

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**REPORT OF THE FIFTH MEETING OF THE REGIONAL ATM CONTINGENCY PLAN
TASK FORCE (RACP/TF/5)**

BANGKOK, THAILAND, 1 – 4 December 2015

The views expressed in this Report should be taken as those of the
Meeting and not the Organization

Approved by the Meeting
and published by the ICAO Asia and Pacific Office, Bangkok

RACP/TF/5
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INTRODUCTION

Meeting

1.1 The Fifth Meeting of the Regional Air Traffic Management (ATM) Contingency Plan Task Force (RACP/TF/5) was held in Bangkok, Thailand from 1 to 4 December 2015 at the Kotaite Wing of the ICAO Asia and Pacific Regional Office.

Attendance

2.1 The meeting was attended by 32 participants from Cambodia, Indonesia, Lao PDR, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, United States and Viet Nam. A list of participants is at **Appendix A** to this report.

Officers & Secretariat

3.1 Mr. Rosly Saad, Director (Air Traffic Services), Civil Aviation Authority of Singapore, chaired the meeting.

3.2 Mr. Shane Sumner, Regional Officer ATM, ICAO Asia and Pacific Office, was the Secretary for the meeting.

Opening of the Meeting

4.1 Mr. Shane Sumner, on behalf of Mr. Arun Mishra, Regional Director of ICAO Asia and Pacific Office, welcomed all the participants to the meeting.

Documentation and Working Language

5.1 The working language of the meeting and all documentation was English. Eight working papers and one Information Paper (IP) were considered by the meeting. A list of papers is included at **Appendix B** to this report.

Draft Conclusions, Draft Decisions and Decisions – Definition

6.1 RACPTF recorded its actions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

- a) **Draft Conclusions** deal with matters that, according to APANPIRG terms of reference, require the attention of States, or action by the ICAO in accordance with established procedures;
- b) **Draft Decisions** deal with the matters of concern only to APANPIRG and its contributory bodies; and
- c) **Decisions** of RACPTF that relate solely to matters dealing with the internal working arrangements of RACPTF.

List of Decisions and Draft Conclusions/Decisions

7.1 List of RACP/TF/5 Draft Conclusions

Draft Conclusion RACP/TF 5-1 – Regional ATM Contingency Plan

That, on completion of the outstanding Tasks in the RACP/TF Task List, Version 1.0 of the Asia/Pacific Regional ATM Contingency Plan be adopted, and uploaded to the ICAO Asia/Pacific Regional Office Website.

7.2 List of RACP/TF/5 Draft Decisions

Draft Decision RACP/TF 5-2 – Dissolution of RACP/TF

That, having completed Version 1.0 of the Asia/Pacific Regional ATM Contingency Plan, RACP/TF be dissolved and any future revision of the plan and residual tasks arising be managed by ATM/SG.

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REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Agenda (WP/01)

1.1 The provisional agenda was adopted by the meeting.

Agenda Item 2: Review Outcomes of Related Meetings

Outcomes of Related Meetings (WP/02)

2.1 The Twenty-Sixth Meeting of the Asia/pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/26, Bangkok, Thailand, 7 – 10 September 2015) had agreed to **Conclusion 26-9 – Asia/Pacific Regional Framework for Collaborative ATFM**, adopting the Framework document. The Framework included performance objectives relevant to Regional ATM Contingency planning, in the areas of ATFM Regulations, Pre-Tactical ATFM Execution, Post-Operations Analysis, Pre-Tactical and Tactical Capacity and Demand Monitoring and Analysis, ATFM Systems, Tactical ATFM Measures.

2.2 The Framework also included among its Research and Future Development Possibilities *Collaborative Trajectory Options*, providing for flexible routing options to avoid airspace constrained by contingency events.

2.3 APANPIRG/26 had also discussed the issue of timely and ongoing information sharing during a volcanic eruption and/or ash cloud event. **Conclusion 26-19 - Volcanic Ash Information Coordination and Collaboration**, urged States to establish a mechanism for updates of information, participate in volcanic ash exercises, and consider establishing an internal crisis management centre.

2.4 The Second Meeting of the Asia/Pacific Volcanic Ash Exercises Steering Group (VOLCEX/SG/2, Bangkok, Thailand, 14 – 16 September 2015) reviewed the VOLPHIN 15/01 volcanic ash exercise, and made 3 recommendations relevant to the work of RACP/TF:

Recommendation 4: Regulatory provisions for response to volcanic ash contingency events;

Recommendation 5: Airspace and airport management in response to volcanic eruption and volcanic ash cloud; and

Recommendation 6: Regular updates of volcanic ash information

2.5 These recommendations and the resultant proposed inclusions in the Regional ATM Contingency Plan were further discussed under WP/04.

2.6 The meeting was informed that ASHTAM required the inclusion of colour-coded information relating to volcanic ash cloud. As the colour-coded information was not available at all volcanic observatories it was determined that NOTAM would be the appropriate aeronautical information message for volcanic ash clouds. This information would be provided by the Secretariat to the Regional AIS – AIM Implementation Task Force (AAITF) for inclusion in Regional AIS guidance material and in the Operating Procedures for Aeronautical Dynamic Data (OPADD).

Agenda Item 3: Review the status of Asia/Pacific ATM Contingency Plans

Indonesia ATM Contingency Plan (IP/02)

3.1 Indonesia provided an update on the establishment of a Level 1 Contingency Plan, published in AIP Supplement 13/2015 on 29 October 2015. The plan included the delegation of responsibility for Jakarta ACC and Ujung Pandang ACC airspace up to F280 to the relevant ATC Approach units, and the delegation of Jakarta airspace to Ujung Pandang, or Ujung Pandang airspace to Jakarta, in the event that either ACC was unable to provide services.

3.2 The Level 2 contingency plan would be published in November 2016.

3.3 The meeting was reminded that the issuance of ASHTAM or NOTAM related to volcanic ash cloud were the responsibility of the Aeronautical Information Service (AIS) of States having responsibility for the provision of services in the affected airspace. The role of the Volcanic Ash Advisory Centre (VAAC) was to issue volcanic ash advisory (VAA) or graphical volcanic ash advisory (VAG) information.

3.4 Sri Lanka noted some items in Indonesia's contingency route and flight level allocation scheme (FLAS) structure that may require changes to their contingency plans.

3.5 Philippines acknowledged the proposed FLAS relating to contingency ATS routes A461 and B473, as they conformed to the existing FLAS.

Agenda Item 4: Asia/Pacific Regional ATM Contingency Plan

Airspace and Airport Management During Volcanic Ash Events (WP/03)

4.1 The secretariat presented information that was previously provided to VOLCEX/SG/2 with a view to its inclusion in future volcanic ash exercises and the development of recommended regional guidance.

4.2 Closure of airspace had been included in VOLPHIN 15/01 exercise NOTAMS, and had subsequently been queried in-exercise by a number of observers.

4.3 The meeting was provided with references from ICAO Doc 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM), Annex 2 to the Convention on Civil Aviation, and the guidance in ICAO Doc 9974 – *Flight Safety and Volcanic Ash – First Edition 2012*, ICAO Doc 9691 – *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds – Third Edition 2015*, and the ICAO *Air Traffic Management Volcanic Ash Contingency Plan Template – First Edition August 2012*.

4.4 Responses to volcanic ash events could include:

- declaration of danger area or restricted area (territorial airspace only) for the airspace over and in proximity to the volcanic source;
- re-routing of all traffic around affected airspace (effectively airspace closure);
- promulgation of amended routes available to avoid the affected airspace, for operators choosing to do so;
- air traffic flow management measures; and/or

- aerodrome closure.

4.5 The meeting agreed to the following contingency planning principles for contingency response to volcanic ash cloud:

Airspace

1. Declaration of danger area or, if required by State regulations, restricted area (territorial airspace only) containing the pre-eruptive or erupting volcano and its forecast/observed ejecta;
2. Inclusion in relevant NOTAM of proposed alternate ATS routes to avoid the volcanic ash cloud and assure regularity of ATM;
3. Inclusion in relevant NOTAM of air traffic flow management (ATFM) measures where applicable;

Airports

4. Inclusion in relevant NOTAM of requirements for pilots to plan for alternate aerodromes and/or additional fuel to allow for delays; and
5. Closure of aerodromes only during periods of volcanic ash contamination of the movement area.

4.6 It was further agreed that NOTAM relating to volcanic ash should include text conforming to these principles.

4.7 The meeting was reminded that Danger Area or Restricted Area relating to volcanic activity were confined to the vicinity of a pre-eruptive or erupting volcano to contain the volume of airspace affected by ballistic ejecta. They should not be promulgated to contain the volume of airspace of the volcanic ash cloud. It was a pilot responsibility to assess the information provided about the volcanic ash cloud, such as the SIGMET and NOTAM information, to determine whether to operate in or avoid the affected airspace.

Volcanic Ash Contingency Planning (WP/04)

4.8 The meeting was presented with proposed inclusions in the Regional ATM Contingency Plan for response to Volcanic Ash Cloud and similar contingency events, as was specified in the RACP/TF Terms of Reference (TOR). The information provided included relevant items from the ICAO *Air Traffic Management Volcanic Ash Contingency Plan Template – First Edition August 2012*, and a reminder of the need for States to ensure adherence to ICAO Standards and Recommended Practices (SARPS)

4.9 Outcomes from VOLCEX/SG/2 were also provided to the meeting. They included:

Recommendation 4: Regulatory provisions for response to volcanic ash contingency events

States' regulatory provisions and arrangements should be reviewed to ensure that (in accordance with the guidance provided in ICAO Doc 9974 – *Flight Safety and Volcanic Ash*):

- a) Aircraft operators are required to include in their safety management system (SMS) an identifiable safety risk assessment for operations into airspace forecast to be, or at aerodromes known to be, contaminated with volcanic ash
- b) Safety oversight procedures are used for the evaluation of operators' capability to conduct flight operations safely into airspace forecast to be, or aerodromes known to be, contaminated with volcanic ash

Recommendation 5: Airspace and airport management in response to volcanic eruption and volcanic ash cloud

States' airspace and airport management policies and procedures should be reviewed to ensure that (in accordance with the guidance provided in ICAO Doc 9974 – *Flight Safety and Volcanic Ash* and the provisions of ICAO Doc 4444 – *PANS-ATM*, 15.8.1c and Note 2):

- a) Airspace affected by volcanic ash cloud should not be 'closed'
- b) Specification in NOTAM of alternate routing or other air traffic flow management (ATFM) measures to manage airspace constraints arising from volcanic ash cloud should be solely for the purpose of ensuring the predictability and regularity of air traffic, and should be based on an assessment of capacity and demand in airspace affected by volcanic ash and/or or by aircraft avoiding the volcanic ash cloud
- c) NOTAM specifying alternate routing or other ATFM measures related to a volcanic eruption or volcanic ash cloud should be issued separately from the ASHTAM/NOTAM issued in accordance with Annex 15, 5.1.1.1, r and u
- d) Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area
- e) Airport capacity limitations of alternate aerodromes, including apron capacity, should be considered, and recommendations for the use of other alternates considered for inclusion in NOTAM (in c, above)
- f) If required by State regulations, any declaration of a Danger Area or Restricted Area should be confined to the pre-eruptive or erupting volcano and the area containing its forecast or observed ejecta

Recommendation 6: Regular updates of volcanic ash information

The Regional ATM Contingency Plan should be reviewed and, where necessary, amended to promote the principles adopted by APANPIRG/26 in *Conclusion 26-19 – Volcanic Ash Information Coordination and Collaboration*

4.10 A range of inclusions in the Regional ATM Contingency Plan that addressed the VOLCEX/SG recommendations and Conclusion 26-19 was proposed. The meeting agreed to the proposed inclusions, which were provided within the context of the relevant sections of the Contingency Plan in WP/06 and WP/07.

4.11 The meeting noted that an Appendix to the Regional ATM Contingency Plan would be drafted, summarizing actions to be taken by relevant Volcanic Observatories, Volcanic Ash Advisory Centres (VAACs), Meteorological Watch Offices (MWOs) and Area Control Centres (ACCs). The actions were currently being examined by VOLCEX/SG. It was suggested that this should include actions to be taken by aircraft operators, who should also play an active role in seeking information.

4.12 In response to a query on what radius around a pre-eruptive or eruptive volcano should be considered for special use airspace (SUA), the Secretariat provided information from AIP New Zealand on SUA operations for volcanic ballistic ejecta (Flimsy 1). The information could also be viewed at http://www.aip.net.nz/pdf/ENR_5.3.pdf.

4.13 USA provided examples of contingency plans relating to volcanic activity for the Anchorage FIR (Flimsy 4, active volcanoes within the airspace) and Oakland FIR (Flimsy 5) no active volcanoes in the airspace. It was agreed that these would be appended to the Regional ATM Contingency Plan as examples of current contingency practices.

Draft Regional ATM Contingency Plan – Background Information (WP/06)

4.14 The Background Information section of the Draft Regional ATM Contingency Plan was provided for consideration by the meeting, including new elements related to volcanic ash contingency planning as agreed under WP/04. **RACP/TF/5 WP/06 Attachment A** provided the Background Information Section of the document. **RACP/TF/5 WP/06 Attachment B** provided the Principles of contingency planning which were referred to in the Background Information section and provided as an appendix to the Plan document.

Draft Regional ATM Contingency Plan – Performance Improvement Plan (WP/07)

4.15 The Performance Improvement Plan section of the Regional ATM Contingency Plan was presented to the meeting (**RACP/TF/5 WP/07 Attachment A**), including new performance objectives relating to volcanic ash cloud contingency events as agreed under WP/04.

4.16 The Draft Regional ATM Contingency Plan, including the new elements agreed under WP/04, is provided at **Appendix C** to this document.

Reporting of State Contingency Planning Status (Flimsy 2)

4.17 The Secretariat proposed additional items for inclusion among the performance objectives of the Regional ATM Contingency Plan relating to States reporting the status of their national contingency plans and bi-lateral contingency arrangements.

4.18 Annex 11 paragraph 2.30 stated *inter alia*:

Air traffic services authorities shall develop and promulgate contingency plans for implementation in the event of disruption, or potential disruption, of air traffic services and related supporting services in the airspace for which they are responsible for the provision of such services.

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Report of the Meeting

4.19 There were currently no mechanisms in place to allow APANPIRG to monitor contingency plan status in the Region. The following APAC Administrations had not previously reported their contingency plan status to the ICAO Regional Office:

Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Cook Islands, DPR Korea, Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Vanuatu.

4.20 The meeting agreed that the following performance objectives be added to the Regional ATM Contingency Plan:

States should report the status of their contingency planning to the ICAO APAC Regional Office, as follows:

1. Implementation of the national ATM Contingency Plan, together with the hyperlink to the website location of the Plan; and
2. The establishment of contingency arrangements with each neighbouring State.

Note: Information of a sensitive nature such as that related to matters of national security need not be included in promulgated contingency plans.

4.21 Reported implementation status would be routinely reported to the ATM Sub-Group of APANPIRG (ATM/SG), and subsequently to APANPIRG, at their respective annual meetings.

4.22 APANPIRG Air Navigation Deficiencies would be raised against the provisions of Annex 11 paragraph 2.30 for States that did not report implementation of their national ATM contingency plan, and/or did not promulgate the plan.

4.23 It was noted that States may remove information of a sensitive nature, such as that related to State security, from their promulgated contingency plan/s.

RACP/TF - Outstanding Items and Task Force Dissolution. (Flimsy 3)

4.24 The Secretariat presented outstanding items from the RACP/TF Task List, together with proposals for their completion and the dissolution of the Task Force.

4.25 It was proposed that outstanding tasks would be completed by the Task Force Chair and Secretary, consulting where necessary with Task Force members.

4.26 The meeting agreed to the actions proposed in Flimsy 3, and consequently also agreed to the following Draft Conclusion and Draft Decision:

Draft Conclusion RACP/TF 5-1 – Regional ATM Contingency Plan

That, on completion of the outstanding Tasks in the RACP/TF Task List, Version 1.0 of the Asia/Pacific Regional ATM Contingency Plan be adopted, and uploaded to the ICAO Asia/Pacific Regional Office Website.

Draft Decision RACP/TF 5-2 – Dissolution of RACP/TF

That, having completed Version 1.0 of the Asia/Pacific Regional ATM Contingency Plan, RACP/TF be dissolved and any future revision of the plan and residual tasks arising be managed by ATM/SG.

4.27 The meeting discussed the Regional Contingency Route and Flight Level Allocation Schemes, which would be appended to the Regional ATM Contingency Plan. It was noted that the regional contingency route structure was incomplete, as a significant number of States had not provided any information. The appendix containing the regional Contingency Route and Flight Level Allocation Schemes would include information to that effect, and a qualifying statement that the information was subject to change, and represented a snapshot of information current at the time of publication.

Agenda Item 5: RACP/TF Task List (WP/5)

5.1 The meeting updated the task list which is included as **Appendix D** to this report.

Agenda Item 6: Any Other Business

6.1 No other business.

Agenda Item 7: Date and Venue of the Next Meeting

7.1 No further meetings of the RACP/TF were proposed. **Draft Decision RACP/TF 5-2** refers.

Closing of the Meeting

8.1. In closing the meeting, the Chairman thanked the Task Force participants for their support for and contributions, and congratulated them on the outcomes. He noted that the 5 meetings of the Task Force had not only resulted in the production of the final draft version of the Regional ATM Contingency Plan, but had provided an opportunity for States to engage in discussions that would result in improved coordinated contingency response capability in the Region. The Chair also noted that the proposed dissolution of the Task Force did not mark the end of work, but the beginning of the work for States, utilizing the guidance in the Regional ATM Contingency Plan to develop and implement robust, coordinated ATM contingency plans.

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Appendix A to the Report

List of Participants

	Name		Title/Organization	TEL/FAX/E-MAIL
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International Civil Aviation Organization

**The Fifth Meeting of the Regional ATM Contingency Plan Task Force
(RACP/TF/5)**

Bangkok, Thailand, 1 – 4 December 2015

LIST OF WORKING PAPERS (WPs) AND INFORMATION PAPERS (IPs)

(Presented by the Secretariat)

NUMBER	AGENDA	WORKING PAPERS	PRESENTED BY
WP/1	1	Provisional Agenda	Secretariat
WP/2	2	Outcomes of Related Meetings	Secretariat
WP/3	3	Airport and Airspace Management During Volcanic Ash Events	Secretariat
WP/4	4	Volcanic Ash Contingency Planning	Secretariat
WP/5	5	RACP/TF Task List	Secretariat
WP/6	4	Contingency Plan Background Information Section Update	Secretariat
WP/7	4	Contingency Plan Performance Improvement Plan Update	Secretariat

NUMBER	AGENDA	INFORMATION PAPERS	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	3	Indonesia ATM Contingency Plan	Indonesia

NUMBER	AGENDA	FLIMSIES	PRESENTED BY
Flimsy 1	-	Information on New Zealand SUA operations for Volcanic Ballistic Ejecta	Secretariat
Flimsy 2	4	Reporting of State Contingency Planning Status	Secretariat
Flimsy 3	4	RACP/TF Outstanding Items and Task Force Dissolution	Secretariat
Flimsy 4	4	Anchorage FIR Volcanic Ash Plan	USA
Flimsy 5	4	Oakland FIR Volcanic Ash Plan	USA

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

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ASIA/PACIFIC REGION ATM CONTINGENCY PLAN

DRAFT Version 0.2, MONTH YEAR

This Plan was developed by the Asia/Pacific Regional ATM Contingency
Plan Taskforce

Approved by APANPIRG/XX and published by the
ICAO Asia and Pacific Office, Bangkok

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SCOPE OF THE PLAN

Plan Structure

1.1 The Asia/Pacific Region ATM Contingency Plan (hereinafter referred to as the Plan) falls within a hierarchy of planning documents (**Figure 1**) defining global vision and strategy, and regional implementation action.

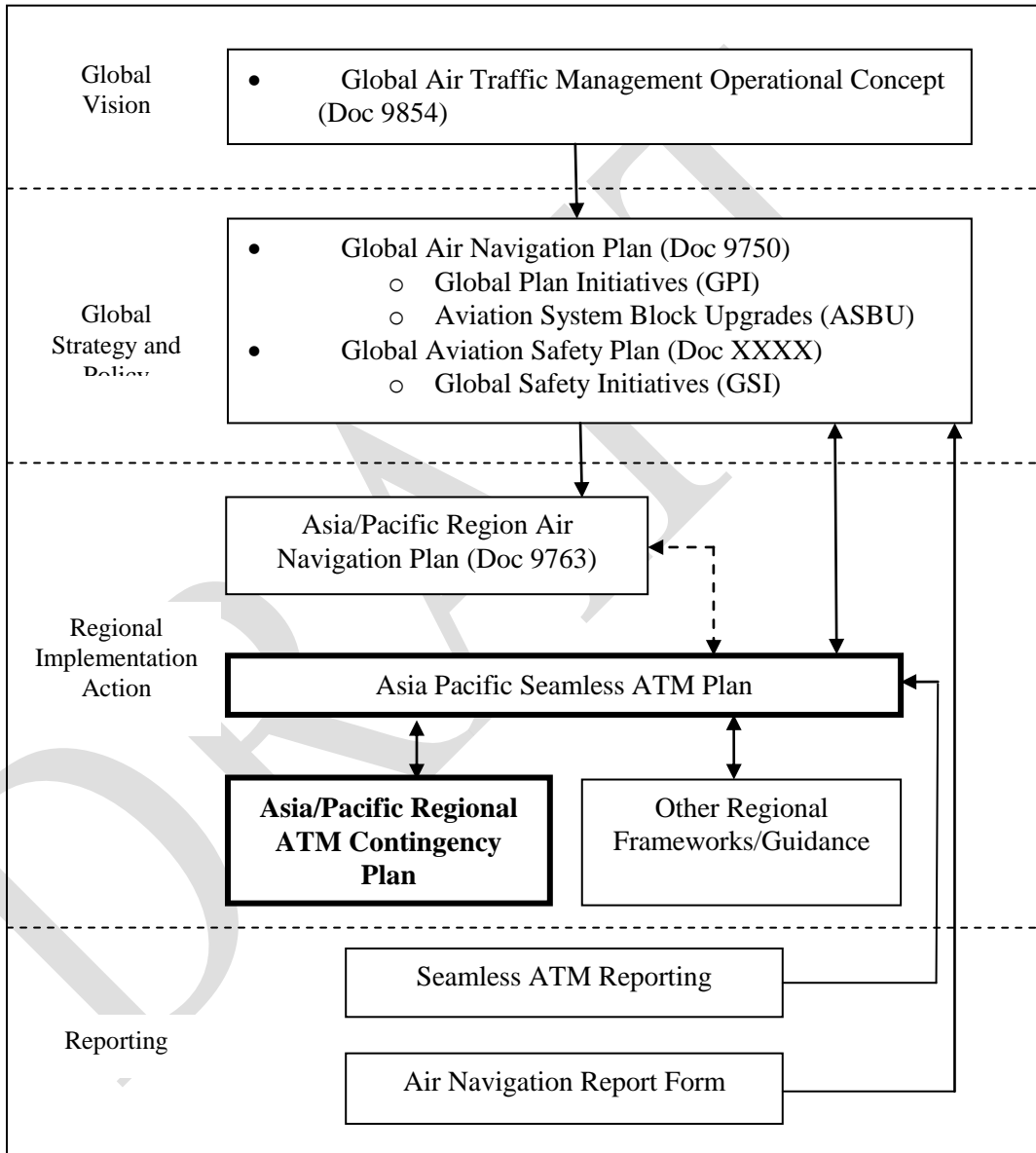


Figure 1: Regional Planning Documents and Linkages.

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1.2 The Plan is structured to provide:

- Regional ATFM planning principles;
- Regional contingency planning elements;
- Analysis of the current Regional contingency planning status;
- A performance improvement plan;
- Considerations for research and future development; and
- Milestones, timelines, priorities and actions.

1.3 The plan describes a hierarchy of contingency plans, and categories of contingency events:

- a) Hierarchy of contingency plans:
 - i. **Level 1**, for domestic (internal State) plans having little or no effect on external air navigation service providers;
 - ii. **Level 2**, for coordinated (inter-State) contingency plans involving two or more States; and
 - iii. **Level 3**, for sub-Regional or Regional contingency plans, detailing contingency arrangements affecting airspace users or services provided outside the contingency airspace.
- b) Categories of contingency plans:
 - i. **Category A – Airspace Safe, but Restricted or No ATS**, due to causal events such as industrial action, pandemic, earthquake, nuclear emergency affecting the provision of ATS, or ATM system failure or degradation;
 - ii. **Category B – Airspace Not Safe**, due to causal events such as Volcanic Ash Cloud (VAC), nuclear emergency, military activity; and
 - iii. **Category C – Airspace Not Available**, due to causal events such as pandemic, national security – normally a political decision.

1.4 Level 1 Contingency Plans and Level 2 Contingency Arrangements are referenced but not included in the Plan. Level 3 (sub-Regional) ATS contingency route structures and flight level allocation schemes are provided in the Plan Appendices.

1.5 Appendices to the Plan provide details of:

- ATM Contingency Planning Principles
- Basic Contingency Plan Elements
- Level 1 Contingency Plan Template
- Volcanic Ash Cloud (VAC) Contingency Plan Template
- State Contingency Contact Points.
- Sub-Regional ATM Contingency Routes and FLAS.

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Plan Review

1.6 The plan requires regular updating to accommodate changes in contingency arrangements and contact details. Updating of the plan appendices is carried out by the ICAO Asia/Pacific Regional Office on receipt of updates from States, and is not dependent on re-versioning or APANPIRG approval. It is intended that APANPIRG and its contributory bodies conduct a complete review of the Plan every three years (or at shorter intervals as determined by APANPIRG from time to time).

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OBJECTIVES

Plan Objectives

2.1 The objectives of the Plan are to

- i. provide a contingency response framework for Asia/Pacific States to ensure the managed continuation of aircraft operations in affected FIRs, including transiting between unaffected FIRs, during contingency events;
- ii. ensure timely, harmonized and appropriate responses to all events resulting in disruption to the provision of Air Traffic Services (ATS), or in which ATS is involved, and hence to normal aircraft movement; and
- iii. provides a greater degree of certainty for airspace and aerodrome users during contingency operations.

2.2 In order to meet these objectives the Plan:

- i. Provides uniform policy and guidance for responding to reasonably foreseeable operational restrictions, including short, medium and long term actions, prevention of overload of the contingency system and guidance for implementation and resumption
- ii. Reviews that status of ATM Contingency Plans and contingency preparedness of Asia/Pacific Region States;
- iii. Identifies areas where ATM contingency planning requires improvement to comply with ICAO Standards and Recommended Procedures defined in Annex 11 *Air Traffic Services* and accepted best practices;
- iv. analyses contingency procedures in use in other ICAO Regions and harmonizes with similar work in adjacent airspaces;
- v. takes into account the varying levels of contingency response necessary for a range of precipitating events;
- vi. provides principles for ATM contingency planning;
- vii. details recommended contingency responses to events such as, but not limited to, severe meteorological and geological phenomena, pandemics, national security and industrial relations issues; and
- viii. provides contingency planning templates for States.

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ABBREVIATIONS AND ACRONYMS

AAR	Aerodrome Arrival Rate or Airport Acceptance Rate
ABI	Advanced Boundary Information (AIDC)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACP	Acceptance (AIDC)
ADOC	Aircraft Direct Operating Cost
ADS-B	Automatic Dependent Surveillance-Broadcast
ADS-C	Automatic Dependent Surveillance-Contract
AIDC	ATS Inter-facility Data Communications
AIGD	ICAO ADS-B Implementation and Guidance Document
AIM	Aeronautical Information Management
AIRAC	Aeronautical Information Regulation and Control
AIRD	ATM Improvement Research and Development
AIS	Aeronautical Information Service
AIXM	Aeronautical Information Exchange Model
AMAN	Arrival Manager
ANSP	Air Navigation Service Provider
AN-Conf	Air Navigation Conference
AOC	Assumption of Control (AIDC)
AOM	Airspace Organization and Management
APAC	Asia/Pacific
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
APCH	Approach
APEC	Asia Pacific Economic Cooperation
APSAPG	Asia/Pacific Seamless ATM Planning Group
APV	Approach with Vertical Guidance
APW	Area Proximity Warning
ASBU	Aviation System Block Upgrade
ASD	Aircraft Situation Display
ASEAN	Association of Southeast Asian Nations
ASMGCS	Advanced Surface Movements Guidance Control Systems
ATC	Air Traffic Control
ATCONF	Worldwide Air Transport Conference
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATS	Air Traffic Services
ATSA	Air Traffic Situational Awareness
ATM	Air Traffic Management
CANSO	Civil Air Navigation Services Organization
CARATS	Collaborative Actions for Renovation of Air Traffic Systems
CDM	Collaborative Decision-Making
CCO	Continuous Climb Operations
CDO	Continuous Descent Operations
CFIT	Controlled Flight into Terrain
CLAM	Cleared Level Adherence Monitoring
COM	Communication
CONOPS	Concept of Operations
CNS	Communications, Navigation, Surveillance
CPAR	Conflict Prediction and Resolution

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CPDLC	Controller Pilot Data-link Communications
CPWG	Cross-Polar Working Group
CSP	Communication Service Provider
CTA	Control Area
CTR	Control Zone
DARP	Dynamic Airborne Re-route Planning
DGCA	Directors General of Civil Aviation
DMAN	Departure Manager
DME	Distance Measuring Equipment
EST	Coordinate Estimate
FAA	Federal Aviation Administration
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIRB	Flight Information Region Boundary
FL	Flight Level
FLAS	Flight Level Allocation Scheme
FLOS	Flight Level Orientation Scheme
FRMS	Fatigue Risk Management System
FUA	Flexible Use Airspace
GANIS	Global Air Navigation Industry Symposium
GANP	Global Air Navigation Plan
GASP	Global Aviation Safety Plan
GBAS	Ground-based Augmentation System
GDP	Gross Domestic Product
GLS	GNSS Landing System
GNSS	Global Navigation Satellite System
GPI	Global Plan Initiative
HF	High Frequency
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation Systems
IO	International Organizations
IPACG	Informal Pacific ATC Coordinating Group
ISPACG	Informal South Pacific ATS Coordinating Group
ITP	In-Trail Procedure
KPA	Key Performance Area
LNAV	Lateral Navigation
LVO	Low Visibility Operations
MET	Meteorological
METAR	Meteorological Aerodrome Report
MLAT	Multilateration
MSAW	Minimum Safe Altitude Warning
MTF	Major Traffic Flow
NextGen	Next Generation Air Transportation System
OPMET	Operational Meteorological
OLDI	On-Line Data Interchange
OTS	Organised Track System
PACOTS	Pacific Organized Track System
PARS	Preferred Aerodrome/Airspace and Route Specifications
PASL	Preferred ATM Service Levels
PBN	Performance-based Navigation
PIA	Performance Improvement Areas

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PKP	Passenger Kilometres Performed
PVT	Passenger Value of Time
RAIM	Receiver Autonomous Integrity Monitoring
RAM	Route Adherence Monitoring
RANP	Regional Air Navigation Plan
RPK	Revenue Passenger Kilometres
RNAV	Area Navigation
RNP	Required Navigation Performance
RVSM	Reduced Vertical Separation Minimum
SAARC	South Asian Association for Regional Cooperation
SATVOICE	Satellite Voice Communications
SAR	Search and Rescue
SBAS	Space Based Augmentation System
SCS	South China Sea
SESAR	Single European Sky ATM Research
SHEL	Software, Hardware, Environment and Liveware
SID	Standard Instrument Departure
SIGMET	Significant Meteorological Information
SPECI	Special Weather Report
STAR	Standard Terminal Arrival Route or Standard Instrument Arrival (Doc 4444)
STCA	Short Term Conflict Alert
STS	Special Handling Status
SUA	Special Use of Airspace
SUR	Surveillance
SWIM	System-Wide Information Management
TAF	Terminal Area Forecast
TAWS	Terrain Awareness Warning Systems
TBO	Trajectory Based Operations
TCAC	Tropical Cyclone Advisory Centre
TCAS	Traffic Collision Avoidance System
TOC	Transfer of Control
UAS	Unmanned Aircraft Systems
UAT	Universal Access Transceiver
UPR	User Preferred Routes
VHF	Very High Frequency
VNAV	Vertical Navigation
VAAC	Volcanic Ash Advisory Centre
VMC	Visual Meteorological Conditions
VOLMET	Volume Meteorological
VOR	Very High Frequency Omni-directional Radio Range
VSAT	Very Small Aperture Terminal
WAFC	World Area Forecast Centre

BACKGROUND INFORMATION

Requirement for Contingency Plans

5.1 Annex 11 to the Convention on Civil Aviation requires that ATS authorities shall develop and promulgate contingency plans for implementation in the event of disruption, or potential disruption, of air traffic services and related supporting services in the airspace for which they are responsible for the provision of such services.

5.2 The 47th Conference of Directors General of the Asia/Pacific Region (Macao, China, October 2010) requested the ICAO Regional Office to consider the establishment of a task force for planning, coordination and implementation of a regional ATM Contingency Plan (Action Item 47/1).

5.3 Subsequently, the 22nd Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/22, Bangkok, Thailand, June 2011) formed a Regional ATM Contingency Planning Task Force (RACP/TF) for planning, coordination and implementation of a regional ATM contingency plan.

5.4 The RACP/TF Terms of Reference directed the Task Force to review the current status of ATM Contingency Plans and the contingency preparedness of Asia and Pacific Region States, and identify areas where ATM contingency planning requires improvement, and to make recommendations on those areas of improvement.

Contingency Planning Principles

5.5 ATM contingency planning principles form the basis for development of Level 1, Level 2 and Level 3 Contingency Plans in response to Category A, B and C contingency events, inter-State contingency agreements, contingency route structures, flight level allocation schemes and aircraft longitudinal spacing, communications transfer arrangements, and for any delegation of ATC separation, FIS and SAR alerting services:

5.6 Asia/Pacific Region Contingency Planning Principles as agreed by RACP/TF and endorsed by APANPIRG are included as **Appendix A**.

Basic Plan Elements

5.7 The plan includes Basic Plan Elements (BPE) which define the minimum recommended considerations for inclusion in Level 1 and Level 2 Contingency Plans. The BPE include Administration, Plan Management, Airspace, ATM Procedures, Pilot/Operator Procedures, Communications Facilities and Procedures, Aeronautical Support services including AIS and MET, and Contact Details. **Appendix B** lists the agreed BPE.

Contingency Plan Coordination and Operations Functions

5.8 Each State should establish an ATM contingency Central Coordinating Committee (CCC) function for the development, maintenance, activation and conduct of contingency plans, and for the forming and convening of an ATM Operational Contingency Group (AOCG) function.

5.9 The Central Coordinating Committee function should include relevant representation from the Regulatory Authority, Air Navigation Service Provider, Military Authority, Other relevant national authority, airspace user representatives, airport authorities meteorological authority, airport authority and other relevant authorities and agencies.

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5.10 The ATM Operational Contingency Group (AOCG) function should be convened by the CCC with a primary responsibility to oversee the day to day operations under the contingency arrangements, and coordinate operational ATS activities, 24 hours a day, throughout the contingency period. The terms of reference of the AOCG will be determined by the CCC. The AOCG function will include any necessary specialist input from the following disciplines:

- Air Traffic Control (ATC)
- Aeronautical Telecommunication (COM)
- Aeronautical Meteorology (MET)
- Aeronautical Information Services (AIS)
- ATS equipment maintenance service provider

The AOCG functions shall include:

- i) review and update of the Contingency Plan as required;
- ii) keep up to date at all times of the contingency situation;
- iii) organize contingency teams in each of the specialized areas;
- iv) keep in contact with and update all affected airspace and system users, customers and other relevant stakeholders;

(Note: Annex 11 provides guidelines for coordination of contingency matters with ICAO)

- v) exchange up-to-date information with the adjacent ATS authorities concerned to coordinate contingency activities;
- vi) notify the designated organizations of the contingency situation sufficiently in advance and/or as soon as possible thereafter;
- vii) take necessary action for issuing NOTAMs in accordance with the contingency plan or as otherwise determined by the particular contingency situation. Where the contingency situation is sufficiently foreseeable the relevant NOTAMs should be issued 48 hours in advance of the contingency events, using templates . NOTAM templates are provided in **Appendix X**.

5.11 Terms of reference, and procedures for the activation of the ATM Operational Contingency Group (AOCG) function should be developed.

Volcanic Ash Cloud Contingency Planning

5.12 The ICAO *Air Traffic Management Volcanic Ash Contingency Plan Template* provides information on terminology related to volcanic ash contingency responses, and the *pre-eruption, start of eruption, on-going eruption* and *recovery* phases of volcanic ash cloud events. Information is also provided on air traffic services procedures, and on air traffic flow management procedures.

5.13 The phases of volcanic eruption activity may be summarized as follows:

Pre-Eruption Phase: a volcanic eruption is expected.

Start of Eruption Phase: commences with the outbreak of the volcanic eruption and entrance of volcanic ash into the atmosphere.

On-going Eruption Phase: commences with the issuance of the first volcanic ash advisory (VAA) containing information on the extent and movement of the volcanic ash cloud.

Recovery Phase: commences with the issuance of the first VAA containing a statement that no volcanic ash is expected.

5.14 **Appendix X** summarizes the actions to be taken by relevant Volcanic Observatories, Volcanic Ash Advisory Centres, MWOs, AIS Units and ACCs¹.

5.15 Operators are required by ICAO Annex 6 – *Operation of Aircraft* to implement appropriate mitigation measures for volcanic ash in accordance with their safety management system (SMS), as approved by the State of the Operator/Registry. This document assumes that ICAO requirements regarding safety management systems have been implemented by all States and aircraft operators. Detailed guidance on Safety Risk Assessments (SRAs) for flight operations with regard to volcanic ash contamination can be found in the manual on *Flight Safety and Volcanic Ash – Risk Management of Flight Operations with Known or Forecast Volcanic Ash Contamination* (ICAO Doc 9974)

5.16 States' regulatory provisions and arrangements should be reviewed to ensure that, in accordance with the guidance provided in ICAO Doc 9974:

- a) Aircraft operators are required to include in their safety management system (SMS) an identifiable safety risk assessment for operations into airspace forecast to be, or at aerodromes known to be, contaminated with volcanic ash
- b) Safety oversight procedures are used for the evaluation of operators' capability to conduct flight operations safely into airspace forecast to be, or aerodromes known to be, contaminated with volcanic ash.

¹ Actions to be taken by the relevant organizations and units are currently being examined by the Volcanic Ash Exercises Steering Group.

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5.17 States' airspace and airport management policies and procedures should be reviewed to ensure that (in accordance with the guidance provided in ICAO Doc 9974 – *Flight Safety and Volcanic Ash* and the provisions of ICAO Doc 4444 – *PANS-ATM*, 15.8.1c and Note 2):

- a) Airspace affected by volcanic ash cloud should not be 'closed'.
- b) Specification in NOTAM of alternate routing or other air traffic flow management (ATFM)² measures to manage airspace constraints arising from volcanic ash cloud should be solely for the purpose of ensuring the predictability and regularity of air traffic, and should be based on an assessment of capacity and demand in airspace affected by volcanic ash and/or or by aircraft avoiding the volcanic ash cloud
- c) NOTAM specifying alternate routing or other ATFM measures related to a volcanic eruption or volcanic ash cloud should be issued separately from the ASHTAM/NOTAM issued in accordance with Annex 15, 5.1.1.1, r and u;
- d) Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area;
- e) Airport capacity limitations of alternate aerodromes, including apron capacity, should be considered, and recommendations for the use of other alternates considered for inclusion in NOTAM (in c, above);
- f) If required by State regulations, any declaration of a Danger Area or Restricted Area should be confined to the pre-eruptive or erupting volcano and the area containing its forecast or observed ejecta.

5.18 AIS units are required under the provisions of Annex 15 to issue information relating to volcanic ash cloud. Information may be issued in either NOTAM or ASHTAM format. Annex 15 specifies that ASHTAM shall include *Item E — Colour code for level of alert indicating volcanic activity*. As colour-coded activity levels for volcanic ash cloud are not in use in volcanic observatories in the Asia/Pacific Region. NOTAM format should be used to disseminate volcanic ash cloud information.

5.19 Examples of volcanic ash contingency plans are provided in provided in **Appendix X**.

² ATFM capability for the Asia/Pacific Region is expected to be implemented under the provisions of the Asia/Pacific Region Manual for Collaborative ATFM.

CURRENT SITUATION

Executive Summary – Current Status of Regional ATM Contingency Readiness

6.1 Qualitative Statement.....

6.2 TEXT

6.3 TEXT

Analysis – Level 1 and Level 2 Contingency Plans

6.4 Asia/Pacific Region ATM Contingency Readiness was examined by RACP/TF in 2012 and 2013. States were requested to provide information on Level 1 (Internal State) and Level 2 (Inter-State) contingency planning, based on Basic Planning Elements (BPE) agreed by the Task Force.

6.5 The Task Force noted that Level 1 (*domestic or internal State*) plans would not be part of the Regional ATM Contingency Plan, but could be referred to in that document. Level 2 (*Inter-State*) Contingency Arrangements, should be harmonized on a sub-regional basis to form Level 3 Contingency Plan/s. Level 1 and 2 plans should address all three categories of contingency response (A, B or C), even if the Category B procedures (VAC, Nuclear emergency, etc.) were simple and of a tactical nature to deal with a changing situation.

6.6 Administrations were requested to provide information on a number of key areas:

- The percentage of ATS units with Level 1 (Internal State) Contingency Plans;
- Coordination, testing, review and amendment of Contingency Plans;
- The addressing of Category A and Category B causal events in Contingency Plans;
- Draft Basic Plan Elements (BPE) incorporated in Contingency Plans; and
- The existence of any formal Level 2 (Inter-State) Contingency Plan agreements, and their inclusions.

6.7 Responses were provided by 16 Administrations. Among the Administrations that did not respond to the questionnaire, 9 had previously reported having contingency plans in place.

6.8 Each responding Administration's overall contingency readiness was categorized as Robust, Marginal or Incomplete for both Level 1 and Level 2 plans, according to the following scale:

- Robust (80 - 100% implementation)
- Marginal (40 – 79%)
- Incomplete (0 – 39%).

Level 1 (Domestic or Internal State) Plans

6.9 Of the 16 responding Administrations there were:

- 7 with Robust Level 1 plans (~44%);
- 8 Marginal (50%); and
- 1 Incomplete (~6%).

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6.10 Further detail of the analyzed results is provided in **Appendix X**. It should be noted that the percentage of non-respondent States with Robust or Marginal Level 1 and 2 contingency plans is expected to be considerably lower than respondent States.

6.11 The overall Regional status of each of the 4 key areas relating to Level 1 contingency plans was also analyzed and the results expressed as a percentage of full implementation, as were the results for individual elements within each key area.

6.12 Overall Regional status of all 4 of the key areas examined was found to be Marginal. Of the 20 elements within the 4 key areas, 1 was Incomplete, 14 were Marginal and 5 were Robust.

6.13 **Table 1** provides a summary of the reported overall Regional Level 1 contingency plan readiness.

Level 1 Plans - Summary Regional Contingency Readiness (%)			AVG
Addressing Category A and B Events	Nuclear Emergency	20	55%
	Pandemic	47	
	Staff Availability	53	
	Volcanic Ash Cloud	53	
	Inundation	53	
	National Security	53	
	Earthquake	67	
	ATM/CNS System Failure or Degradation	93	
Level 1 Plans	Percentage of ATSU with Level 1 Plan	63	63%
Coordination, Testing and Review	Internal Coordination of Plans	67	74%
	Regular Testing	67	
	Routine and Event Driven Review	87	
DRAFT Basic Plan Elements (No. of sub-elements)	Airspace (1)	47	75%
	Communications Facilities and Procedures (4)	65	
	Pilot/Aircraft Operator Procedures (5)	72	
	Aeronautical Support Services (2)	77	
	ATM Procedures (7)	78	
	Contact Details (2)	80	
	Plan Management (2)	87	
	Administration (2)	90	

Table 1 – Level 1 Plans - Summary of Reported Regional Readiness

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Level 2 (Inter-State) Plans

6.14 Analysis of the 16 questionnaire responses indicated that:

- 5 Administrations had Robust Level 1 plans (~31%);
- 5 were Marginal (~31%); and
- 6 were Incomplete (~38%).

6.15 5 Administrations had Robust Level 2 plans, 5 Marginal and 6 Incomplete.

6.16 **Table 2** summarizes the Regional Level 2 contingency readiness determined by State responses to the questionnaire, also expressed as a percentage of full implementation and presented in a potential order of priority for consideration by the Task Force.

Level 2 Plans – Summary of Overall Regional Readiness (%)	
Delegation of ATC Separation	33
Formal Inter-State Agreements (LoA or MoU)	47
Contingency Route Structure	47
Flight Level Allocation Scheme	47
Minimum Longitudinal Spacing	47
Frequency Transfer Arrangements	60
Delegation of FIS and SAR Alerting Services	60

Table 2 – Level 2 Plans – Summary of Regional Readiness³.

³ Delegation of ATC Separation, FIS and SAR responsibility in Level 2 plans is dependent upon both the legal and functional capacity for States to either delegate or accept delegation of separation or other ATS responsibility.

PERFORMANCE IMPROVEMENT PLAN

ATM Contingency Operations Capability

Note: prior to implementation, ATM Contingency plans should be verified by an appropriate safety assessment conducted under the State's Safety Management System.

- **Expected implementation by 10 November 2016**

Level 1 (Domestic or Internal State) Plans

7.1 Each State should establish an ATM contingency Central Coordinating Committee (CCC) function for the development, maintenance, activation and conduct of contingency plans, and for the forming and convening of an ATM Operational Contingency Group (AOCG) function.

7.2 Terms of reference and procedures for the activation of the ATM Operational Contingency Group (AOCG) function should be developed.

7.3 Level 1 contingency plans for Category A, B and C contingency events, conforming with the Principles and including the Basic Plan Elements of the Regional ATM Contingency Plan, should be developed and implemented for all ATS units.

7.4 Human performance-based training and procedures for response to ATM contingency operations for all staff providing related ATS, including ATC, Flight Information, Aeronautical Information, Aeronautical Telecommunication and ATS equipment maintenance staff should be developed and implemented.

7.5 Programs of regular desktop and inter-unit coordinated exercises of all Level 1 contingency plans should be implemented.

7.6 Processes should be implemented to ensure the outcomes of any testing, pre-activation or activation a contingency plan or any contingency exercise are reviewed and analysed, and lessons learned incorporated in contingency procedures and training.

7.7 Details of contingency ATS routes and associated flight level allocation schemes should be published in State AIP (Section ENR 3.5).

7.8 Relevant sections of contingency plans that may have an effect on international flights should be made available on the public internet website of the ANSP, and the hyperlink provided to ICAO Asia/Pacific Regional Office for inclusion in the Regional ATM Contingency Plan.

Note: A single combined document comprising information from all relevant Level 1 contingency plans may be suitable for this purpose

Level 2 Contingency Arrangements

7.9 Level 2 contingency arrangements should be formalized for all cases where the pre-activation or activation of a Level 1 contingency plan would impact upon ATS within the area of responsibility of a neighbouring State.

7.10 Level 2 contingency arrangements should include procedures for the tactical definition and promulgation by NOTAM of contingency ATS routes to avoid airspace affected by Category B contingency conditions.

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7.11 Details of contingency ATS routes and flight level allocation scheme details should be published in State AIP.

Level 3 Sub-Regional Contingency Plans

7.12 Where practicable, each State should harmonize its Contingency ATS Route and FLAS structures with those of all neighbouring States.

Volcanic Ash Contingency Planning

7.13 States' regulatory provisions and arrangements should be reviewed to ensure that, in accordance with the guidance provided in ICAO Doc 9974 – *Flight Safety and Volcanic Ash* :

- a) Aircraft operators are required to include in their safety management system (SMS) an identifiable safety risk assessment for operations into airspace forecast to be, or at aerodromes known to be, contaminated with volcanic ash
- b) Safety oversight procedures are used for the evaluation of operators' capability to conduct flight operations safely into airspace forecast to be, or aerodromes known to be, contaminated with volcanic ash.

7.14 States' airspace and airport management policies and procedures should be reviewed to ensure that, in accordance with the guidance provided in ICAO Doc 9974 – *Flight Safety and Volcanic Ash* and the provisions of ICAO Doc 4444 – PANS-ATM, 15.8.1c and Note 2:

- c) Airspace affected by volcanic ash cloud should not be 'closed'
- d) Specification in NOTAM of alternate routing or other air traffic flow management (ATFM)⁴ measures to manage airspace constraints arising from volcanic ash cloud should be solely for the purpose of ensuring the predictability and regularity of air traffic, and should be based on an assessment of capacity and demand in airspace affected by volcanic ash and/or by aircraft avoiding the volcanic ash cloud
- e) NOTAM specifying alternate routing or other ATFM measures related to a volcanic eruption or volcanic ash cloud should be issued separately from the ASHTAM/NOTAM issued in accordance with Annex 15, 5.1.1.1, r and u
- f) Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area
- g) Airport capacity limitations of alternate aerodromes, including apron capacity, should be considered, and recommendations for the use of other alternates considered for inclusion in NOTAM (in c, above)

⁴ ATFM capability for the Asia/Pacific Region is expected to be implemented under the provisions of the Asia/Pacific Region Manual for Collaborative ATFM.

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h) If required by State regulations, any declaration of a Danger Area or Restricted Area should be confined to the pre-eruptive or erupting volcano and the area containing its forecast or observed ejecta.

7.15 Each State should ensure that a list of ICAO registered volcanoes relevant to the State, drawn from ICAO Doc 9691 - Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds Appendix F, is maintained at all International NOTAM Offices, with volcano name, number and nominal position.

7.16 A series of templates should be available for different stages of volcanic activity to assist Meteorological Watch Office (MWO) and Aeronautical Information Service (AIS) staff in expediting the process of originating and issuing relevant MET and AIS messages.

7.17 Multi-lateral Volcanic Ash Cloud Exercises should be conducted by each State at least annually. Internal desktop contingency plan exercises should include volcanic ash cloud scenarios.

7.18 States should establish a mechanism to provide regular and timely updates of information during a volcanic eruption and/or ash cloud event to ensure all stakeholders are up to date with current information, situation reports and contingency planning;

7.19 States should establish an internal crisis management centre to support the collaborative and timely sharing of information such as volcanic eruptions, or other crises that will have a significant impact on airport and/or airspace management.

Note 1: This information sharing process is supplemental to the mandatory provisions of Annex 3 and Annex 15 relating to the dissemination of volcanic eruption and ash cloud information.

Note 2: Information relating to volcanic eruption and ash cloud should be collaboratively shared through the State's CDM/ATFM processes, where established.

Promulgation and Status Reporting of State ATM Contingency Plans

7.20 National ATM Contingency Plans should be promulgated on the website of the Air Navigation Service Provider

7.21 States should report the status of their contingency planning to the ICAO APAC Regional Office, as follows:

1. Implementation of the national ATM Contingency Plan, together with the hyperlink to the website location of the Plan; and
2. The establishment of contingency arrangements with each neighbouring State.

Note: Information of a sensitive nature such as that related to matters of national security need not be included in promulgated contingency plans.

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RESEARCH AND FUTURE DEVELOPMENT

8.1 Strategic capability to publish and activate collaborative trajectory options should be implemented through the multi-lateral cooperative design and publication in AIP of contingency routes for the avoidance of airspace affected by Category A or closed by Category C contingency events, using RNP 2 specifications (Seamless ATM Plan Category S airspace) or RNP 4 (Seamless ATM Plan Category R Airspace), or more efficient specifications that may become available.

Note: the decision to either transit or avoid airspace affected by Category A contingency events is a matter for the airspace user.

8.2 Capability for networked tactical ATFM measures should be implemented to manage access to Category A contingency airspace and regulate flows of traffic avoiding Category B or C contingency events.

APPENDIX A: ATM Contingency Planning Principles

1. All ATS units, including ATC Sectors, Units, Centres and supporting Flight Information and Briefing Offices should have a Level 1 Contingency Plan to ensure the safe transit of international traffic in the event of disruption or withdrawal of ATS, or unsafe airspace conditions such as volcanic ash cloud, nuclear emergency or national security responses.
2. The overriding principle is that safety has primacy over efficiency and optimal levels and routes;
3. Contingency Operations will necessitate lower than normal airspace capacity to ensure safety.
4. System and ATC service redundancy is the most effective contingency capability.
5. All Contingency Plans should define the following where applicable:
 - A Contingency Route Structure supported by a Flight Level Allocation Scheme (FLAS) and minimum navigation and height-keeping (e.g. RVSM or non-RVSM) capability for access;

Note: Contingency Route Structures and/or FLAS need not be defined where the Contingency Plan states that all routes and/or levels remain available during contingency operations.

 - Provisions for tactical definition and coordination of additional routes/FLAS and priority for access to accommodate selected non-scheduled operations such as humanitarian, medical evacuation and flood and fire relief (FFR) flights;
 - Priority determination for routine scheduled and non-scheduled flights;
 - Flights excluded from operations in contingency airspace, and minimum navigation and height keeping (RVSM) capability required for access to the contingency airspace;
 - Specified minimum longitudinal spacing between consecutive aircraft entering the contingency airspace on non-separated ATS contingency routes;
 - Contingency communication arrangements including means of communication within contingency airspace and communications transfer arrangements for aircraft entering and leaving the airspace;
 - Details of delegation of air traffic services arrangements (if any);
 - Contingency points of contact
6. Level 2 Contingency Arrangements (arrangements between neighbouring administrations) should be included in bi-lateral or multi-lateral agreements between States in all cases where activation of any Level 1 Contingency Plan will impact upon a neighbouring State's ATSU.
7. Level 1 Contingency Plans should include, either in detail or by reference, any relevant Level 2 Contingency Arrangements.

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8. Close cooperation between neighbouring administrations, together with supporting mechanisms for the tactical definition and promulgation of contingency routes for the avoidance of Category B and C contingency airspace.
9. Collaborative Air Traffic Flow Management Measures should be the first priority response to Category A contingency events, and for the management of deviating traffic during Category B and C events.
10. Contingency routes must be vertically separated whenever lateral route separation is less than the minimum specified by the State for contingency operations.
11. Contingency Flight Level allocation scheme planning should include consideration of allocating the optimum flight levels to routes used by long haul aircraft, depending on the traffic density on the route, wherever practicable.
12. Contingency ATS routes should provide minimum lateral separation of 100 NM between aircraft that are not vertically separated under a FLAS, except where the minimum aircraft navigational capability specified in the contingency plan permits reduced lateral separation specified in ICAO Doc 7030 *Regional Supplementary Procedures* Section 6.2 or ICAO Doc. 4444 *PANS-ATM*.

States should specify any necessary buffers to minimum lateral separation requirements where meteorological phenomena may require aircraft to deviate from the ATS route to maintain flight safety. Information on the buffers should be provided in operational information provided on pre-activation or activation of the contingency plan.

13. Minimum longitudinal spacing between aircraft operating on the same contingency route and not vertically separated should be 15 minutes or 120 NM. However, this may be reduced to 10 minutes or 80 NM in conjunction with application of the Mach number technique where authorized by the relevant authority and agreed in the appropriate LOA or other Contingency Arrangement.
14. Contingency ATS routes and FLAS, and contingency procedures, should be agreed between geographically grouped neighbouring States to form sub-regional contingency plans.
15. Contingency ATS routes should be published in State AIP to permit the storing of route details in airspace users' navigation databases.
16. Airspace classifications for ICAO Classes A, B and C airspace should remain unchanged during contingency operations to facilitate managed access to the airspace in accordance with the contingency plan. Classes D and E airspace may be reclassified as Class C or higher where necessary to preclude VFR operations.
17. Define ground and airborne navigation requirements if necessary
18. Alternate aerodromes should be specified where necessary in Level 1 contingency plans for airport control towers and terminal airspace.
19. Aircraft operators are required by ICAO Annex 6 – *Operation of Aircraft* to implement appropriate mitigation measures for volcanic ash in accordance with their safety management system (SMS), as approved by the State of the Operator/Registry.
20. Airspace affected by volcanic ash cloud should not be closed to international civil aviation.

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21. Amended ATS routes, whether published or promulgated ad-hoc, may be prescribed as part of the air traffic flow management (ATFM) response to expected demand and capacity imbalance caused by aircraft avoiding volcanic ash cloud.
22. Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area;
23. Closure of airports affected by volcanic ash deposition should be supported by a safety assessment conducted in collaboration between airport operator, aircraft operators and the air navigation service provider, in accordance with their respective safety management systems.

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APPENDIX B: Basic Plan Elements

Element 1: Administration

- a) Record of signatories, version control and records of amendment.
- b) Definition of the objectives, applicable airspace and operations, and exclusions.

Element 2: Plan Management

- c) List of States and FIRs affected, and the agreed methods of notification in the event of pre-activation, activation and termination of the plan.

Contingency events may arise with insufficient advance notice to permit pre-activation of contingency plans

- d) Details of the arrangements in place for management of the plan, including:
 - i. provisions for a Central Coordinating Committee to authorize and oversee the activation of the plan and arrange for ATS restoration in the event of an extended outage;
 - ii. ATM Operational Contingency Group for 24 hour coordination of operational and supporting activities under the plan, and
 - iii. the terms-of-reference, structure and contact details for each.
- e) Details of testing, review and reporting actions:
 - i. Schedule of desktop and simulator testing;
 - ii. Post-activation review (PAR) requirements:
 - Completion of a preliminary PAR report within 28 days of any activation or testing of contingency plans, including any recommendations to address deficiencies and implement improvements in contingency plans, arrangements, procedures and training.
 - A more comprehensive PAR report should be prepared for major contingency events, or any contingency event involving an air safety incident investigation.

A full PAR analysis of major events could take many months to complete.

 - Input to the PAR from all parties affected by or involved in the response to the contingency is actively sought and considered;

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- Bi-lateral or multi-lateral PAR for activation or testing of Level 2 contingency arrangements;
- iii. Timely reporting to ICAO and other affected States of anticipated or experienced disruptions requiring activation of contingency plans.

Note: Annex 11 states that: States anticipating or experiencing disruption of ATS and/or related supporting services should advise, as early as practicable, the ICAO Regional Office and other States whose services might be affected. Such advice should include information on associated contingency measures or a request for assistance in formulating contingency plans.

- f) Inclusion of contingency plans/procedures in ATS training and refresher training programs.

Element 3: Airspace

- g) Procedures and determinants for implementation and activation of Special Use Airspace including, where necessary, Restricted or Prohibited Areas in territorial airspace, or Danger Areas over the high seas.
- h) Criteria for airspace classification changes and associated separation and CNS requirements
- i) Collaborative Trajectory Options for Category A, B and C events, and for Large Scale Weather Deviations (LSWD)

Element 4: ATM Procedures

- j) Details of re-routing to avoid the whole or part of the airspace concerned, normally involving establishment of:
- i. Strategic and Tactical Collaborative Trajectory Options providing additional routes or route segments with associated conditions for their use; and/or
 - ii. a simplified route network through the airspace concerned, together with a Flight Level Allocation Scheme, to ensure that a standard minimum vertical separation is applied where less than a specified minimum lateral separation exists between routes.
- k) Details of how domestic traffic, departing and arriving flights and SAR, humanitarian and State aircraft flights will be managed during the contingency period.
- l) Procedures for transition from normal services levels to contingency services, and resumption of normal service.
- m) Procedures for joining or departing a contingency route.
- n) Details of reduced levels of service, if any, within the affected airspace.

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- o) Establishment of arrangements for controlled access to the contingency area to prevent overloading of the contingency system, utilizing allocated airspace entry times or, where ATFM capability exists, tactical ATFM measures.
- p) Procedures for adjacent service providers to establish longitudinal spacing at the entry point, and to maintain such separation through the airspace;
- q) Reassignment of responsibility for providing air traffic services, to the extent possible, in non-sovereign airspace and to international aircraft transiting sovereign airspace; and/or
- r) Coordination and communications transfer procedures for aircraft entering and leaving the affected airspace.

Element 5: Pilot/Operator Procedures

- s) Requirements for flight plan submission during the contingency period, including contingency route planning requirements, and arrangements if airspace is restricted or not available and no contingency route is available;
- t) Emergency procedures, including In-flight requirements for broadcast of position and other information, and for continuous listening watch, on specified pilot-pilot and GUARD VHF frequencies;
- u) Requirements for display of navigation and anti-collision lights;
- v) Requirements for climbing and descending well to the right of the centreline of specifically identified routes;
- w) Requirements for all operations to be conducted in accordance with IFR, including operating at IFR flight levels from the relevant Table of Cruising Levels in Appendix 3 of Annex 2, except where modified by a Flight Level Allocation Scheme.

Element 6: Communications Facilities and Procedures

- x) Provision and operation of adequate air-ground communications, AFTN and ATS direct speech links;
- y) Specification of radio frequencies to be used for particular contingency routes.
- z) Log-on and connection management for CPDLC aircraft, where appropriate;
- aa) Use of ADS-C automatic position reporting in lieu of voice position reporting to ATS.

Element 7: Aeronautical Support Services including AIS and MET

- bb) AIP Information regarding the Contingency Planning, and notification by NOTAM of anticipated or actual disruption of air traffic services and/or supporting services, including associated contingency arrangements, as early as practicable and, in the case of foreseeable disruption, not less than 48 hours in advance

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cc) Reassignment to adjacent States of the responsibility for providing meteorological information and information on status of navigation aids.

Element 8: Contact Details

dd) Contact details for the RCC responsible for the affected FIR, and coordination arrangements.

ee) Contact details of adjacent States ANSPs and other international organisations participating in the contingency plan.

ff) Prior notification requirements for adjacent FIR activation of Level 2 contingency arrangements.

Note: The first priority response to any short notice contingency response should be the immediate handling of the air situation, followed by the activation of the contingency plan.

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APPENDIX X: CONTINGENCY PLAN TEMPLATE

Air Traffic Management Contingency Plan

[ATS UNIT NAME]

Version X.X

Effective: [DD Month YYYY]

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FOREWORD

(EXAMPLE)

1.1 This Contingency Plan forms part of the overall national contingency planning for [STATE], in accordance with the provisions of Annex 11 to the Convention on Civil Aviation, ICAO Doc 9462 *ATS Planning Manual* and Doc 9673 *Asia and Pacific Regions Air Navigation Plan*, and the *Asia/Pacific Region ATM Contingency Plan*. The Plan, and any activation of the Plan, is authorized by [AUTHORITY].

1.2 The Plan provides for the safe continuation of international air traffic through the [XXXX] FIR during periods when ATS may be disrupted or unavailable, or when airspace may be affected by volcanic ash cloud, radioactive cloud, severe weather events or military activity.

1.3 The Plan has been developed in close cooperation and collaboration with airspace users, military authorities and civil aviation authorities responsible for adjacent FIRs.

1.4 The Plan will be activated by NOTAM as far in advance as is practicable. In the event that such prior notification is impracticable the Plan will be activated by the designated authority using the most expeditious alternative means available.

1.5 The Plan serves as the formal agreement between the States listed in paragraph 2.1, when authorized by their signatory **OR** The Plan is supported by [OPERATIONAL LOA or SECTIONS XX XX XX OF THE OPERATIONAL COORDINATION LOA BETWEEN XXXX AND XXXX].

1.6 [THE FOLLOWING SECTIONS/APPENDICES OF THIS PLAN ARE INCLUDED IN THE OPERATIONAL LOA or OPERATIONAL COORDINATION LOA or MOU BETWEEN XXXX AND XXXXXX]

ATM CONTINGENCY PLAN FOR [ATS UNIT]

OBJECTIVE

1.1 The Air Traffic Management (ATM) Contingency Plan for the [FIR/ATS Centre/ATS UNIT] details arrangements to ensure the continued safety of air navigation in the event of partial or total disruption of air traffic services in the [AIRSPACE/SERVICE DESCRIPTION] in accordance with ICAO Annex 11 – *Air Traffic Services*. The Contingency Plan provides the ATS procedures and contingency route structure using published ATS routes, where practicable, that will allow aircraft operators to transit the [AIRSPACE DESCRIPTION] during periods of limited or no ATS.

[DESCRIBE HERE THE SCOPE OF THE PLAN, E.G. IF THE PLAN RELATES ONLY TO THE TRANSIT OF INTERNATIONAL AIR TRAFFIC]

[ATS UNITS, CENTRES, STATES AND FIRS AFFECTED]

2.1 In the event that the [AUTHORITY] activates this Contingency Plan, the civil aviation authorities of the [XXXX ADJACENT ATS UNITS, CENTRES, STATES OR FIRS AFFECTED] will be notified in accordance with the [LETTER OF AGREEMENT, MEMORANDUM OF UNDERSTANDING OR OTHER CONTINGENCY ARRANGEMENT]. The adjacent [ATS UNITS, CENTRES STATES OR FIRS] directly affected by this Contingency Plan are as follows:

- a) [STATE]
[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]
- b) [STATE]
[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]
- c) [STATE]
[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]
- d) [STATE]
[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]
- e) [STATE]
[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]

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2.2 The contact details of the civil aviation authorities, organizations and ATS units are contained in **Appendix X**. These details should be regularly reviewed, and relevant information provided to the [AUTHORITY] as soon as practicable.

MANAGEMENT OF THE CONTINGENCY PLAN

3.1 The contingency measures set out in this Plan are applicable in cases of foreseeable events caused by unexpected interruptions in ATS caused by natural occurrences or other circumstances, which, in one way or another, may impair or totally disrupt the provision of ATS and/or of the related support services in the [AIRSPACE].

3.2 The following arrangements have been put in place to ensure that the management of the Contingency Plan provides for [INTERNATIONAL IF SO LIMITED] flights to proceed in a safe and orderly fashion through the [AIRSPACE].

Central Coordinating Committee

3.3 The Central Coordinating Committee (CCC) function shall oversee the conduct of the Contingency Plan and in the event that the [SERVICE] is disrupted for an extended period, make arrangements for and facilitate the temporary relocation of the [SERVICE] to the [ALTERNATE FACILITY OR ATS UNIT/CENTRE] and the restoration of [SERVICE]. The terms of reference for the CCC will be determined by the [AUTHORITY].

3.4 The Central Coordinating Committee includes representation from the following:

- 1) [REGULATORY AUTHORITY OR ORGANIZATION]
- 2) [AIR NAVIGATION SERVICE PROVIDER]
- 3) [MILITARY AUTHORITY]
- 4) [OTHER RELEVANT NATIONAL AUTHORITY]
- 5) [AIRSPACE USER REPRESENTATIVE/S]
- 6) [AIRPORT AUTHORITIES]
- 7) [METEOROLOGICAL AUTHORITY]
- 8) [AIRPORT AUTHORITY]
- 9) [OTHER RELEVANT AUTHORITIES/AGENCIES]

3.5 Terms of Reference for the CCC and the contact details of its members are provided in **Appendix X**.

3.6 The CCC shall oversee the conduct of the Contingency Plan and in the event that the [SERVICE] is disrupted for an extended period, make arrangements for and facilitate the temporary relocation of the [SERVICE] to the [ALTERNATE FACILITY OR ATS UNIT/CENTRE] and the restoration of [SERVICE].

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3.7 Under the circumstances described and when deemed necessary by the [AUTHORITY] (OR Under the circumstances described in its Terms of Reference and when deemed necessary) and as soon as practicable in advance of, or after the commencement of a contingency event causing disruption to [AIRSPACE/ATS SERVICE] has occurred, the [AUTHORITY] shall convene the Central Coordinating Committee, by the most expeditious means appropriate for the situation, e.g. by telephone or web-based conference.

Note: This depends on the scale of the plan. E.g. a remote regional control tower would not necessarily require re-convening of a CCC

ATM Operational Contingency Group

3.8 The ATM Operational Contingency Group (AOCG) function will be convened by the CCC with a primary responsibility to oversee the day to day operations under the contingency arrangements, and coordinate operational ATS activities, 24 hours a day, throughout the contingency period. The terms of reference of the AOCG will be determined by the CCC. The AOCG will include any necessary specialist input from the following disciplines:

- Air Traffic Control;
- Aeronautical Telecommunication (COM);
- Aeronautical Meteorology (MET);
- Aeronautical Information Services (AIS);
- ATS equipment maintenance service provider

3.9 The AOCG functions shall include:

- viii) review and update of the Contingency Plan as required;
- ix) keep up to date at all times of the contingency situation;
- x) organize contingency teams in each of the specialized areas;
- xi) keep in contact with and update all affected airspace and system users, customers and other relevant stakeholders.;

Note: Annex 11 provides guidelines for coordination of contingency matters with ICAO

- xii) exchange up-to-date information with the adjacent ATS authorities concerned to coordinate contingency activities;
- xiii) notify the designated organizations of the contingency situation sufficiently in advance and/or as soon as possible thereafter;
- xiv) take necessary action for issuing NOTAMs according to this plan or as otherwise determined by the particular contingency situation. Where the contingency situation is sufficiently foreseeable vance the relevant NOTAMs will be issued 48 hours in advance of the contingency event s. NOTAM templates are provided in **Appendix X**.

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xv) maintain an activity log using the form in **Appendix X**.

3.10 Terms of Reference for the CCC and the contact details of its members are provided in **Appendix X**.

Plan Testing and Review

3.11 The Plan shall be tested in desktop exercises, where necessary including telephone or web-based conference facilities, at least once per [TIMEFRAME].

3.12 ATC simulation testing of the plan should occur at least once per [TIMEFRAME], and whenever required by the [AUTHORITY].

3.13 A full review of the Plan shall be conducted at least once per [TIMEFRAME]. Provisions for the review of airspace, ATS route, co-ordination and communications details of the Plan shall be included in relevant ATS airspace, data and facility implementation plans.

3.14 A preliminary post-activation review (PAR) report shall be completed within [XX] days following completion of testing or resumption of normal operations. A more comprehensive report shall be completed and forwarded to [AUTHORITY] in any case where an air safety incident investigation related to the pre-activation or activation of the Plan has been conducted, or as otherwise determined by the [AUTHORITY].

CONTINGENCY ROUTE and FLIGHT LEVEL STRUCTURE

4.1 In the event of disruption of the ATC services provided by [ATS UNIT, CENTRE OR FIR], contingency routes will be specified to ensure safety of flight and to facilitate limited flight operations commensurate with the prevailing conditions. Existing ATS routes form the basis of the contingency routes to be used, and a flight level allocation scheme (FLAS) introduced to minimize potential points of conflict, and to limit the number of aircraft operating simultaneously in the system under reduced air traffic services. The contingency route structure [FOR INTERNATIONAL FLIGHTS if necessary] is detailed in **Appendix X**. Additional unpublished contingency routes may be developed tactically by the AOCG and promulgated by NOTAM as and when circumstances require, such as in the case of volcanic ash cloud, radioactive cloud or severe weather event. [INSERT IF RELEVANT, As and where dictated by circumstances domestic flights and international flights that have not yet departed may be temporarily suspended until a full assessment of the prevailing conditions has been determined and sufficient air traffic services restored. A decision to curtail or restart these operations will be made by the CCC.

4.2 Aircraft on long-haul international flights and special operations (e.g. Search and Rescue (SAR), State aircraft, humanitarian flights, etc), shall be afforded priority for levels at FL290 and above. Domestic and regional operators should plan on the basis that FL290 and above may not be available.

4.3 International operators affected by the suspension of all operations from [STATE OR FIR] airports will be notified by the relevant airport authority when operations may be resumed, and flight planning information will be made available pertaining to that airport. International flights that have received such approval may be required to flight plan via domestic routes to join international contingency routes.

4.5 International operators may elect to avoid the [AIRSPACE] by using ATS routes [DESCRIBE ATS ROUTES OR ADJACENT AIRSPACE AS PER AGREEMENT].

AIR TRAFFIC MANAGEMENT AND CONTINGENCY PROCEDURES

Reduced ATS And Provision of Flight Information Services (FIS)

5.1 During the contingency period ATS including ATC may not be available, particularly communications and ATS surveillance services. In cases where services are not available, a NOTAM will be issued providing the relevant information. The contingency plan provides for limited flight information and alerting services to be provided by [ATS UNIT/S OR CENTRE/S].

5.2 [DESCRIBE ANY DIVISION OF RESPONSIBILITY OF ADJACENT ATS UNITS OR CENTRES FOR SERVICE PROVISION IN THE CONTINGENCY AIRSPACE]. [DESCRIBE THE LEVEL OF SERVICE AVAILABLE]. A chart depicting the airspace arrangement is provided in **Appendix X**.

ATS Responsibilities

5.3 During the early stages of a contingency event, ATC may be overloaded and tactical action may be taken to re-clear aircraft on alternative routes not included in this Plan.

5.4 In the event that ATS cannot be provided in the [AIRSPACE] a NOTAM shall be issued indicating the following:

- a) time and date of the beginning of the contingency measures;
- b) airspace available for landing and overflying traffic and airspace to be avoided;
- c) details of the facilities and services available or not available and any limits on ATS provision (e.g., ACC, APPROACH, TOWER and FIS), including an expected date of restoration of services if available;
- d) information on the provisions made for alternative services;
- e) Applicable ATS routes, AIP-published contingency routes, or tactically defined contingency routes;
- f) any special procedures to be followed by neighbouring ATS units not covered by this Plan;
- g) any special procedures to be followed by pilots; and
- h) any other details with respect to the disruption and actions being taken that aircraft operators may find useful.

5.5 NOTAM pro-forma are provided at **APPENDIX X**.

5.6 In the event that the [XXXX International NOTAM Office is unable to issue the NOTAM, the alternate International NOTAM Office at [INSERT ALTERNATE] and/or [INSERT ALTERNATE] will take action to issue the contingency NOTAM upon notification by the [AUTHORITY].

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Aircraft [SEPARATION OR SPACING]

5.7 Aircraft separation criteria, where applicable, will be in accordance with the *Procedures for Air Navigation Services-Air Traffic Management* (PANS-ATM, ICAO Doc 4444) and the *Regional Supplementary Procedures* (ICAO Doc 7030).

5.8 The minimum longitudinal [SEPARATION/SPACING] will be 15 minutes. However, this may be reduced to 10 minutes in conjunction with application of the Mach number technique where authorized by the [AUTHORITY] and agreed in the appropriate LOA or other Contingency Arrangement.

5.9 The contingency route structure provides for lateral [SEPARATION/SPACING] of 100 NM. In cases where the lateral spacing of contingency routes is less than 100NM, and for crossing routes, a minimum vertical [SEPARATION/SPACING] of [1000/2000] ft will be applied.

Priority for Flight Levels

5.10 Where possible, aircraft on long-haul international flights shall be afforded priority for cruising levels assigned in accordance with the (FLAS).

Airspace Classifications

5.11 Depending on the degree of disruption airspace classifications [OTHER THAN CLASS X, Y, Z – STATE ANY OTHER CONDITIONS RELATING TO NON-CONTINUOUS AIRSPACE, ETC] may be changed to reflect the reduced level of services. Changes to airspace classification will be notified by NOTAM.

Aircraft position reporting

5.12 The primary means of communication will be by VHF or HF radio except for aircraft operating Automatic Dependent Surveillance - Contract (ADS-C) and Controller-Pilot Data Link Communications (CPDLC) systems. When CPDLC has been authorized for use by the relevant ATC authority this will become the primary means of communication, with HF as secondary. ADS-C shall replace any requirement for voice position reporting to ATC for aircraft so equipped, and in this case CPDLC or HF will be the secondary means of communication.

5.13 Traffic Information Broadcast by Aircraft (TIBA) procedures shall apply in [DESCRIBE AIRSPACE/CIRCUMSTANCES]. Details of TIBA procedures and communications requirements are provided in [Attachment B to Annex 11 to the Convention on Civil Aviation *or* (STATE) AIP SECTION XXX] reproduced in **Appendix X**.

5.14 TIBA frequencies shall be as follows:

- [DESCRIPTION OF AIRSPACE] – [XXX.XX] MHz;
- [DESCRIPTION OF AIRSPACE] – [XXX.XX] MHz;
- [DESCRIPTION OF AIRSPACE] – [XXX.XX] MHz;
- [DESCRIPTION OF AIRSPACE] – [XXX.XX] MHz;

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Exclusions

5.15 [SPECIFY EXCLUDED FLIGHTS E.G. VFR, NON SCHEDULED, MILITARY, ETC] shall not operate in the [DESCRIBE AIRSPACE] during contingency operations, except for [SPECIFY FLIGHTS E.G. SAR, FFR, MEDICAL EVACUATION ETC] and any other flights as authorized by the [AUTHORITY].

Procedures for ATS Units

5.16 The ATS units providing ATC services will follow their unit emergency operating procedures and activate the appropriate level of contingency procedures in line with [THIS PLAN (*where it also serves as the formal LOA*)] or THE OPERATIONAL LETTER OF AGREEMENT or MOU, ETC]. These procedures include the following:

- a) Where ATS provided by the [ATS UNIT, CENTRE, FIR OR STATE] may be reduced or disrupted by a short-notice contingency event, ATC will inform pilots of the emergency condition and advise if it is likely that the ACC will be evacuated and ATS suspended. In the event of it becoming necessary to evacuate the ACC building, the unit evacuation procedures will be activated, and time permitting, controllers will make an emergency evacuation transmission on the radio frequency in use providing pilots with alternate means of communication;
- b) during the period the contingency procedures are in effect, flight plan and other aircraft movement messages must continue to be transmitted by operators to the [ATS UNIT, CENTRE, FIR OR STATE] via the AFTN using normal procedures;
- c) on notification by [AUTHORITY], the ATS authorities operating the [NEIGHBOURING ATS UNITS, CENTRES, FIRS OR STATES] will activate the contingency procedures in accordance with [THIS PLAN (*where it also serves as the formal LOA*)] or THE OPERATIONAL LETTER OF AGREEMENT or MOU, ETC];
- d) prior to entry to the [AFFECTED AIRSPACE] during contingency operations prior authorization must be obtained from [AUTHORITY], and flights must comply with the ATC [CLEARANCE/ROUTE, FLIGHT LEVEL] and communications instructions issued by the ATC authority responsible for the airspace immediately adjacent to the contingency airspace.
- e) Coordination of aircraft boundary estimates and flight levels by the adjacent ATC authority responsible for aircraft entering the [AFFECTED AIRSPACE] shall be in accordance with [THIS PLAN (*where it also serves as the formal LOA*)] or THE OPERATIONAL LETTER OF AGREEMENT or MOU, ETC].
- f) the ACC responsible for aircraft entering the [AFFECTED AIRSPACE] will instruct pilots to maintain the last flight level assigned and speed (MACH number if applicable) while operating in the [AFFECTED AIRSPACE];
- g) the ACC responsible for aircraft entering the [AFFECTED AIRSPACE] will not authorize any change in route, flight level or speed unless specifically authorized by the ATS unit normally responsible for the affected airspace, or under [THIS PLAN (*where it also serves as the formal LOA*)] or THE OPERATIONAL LETTER OF

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AGREEMENT or MOU, ETC].

- h) the ACC responsible prior for aircraft entering the [AFFECTED AIRSPACE] will inform aircraft that they must establish contact with the first ATS unit after transiting the [AFFECTED AIRSPACE] not less than [XX] minutes before the estimated time of entry to the [NEXT AIRSPACE/FIR],
- i) aircraft may also chose to avoid the [AFFECTED AIRSPACE] by flight planning via published ATS routes, or via any alternative contingency ATS routes promulgated by NOTAM issued by the controlling authorities of the adjacent FIRs.
- j) [DETAIL ANY ROUTE OR AIRSPACE –SPECIFIC ARRANGEMENTS]

Transition To and From Contingency Operations

5.17 During times of uncertainty when airspace closures seem possible, aircraft operators should be prepared for a possible change in routing while en-route, familiarization of the alternative routes outlined in this Contingency Plan, as well as those which may be promulgated by a State via NOTAM or AIP.

5.18 In the event of airspace closure that has not been promulgated, ATC should, if possible, broadcast to all aircraft in their airspace, what airspace is being closed and to stand by for further instructions.

5.19 ATS providers should recognize that when closures of airspace or airports are promulgated, individual airlines might have different company requirements as to their alternative routings. ATC should be alert to respond to any request by aircraft and react commensurate with safety.

Transfer of control and coordination

5.20 Unless otherwise specified in [THIS PLAN (*where it also serves as the formal LOA*) or THE OPERATIONAL LETTER OF AGREEMENT or MOU, ETC] transfer of control and communication should be at the common FIR boundary between ATS units.

PILOTS AND OPERATOR PROCEDURES

Filing of flight plans

6.1 Flight planning requirements detailed in [STATE] AIP continue to apply during contingency operations, except where modified by the contingency ATS routes and FLAS specified by ATC and/or in NOTAM.

Overflight approval

6.2 Aircraft operators must obtain over-flight approval from the [AUTHORITY] prior to operating flights through the [AFFECTED AIRSPACE]. During the period of activation of this Contingency Plan the adjacent ATS authority will provide normal ATC clearances for aircraft to enter the [AIRSPACE]. The adjacent ATS authority is not responsible for coordination or provision of overflight clearances for the [AIRSPACE]. The operator must ensure any required overflight approval has been obtained.

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CNS Capability

6.3 Flights operating through the [AFFECTED AIRSPACE] shall be equipped with the following minimum communications, navigation and surveillance capability:

- a) [SPECIFY]
- b) [SPECIFY]
- c) [SPECIFY]
- d) SPECIFY]

Pilot operating procedures

6.4 Pilots will continue to make or broadcast routine position reports in line with normal ATC reporting procedures:-

6.5 Pilots of aircraft operating in the [AFFECTED AIRSPACE] during contingency operations shall comply with the following procedures:

- a) all aircraft proceeding along the ATS routes established in this Contingency Plan will comply with the instrument flight rules (IFR) and will be assigned a flight level in accordance with the flight level allocation scheme applicable to the route(s) being flown as specified in Appendix 1D;
- b) flights are to flight plan using the Contingency Routes specified in Appendix 1D, according to their airport of origin and destination;
- c) aircraft are to operate as close as possible to the centre line of the assigned contingency route;
- d) a continuous communications watch shall be maintained on the specified contingency frequency as specified in **Appendix X**.
- e) aircraft position reports and other information as necessary shall be broadcast in accordance with TIBA procedures defined in AIP [STATE];
- f) aircraft navigation and anti-collision lights shall be displayed;
- g) except in cases of emergency or for reasons of flight safety, pilots are to maintain during their entire flight within [AFFECTED AIRSPACE], the last assigned flight level, mach number and SSR transponder code. If no transponder code has been assigned, aircraft shall squawk code [XXXX].
- h) aircraft are to reach the flight level last assigned by the responsible ACC at least [XX] minutes before entering the [AFFECTED AIRSPACE] or as otherwise instructed by the ATC unit acting in accordance with the operational Letter of Agreement or other Contingency Arrangement;
- i) pilots are to include in their last position report prior to entering the [AFFECTED AIRSPACE], the estimated time over the entry point of the [AFFECTED AIRSPACE] and the estimated time of arrival over the relevant exit point;

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- j) pilots are to contact the next adjacent ACC as soon as possible, and in any event not less than ten (10) minutes before the estimated time of arrival over the relevant exit point from the [AFFECTED AIRSPACE];
- k) pilots are to strictly adhere to the ICAO Traffic Information Broadcasts by Aircraft (TIBA) procedures, reproduced in **Appendix X**, on the specified VHF and HF frequencies listed in **Appendix X**. When necessitated by emergency conditions or flight safety requirements, pilots are to transmit blind on these frequencies, their current circumstances and the commencement and completion of any climb and descent or deviation from the cleared contingency route;
- l) whenever emergencies and/or flight safety reasons make it impossible to maintain the flight level assigned for transit of [AFFECTED AIRSPACE], pilots are to climb or descend well to the right of the centerline of the contingency route, and if deviating outside the [AFFECTED AIRSPACE], to immediately inform the ACC unit responsible for that airspace. Pilots are to broadcast details of any level change including aircraft identification, aircraft position and route, vacated flight level, intended flight level, flight level passed and cruising flight level maintained on [FREQUENCY];
- m) pilots are to maintain own longitudinal separation of 15 minutes from preceding aircraft at the same cruising level; and
- n) not all operational circumstances can be addressed by this Contingency Plan and pilots are to maintain a high level of alertness when operating in the contingency airspace and take appropriate action to ensure safety of flight.

Interception of civil aircraft

6.6 Pilots need to be aware that a contingency routing requiring aircraft to operate off normal traffic flows may result in interception by military aircraft. Aircraft operators must therefore be familiar with international intercept procedures contained in ICAO Annex 2 –*Rules of the Air*, paragraph 3.8 and Appendix 2, Sections 2 and 3.

6.7 Pilots are to comply with instructions given by the pilot of the intercepting aircraft. In such circumstances, the pilot of the aircraft being intercepted shall broadcast information on the situation.

6.8 If circumstances lead to the closure of the [AFFECTED AIRSPACE] and no contingency routes are available, aircraft will be required to remain clear of the [AFFECTED AIRSPACE]. As much warning as possible will be provided by the appropriate ATS authorities in the event of the complete closure of airspace.

6.9 Pilots shall continuously guard the VHF emergency frequency 121.5 MHz and should operate their transponder at all times during flight, regardless of whether the aircraft is within or outside airspace where secondary surveillance radar (SSR) is used for ATS purposes. Transponders should be set on the last discrete code assigned by ATC or select code [XXXX] if no code was assigned.

COMMUNICATION PROCEDURES

Degradation of Communication - Pilot Radio Procedures

7.1 When operating within the contingency airspace, pilots should use normal radio communication procedures where ATS services are available. Where limited or no ATS is available communications will be conducted in accordance with the procedures in this Plan, or as otherwise notified by NOTAM.

7.2 If communications are lost unexpectedly on the normal ATS frequencies, pilots should try the next applicable frequency, e.g. if en-route contact is lost then try the next appropriate frequency, that is, the next normal handover frequency. Pilots should also consider attempting to contact ATC on the last frequency where two-way communication had been established. In the absence of communication with ATC, the pilot should continue to make routine position reports on the assigned frequency, and also broadcast positions in accordance with the TIBA procedures.

Communication frequencies

7.3 A list of frequencies to be used for the contingency routes and the ATS units providing FIS and air-ground communication monitoring for the [AIRSPACE] is detailed at **Appendix X**.

AERONAUTICAL SUPPORT SERVICES

Aeronautical Information Services (AIS)

8.1 [DETAIL THE AVAILABILITY OR ALTERNATE ARRANGEMENTS FOR AIS]

Meteorological Services (MET)

8.2 [DETAIL THE AVAILABILITY OF METEOROLOGICAL SERVICES AND THE METHODS OF DISTRIBUTION OF MET INFORMATION DURING CONTINGENCY OPERATIONS.]

SEARCH AND RESCUE ALERTING

Notification and Coordination

9.1 The SAR authority responsible for the [AFFECTED AIRSPACE] is the [XXXXX] Rescue Coordination Centre (RCC)

IDD: XXXXXXXXXXXX

Fax: XXXXXXXXXXXX

AFTN: XXXXXXXXX

9.2 [INSERT SAR ALERTING ARRANGEMENTS AS NECESSARY. MAY INCLUDE CONSIDERATION OF NEIGHBOURING ATS UNITS PROVIDING FULL FLIGHT FOLLOWING, OR LIMITED TO RESPONSE TO IN-FLIGHT EMERGENCIES].

DRAFT

SUB-PLANS

DRAFT

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LIST OF APPENDICES

Appendix X – Contact Details

Appendix X – Coordinating Bodies

Appendix X – Specimen NOTAMs

Appendix X – International Route Structure During Total
Disruption

Appendix X – Chart of Contingency Routes

Appendix X – Contingency Frequencies for Control
and/or Flight Monitoring

Appendix X – Flight Planning

Appendix X – Traffic Information Broadcasts by
Aircraft Procedures

Appendix X – ICAO Interception Procedures

Appendix X – Recording and Reporting Form

Appendix X – Guidance for using the template

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RACPTF - TASK LIST

ID	Activity	Start Date	Complete Date	Status	Group Responsible
1/1	Develop Basic Plan Elements	19 Apr 2012	30 April 2015 Completed	Final update to be completed before RACP/TF/5	Secretariat (RACP/TF/1 WP05)/Regional ATM Contingency Plan Review Team
1/2	Develop key principles and practices	19 Apr 2012	30 April 2015 Completed	Final update to be completed before RACP/TF/5	Secretariat/Regional ATM Contingency Plan Review Team
1/3	Draft Regional ATM Contingency Plan	19 Apr 2012	30 April 2015 27 May 2016	Final update to be completed before RACP/TF/5 Completed, subject to completion of other tasks	Secretariat/Regional ATM Contingency Plan Review Team
1/4	Form Regional ATM Contingency Plan Review Team	17 Apr 2012	19 Apr 2013	Completed	RACP/TF
1/5	Develop Contingency Plan Review Questionnaire	19 Apr 2012	30 Jun 2012	Completed	Secretariat
1/6	Update Regional Office Contingency Plan Status Record	17 Apr 2012	19 Apr 2012	Completed	Secretariat
1/7	All States to develop Contingency Plan	19 Apr 2012	Ongoing	States to report implementation of national plan to Regional Office. Regional ATM Contingency Plan Performance Objective Refers	States
1/8	Contingency Plan template based on Indonesian model	19 Apr 2012	30 April 2015 27 May 2016	Some further refinement by RACP/TF/5 Final Editorial Checks	Secretariat/Regional ATM Contingency Plan Review Team Secretary/Chair
1/9	Review State ATM Contingency Plans and identify areas for improvement	19 Apr 2012	Ongoing	Completed	Secretariat/Regional ATM Contingency Plan Review Team

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ID	Activity	Start Date	Complete Date	Status	Group Responsible
1/10	Review Terms of Reference for meeting timeline and suitability	RACP/TF/1	RACP/TF/2	Completed	RACP/TF
1/11	Development of a Level 2 Contingency Arrangement Template	19 Apr 2012	RACP/TF/5	Closed. Template developed under task 1/8 for both Level 1 and 2	Secretariat/Regional ATM Contingency Plan Review Team
1/12	RACP/TF/1 17 – 19 April 2012	17 Apr 2012	19 Apr 2012	Completed	Secretariat
1/13	RACP/TF/2 25 - 29 March 2013	25 Mar 2013	29 Mar 2013	Completed	Secretariat
1/14	RACP/TF/3 2013	12 Nov 2013	15 Nov 2013	Completed	Secretariat
2/1	Forward preliminary Contingency Route and FLAS structures to the Secretariat for collation.	14 Mar 2013	RACP/TF/5	Closed. Included in 2/2	RACP/TF SWG
2/2	Circulate relevant current Contingency Route and FLAS structures to States end Jan 2016 , and request they provide route and FLAS information by 27 March 2015 26 Feb 2016 RACP/TF/4-participant States need only provide any amended information.	15 Apr 2013	14 Feb 2015 25 March 2016	(Will be included in Regional ATM Contingency Plan).	Secretariat
3/1	Explore the establishment of a linkage between the Regional ATM Contingency Plan and the Regional Framework for Collaborative ATFM	15 November 2013	RACP/TF/4	Closed. Linkage established in ATFM/SG TOR.	Secretariat
3/2	Re-circulate contingency questionnaire to non-respondent States	15 November 2013	15 Jan 2014	Closed.	Secretariat
3/2	RACP/TF/4	29 Apr 2014	2 May 2014	Completed	Secretariat
3/3	Standardize contingency route table	15 Nov 2013	Ongoing 25 March 2016	On receipt of responses to 2/2	Secretary/Chair Contingency Plan Review Team/Secretariat
3/3	Contact non-SWG States with request to forward contingency route and FLAS to Regional Office by RACP/TF/5	15 Nov 2013	15 Jan 2014	Closed. Included in 2/2	Secretariat
3/4	Consolidated contingency route/FLAS map	15 Nov 2013	31 May 2014	Completed	Singapore/Secretariat
3/5	Confirmation of Contingency Plan Review Team replacements	15 Nov 2013	6 Feb 2015 Closed		India/Thailand

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ID	Activity	Start Date	Complete Date	Status	Group Responsible
4/1	Qualitative summary of Current Situation information in Draft Plan	29 Jan 2015	28 Feb 2015 27 May 2016		Chair/Secretary
4/2	Draft contingency guidance for Volcanic Ash, Radioactive Cloud, Toxic Chemical	29 Jan 2015	28 Feb 2015 Completed		Review Team/Secretary
4/3	Update Regional Contingency Routes and FLAS table and map	29 Jan 2015	30 April 2015 26 March 2016		Singapore/Secretary/Chair
4/4	Develop naming convention for contingency routes	29 Jan 2015	28 Feb 2015 Completed		Review team/Secretary
4/5	Further information on Action Plans (RACP/TF/4 WP/11 refers	29 Jan 2015	RACP/TF/5 Closed	No further action required	Secretariat
4/6	RACP/TF/5	29 Jan 2015	June 2015 Completed		Secretariat
5/1	Refer NOTAM vs ASHTAM issue to AAITF for inclusion in OPADD	3 Dec 2015	Completed	OPADD to be updated 2016	Secretariat
5/2	Appendix to Plan: Summary of actions to be taken by all organizations/units/stakeholders in response to volcanic pre-eruption and eruption/ash cloud	3 Dec 2015	4 March 2016	Incorporate outcomes of VOLCEX/SG	Secretariat/Chair
5/3	Appendix to Plan: USA examples of volcanic ash contingency procedures Anchorage and Oakland FIRs.	3 Dec 2015	11 Dec 2015		USA/Secretariat/Chair