and the invaluable observational support that was continued to be provided during the time the usual communication systems were unavailable.

2.6 Tonga ATS Unit received volcanic activity information provided by the Tonga Geological Service and Meteorological Services during the eruptions. Official confirmation of this is forthcoming and intended to be provided during the meeting.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- i. note the information contained in this paper and discuss as required;
- ii. formulate a Draft Conclusion for the removal of the deficiency AP-MET-17 from the APANPIRG Deficiency Database; and
- iii. request the ICAO Secretariat to progress the update ANP Vol I Table MET I-1 State Volcano Observatories to include Tonga Geological Services.

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**ATTACHMENT A – VAAC Wellington Letter of Support**



Mr Peter Dunda  
Regional Officer – MET/ENV  
ICAO Asia-Pacific Regional Office  
252/1 Vibhavadi-Rangsit Road  
Chatuchak, Bangkok 10900

13<sup>th</sup> June 2022

Dear Mr Dunda

**RE: Letter of Support for Tonga Meteorological Service**

From late December 2021 through till mid-January 2022, Wellington VAAC dealt with multiple eruptions from Hunga Tonga-Hunga Ha'apai in the Kingdom of Tonga, issuing 53 VAA as a result. The clear and excellent communication from both Tonga Meteorological Service and Tonga Geological Services proved invaluable to Wellington VAAC during this period.

During this eruptive period, Wellington VAAC received roughly 52 VONA from Tonga Geological Services, in coordination with Tonga Meteorological Service via email. The VONA were timely and gave detailed descriptions of the colour of the eruption plumes, as well as ashfall coverage and depth. Photos and videos of the eruptions, as well as PIREP were often attached to the VONA as supporting evidence.

Even when communication to the Kingdom of Tonga was disrupted due to the very violent eruption of Hunga Tonga-Hunga Ha'apai on January 15<sup>th</sup> 2022, Tonga Meteorological Service remained in regular contact with Wellington VAAC via satellite phone, continuing to provide observations of the volcanic ash plume.

The information provided by Tonga Geological Services and Tonga Meteorological Service was vital to Wellington VAAC while preparing VAA during the eruptive episodes. Wellington VAAC believes that the timely and excellent communication from Tonga Meteorological Service during the Hunga Tonga-Hunga Ha'apai eruptions highlight that the Air Navigation Deficiency is no longer valid.

Yours sincerely

Ashlee Parkes on behalf of Wellington VAAC  
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