INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA AND PACIFIC REGION ATM CONTINGENCY FRAMEWORK

Version 4.0, October 2024

Approved by ATM/SG/X and published by the
ICAO Asia and Pacific Office, Bangkok

ASIA AND PACIFIC REGION ATM CONTINGENCY FRAMEWORK

TABLE OF CONTENTS

Contents

FOREWORD 4
RECORD OF AMENDMENTS 5
CHAPTER 1 6
INTRODUCTION 7
CHAPTER 2 1
NATIONAL LEVEL 1
CHAPTER 3 5
REGIONAL LEVEL 5
CHAPTER 4 8
PLAYBOOKS 8
CHAPTER 5 10
APAC ATM VOLCANIC ASH CONTINGENCY PLAN 10

Appendix A –ATM Contingency Principles
Appendix B –ATM Basic Planning Elements
Appendix C – Playbooks

FOREWORD

Guidelines for contingency measures for application in the event of disruptions of air traffic services and related supporting services were first approved by the Council on 27 June 1984 in response to Assembly Resolution A23-12, following a study by the Air Navigation Commission and consultation with States and international organizations concerned, as required by the Resolution. The guidelines were subsequently amended and amplified in light of experience gained with applying contingency measures in various parts of the world and differing circumstances.

This document provides guidelines to ensure the safe and orderly flow of international air traffic across the ICAO ASIA and Pacific (APAC) Region in the event of disruptions of air traffic services (ATS) or related supporting services and to preserve the availability of major (ATS) routes in such circumstances. This document replaces and supersedes the Asia/Pacific Region ATM Contingency Plan Version 3.0, August 2019. The updated National ATM Contingency Plan Template, ATS Emergency Response Template and Tower Emergency Plan Template are available on the ICAO APAC Office website [link] for ANSPs.

This document describes the regional contingency framework, including the arrangements and procedures to support effective regional collaboration, minimize the impact of disruption, and ensure the continued safety of flight operations, in accordance with the provisions of Annex 11—*Air Traffic Services*.

Implementing the regional framework is mainly to prepare the region to respond to and manage contingency events effectively. States are responsible for ensuring they comply with the ICAO provisions concerning contingency and emergency planning and implementation.

This document has been developed with the support of APAC Air Navigation Service Provider Committee Work Stream 3 and approved by the APAC Air Traffic Management Sub-group (ATM/SG) of the Asia/Pacific Planning and Implementation Regional Group (APANPIRG).

— — — — — — — —

RECORD OF AMENDMENTS

Amendment Number	Effective Date	Initiated by	Paragraph/ Reference	Remarks
1				

ABBREVIATIONS AND ACRONYMS

ACG	ATM Contingency Group
AIS	Aeronautical Information Service
ANS	Air Navigation Services
ANSP	Air Navigation Service Provider
APAC	Asia and Pacific
APP	Approach
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
CAA	Civil Aviation Authority
CCC	Contingency Coordination Committee
CDM	Collaborative Decision-Making
CNS	Communications, Navigation, Surveillance
CTA	Control Area
FIC	Flight Information Center
FIR	Flight Information Region
FIS	Flight Information Service
FLAS	Flight Level Allocation Scheme
FPL	Flight Plan
GNSS	Global Navigation Satellite System
IATA	International Air Transport Association
IVATF	International Volcanic Ash Task Force
LoA	Letter of Agreement
MET	Meteorological
PB	Playbook
RCC	Rescue Coordination Center
RSC	Rescue sub-centre
SAR	Search and Rescue
SMS	Safety Management system
SRA	Safety Risk Assessment
TWR	Tower
UTA	Upper Control Area
VAAC	Volcanic Ash Advisory Centre

Chapter 1

INTRODUCTION

1.1 The APAC Region Air Traffic Management (ATM) Contingency Framework has been developed to assist in providing for the safe and orderly flow of international air traffic in the event of disruption or potential disruption of air traffic services (ATS) and related supporting services in the APAC Region, in accordance with the provisions of ICAO Annex 11 – *Air Traffic Services*, Chapter 2, 2.32 and its Attachment C.

1.2 The framework includes contingency arrangements and procedures to be implemented in cases when the airspace users decide to circumnavigate airspace(s) due to events such as conflict zones, adverse weather, natural disasters or public health emergency, or when the ATS are disrupted due to events such as ATM system failure, industrial actions, security, or pandemic, which might significantly affect traffic routing and increase air traffic movements in other airspace(s) and require cross-border coordination.

1.3 The framework describes the role and procedures of the Contingency Coordination Teams (CCTs) as a mechanism used with the support of ICAO to ensure effective regional coordination and collaboration to respond to and manage contingencies.

1.4 The framework supports preparedness to address contingencies at the national, regional and inter-regional levels through guidelines on the planning aspects and the arrangements and procedures to be implemented. It also provides guidance on the roles of each stakeholder and the process to be followed. The framework also introduces the Playbooks – a set of predefined contingency scenarios with their associated pre-agreed contingency arrangements and procedures between adjacent area control centers (ACCs) that would be applied in most contingency events – and how they can be used.

1.5 The ICAO APAC Regional Office will coordinate with ICAO Headquarters and Regional Offices concerned on any amendment to the Regional Contingency Framework and its components.

1.6 The relevant ICAO Regional Offices will distribute this Contingency Framework to all States and international organizations within their regions.

1.7 This version and its updates should be available on the ICAO APAC Office website [link].

1.8 To help keep this document up to date, Stakeholders are encouraged to send their comments/suggestions for improvements to the ICAO APAC Regional Office (apac@icao.int).

1.9 The Framework comprises two main aspects: national and regional levels, as reflected in **Figure 1**. It also describes the regional ATM contingency planning principles and the basic planning elements.

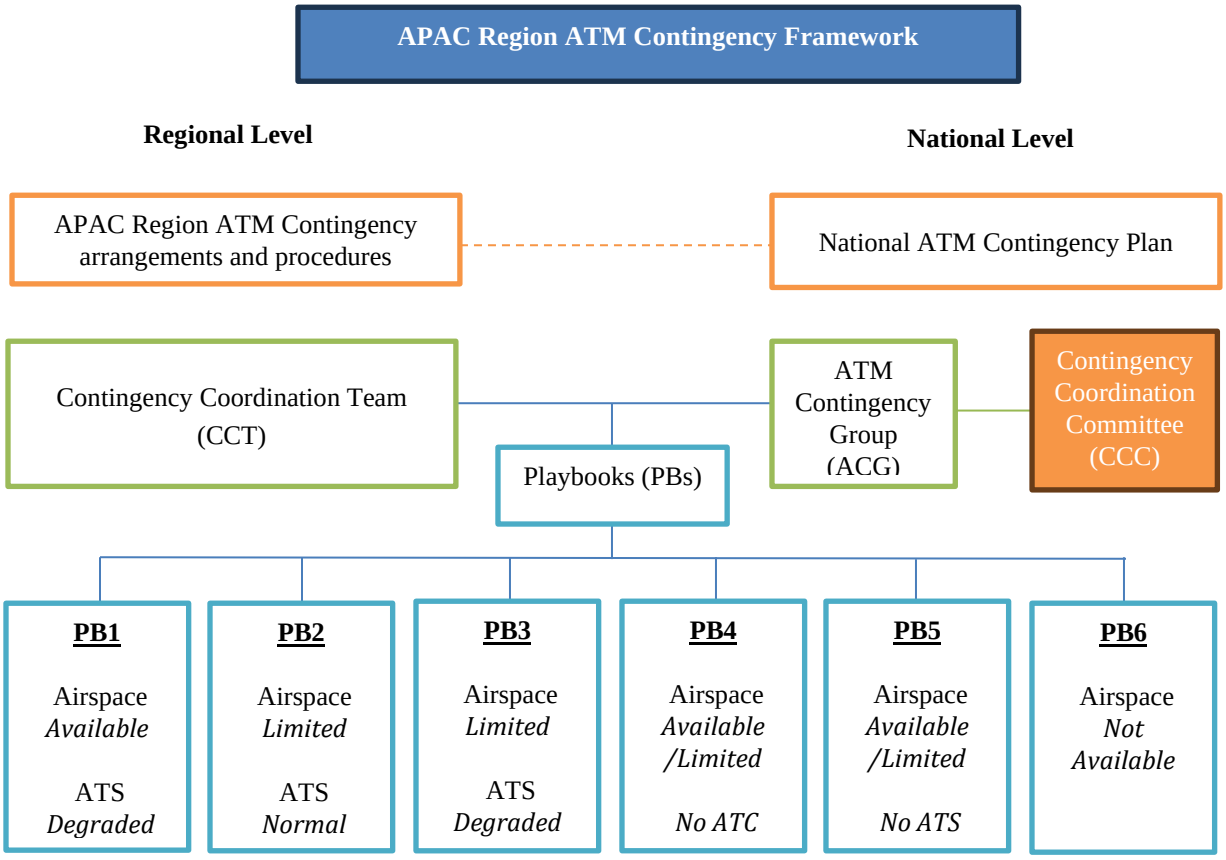

Figure1. APAC Regional ATM Contingency Framework

Scope and scale of contingency response and event

1.10 The following are the three levels describing the management scale of a contingency event in the ICAO APAC Region:

Level 1: contingency within the State's delineated FIR(s) that can be managed locally;

Level 2: cross-border contingency requiring collaboration between two adjacent States; and

Level 3: sub-regional or regional contingency requiring collaboration of more than two States.

1.11 The following are the categories of contingency events that identify the scope of the event and its potential impact on traffic flows. These categories are based on combinations of airspace availability and status of air traffic services:

Category A /PB1 – Airspace Available/ ATS degraded.

Category B /PB2 – Airspace Limited/ ATS Available.

Category C /PB3 – Airspace Limited/ ATS degraded.

Category D /PB4 – Airspace Available or Limited/ No ATC (only FIS).

Category E /PB5 – Airspace Available or Limited/ No ATS at all

Category F /PB6 – Airspace Not Available or Avoided by airlines

1.12 The following are examples of contingency events that would impact the availability of airspace and/or the provision of air traffic services: industrial action, pandemic, earthquake, adverse weather, ATM system failure, volcanic ash, nuclear emergency, military activity, national security, political unrest, conflict zones, complete loss of facility operational capability, loss of manpower, GNSS spoofing, cyber security, major events.

ATM Contingency Planning Principles

1.13 ATM contingency planning principles in **Appendix A** form the basis for the development of contingency responses and management of any contingency event including bilateral and multilateral States contingency agreements on contingency routes, flight level allocation schemes, longitudinal separation, transfer of communication and control, ATC separation, FIS and alerting service, search and rescue services and delegation of air navigation services (ANS) services as applicable.

ATM Contingency Basic Planning Elements

1.14 The Basic Planning Elements (BPE) in **Appendix B** define the minimum recommended considerations for inclusion in contingency responses, such as those related to Administration, Plan Management, Airspace, ATM Procedures, Pilot/Operator Procedures, Communications Facilities and Procedures, Aeronautical Support services including AIS and MET, and Contact Details of involved facilities and focal points in contingency response and management.

1.15 Air navigation service providers (ANSPs) should implement a mechanism to determine the safety and operational impacts of a contingency event promptly to ensure an effective and rapid response to such an event

1.16 States and ANPSs should include in the training programme of all personnel involved in contingency response and management of ATM contingencies including those related to the APAC Region ATM Contingency Framework and its components. Workshops and exercises at national, sub-regional, and regional levels should be conducted periodically to raise awareness and prepare the region for effective response to contingencies.

APAC Region ATM Contingency Focal Points

1.17 The list of APAC Region ATM Contingency Focal Points is available on the ICAO APAC Office website (link). States and international organizations are urged to keep the contact details of their focal points up to date by contacting the ICAO APAC Office (apac@icao.int).

APAC Region ATM Contingency monitoring mechanism

1.18 The monitoring mechanism and status of APAC Region readiness to respond to contingency events are available at the ICAO APAC Office website [link].

— — — — — — — —

CHAPTER 2

NATIONAL LEVEL

2.1 In accordance with Annex 11, 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. Such contingency plans shall be developed with the assistance of ICAO as necessary, in close coordination with the air traffic services authorities responsible for the provision of services in adjacent portions of airspace and with airspace users concerned.

2.2 Preparatory actions should include the initial development of contingency plan that covers responses to categories A to E that are likely to affect the availability of airspace for civil aircraft operations and/or the provision of air traffic services and support services.

2.3 The responsibility for appropriate contingency action for airspace over the high seas continues to rest with the State(s) normally responsible for providing the services until, and unless, that responsibility is temporarily reassigned by ICAO to (an) other State(s).

2.4 States are required to review their national ATM contingency plan and coordinate any amendments with neighbouring States and ICAO APAC Office periodically. Copies of the latest version of the National ATM Contingency Plan should be provided to ICAO APAC Office for posting on the ICAO APAC Regional Office webpage [link].

2.5 Guidance material, an ATM Contingency Plan Template, and an Emergency Checklist have been developed to support States in developing their national ATM Contingency Plans and responding to contingencies and emergencies. They are available on the ICAO APAC Office website [link] for ANSPs.

2.6 States should establish an ATM Contingency Group (ACG) responsible to plan, respond to and manage contingencies. In a contingency event, the ACG would introduce contingency arrangements and be able to provide up-to-date information at national and regional levels on the situation and associated contingency measures until the situation has returned to normal. The ACG should perform its tasks on a 24-hour basis.

2.7 A national contingency coordination committee (CCC) should be established and composed of high-level representatives from aviation and other stakeholders to act as a central agency for the purpose of exchanging information and coordinating activities during disruption. The CCC should support the ACG in implementing contingency and recovery measures. The ACG should keep the CCC updated on the situation, the status of the implemented measures, their associated challenges and what actions are required from the CCC or its members.

2.8 The terms ACG and CCC are used as indicative names. States might elect to use different terms, especially if already-established entities perform the same tasks.

2.9 The ACG should be composed of the following and other experts or representatives may be invited to join as required:

a) ACC Manager or similar position as Lead;

b) Director of or their delegates: AIS, CNS, MET, RCC; Airspace Planning; ANS Safety (regulator); facility maintenance;

c) Military Liaison Officer; and

d) Managers or supervisors of other ATS units, as required.

2.10 The ACG functions should include but not be limited to the following:

a) convene rapidly to exchange information to support the assessment of the situation responding to a contingency event;

b) identify which Playbook to apply;

In cases when the event is not covered in a Playbook, then the ACG has to explore contingency arrangements and procedures to be implemented;

c) advise and coordinate with adjacent ACCs, ICAO APAC RO, and airspace users (IATA), if no other unit is in place to do so;

d) inform the CCC of the situation and indicate actions required from the CCC, if any;

e) activate the contingency plan and initiate the implementation of the associated contingency arrangements and procedures as reflected in the relevant Playbook;

At this stage required NOTAMs should be issued by all the States concerned.

f) keep updated on the contingency situation at all times;

g) review and update the contingency arrangements and procedures, as required;

h) participate and contribute to the dissections of the contingency coordination team (CCT) when established by ICAO and provide required information and updates;

i) exchange up-to-date information with the adjacent ATS authorities concerned to coordinate contingency measures;

j) notify the designated organizations of the contingency situation sufficiently in advance and/or as soon as possible thereafter;

k) take necessary action to issue NOTAMs in accordance with the contingency plan or as otherwise required by the particular contingency situation. NOTAMs should be issued 48 hours in advance if the contingency situation is sufficiently foreseeable. Templates should be prepared and used as far as possible;

l) prepare actions for the recovery-getting back to normal operations;

m) assess and confirm if the situation is rectified and normal operations can be resumed;

n) agree on the deactivation of the contingency plan or advise the CCT, if established, to do so; and

o) cancel NOTAMs related to the contingency situation.

2.11 The CCC should include high-level representation from the following:

a) Civil Aviation Authority as Lead;

b) ANSPs;

c) Military Authorities;

d) Airport Operators;

e) Airspace users;

f) Metrological Authorities if not part of ANSPs;

g) Search and rescue (RCC, RSCs, and mission control facilities);

h) Other relevant authorities/agencies.

2.12 The CCC functions should include but not be limited to the following:

a) convene rapidly to exchange information and provide high-level support to the ACG in responding to and managing contingencies, as required;

b) take actions, such as mobilizing resources or means, for the provisions of ATS;

c) facilitate coordination between civil and military for management of the airspace, including the establishment of contingency routes as applicable;

d) coordinate internally and with the States and International Organizations concerned for actions that require high-level decision-making, as necessary.

2.13 The following provide the step-by-step actions to be taken in case of a contingency event:

Note. ACC Manager is used for representation; in some States the functions might be performed by a similar position. Also, the task could be performed by a designated staff on behalf of the Manager.

1- The ACC supervisor to action as per the applicable standards of operations;
2- inform the ACC Manager to assess the situation;
3- ACC Manager as the Lead call for the ACG;
4- The ACG Lead defines what Playbook to apply;
5- The ACG Lead advises the adjacent States and ICAO APAC RO and IATA;
6- The ACG Lead informs the CCC indicating if actions are required from the CCC;
7- ACG Activate the contingency plan (arrangements and procedures to be implemented);
8- NOTAM issuance by all the States concerned (affected FIRs), as applicable;
9- Contingency goes Live – ACG to call for meetings (in-person or via video conference);
10- ACG monitors and continuously assesses the situation;
11- ACG reviews and introduces improvements to the contingency arrangements and procedures as needed;
12- Contingency event ceased – ACC Manager advises the adjacent States and ICAO APAC RO and CCC;
13- Deactivation of contingency plan (NOTAMs Cancellation)
14- ACG to carry out a post-implementation assessment.

2.14 When informing the ICAO APAC Regional Office (ref. step 5) or based on information received by ICAO, a Contingency Coordination Team (CCT), as described in Chapter 3, would be established and follow the following steps:

1- The ICAO Regional Officer/ATM coordinates with the following; to assess the situation, the need, and the scope of the CCT:

a. ICAO Headquarters and Regional Offices concerned;
b. Contingency Focal Points of States concerned;
c. IATA; and
d. Other organizations as needed.

2- ICAO APAC RO activates the CCT and calls for the first CCT Meeting
3- CCT agrees on the implementation of contingency arrangements and procedures (Playbook);
4- CCT monitors and continuously assesses the situation;
5- ICAO arranges for periodic meetings (usually via web conference) of the CCT;
6- ICAO shares the outcome of CCT meetings and updates received;
7- Contingency event ceased – ICAO deactivated the CCT or put it on monitoring status; and
8- CCT members to carry-out post-implementation assessment.

— — — — — — — —

CHAPTER 3

REGIONAL LEVEL

3.1 A Contingency Coordination Team (CCT) would be established with the support of the ICAO APAC Office to effectively respond to and manage contingency situation involving more than one State (Level 2 or 3). CCT is a forum for exchange of information related to a contingency event and to agree on the implementation of necessary contingency arrangements and procedures in a collaborative manner.

3.2 A Contingency Coordination Team (CCT) is to be established from the following members:

- ICAO (Headquarters and Regional Offices Focal points); members;
- States/ANSPs concerned;
- IATA; and
- other organizations and agencies as deemed necessary.

3.3 The main functions of the CCT are not limited to the following:

- monitor continuously information from all relevant sources;
- initiate action for the activation/deactivation of the contingency arrangements and procedures as reflected in the relevant playbook or as determined for the contingency event;
- arrange for the constant exchange of relevant aeronautical information to the ICAO Regional Office and Headquarters;
- liaise with international/regional organizations as appropriate; and
- exchange up-to-date information with States directly concerned and States that would be potentially involved in contingency arrangements; and

3.4 The notification and coordination process in **Table 1.** is intended to facilitate the monitoring, exchange of information, and implementation of contingency arrangements between airspace users, ANSPs, IATA and ICAO.

Airlines	Airline Actions	IATA Actions	Contingency Coordination Team (CCT)	States/ ANSPs
Monitor global activities that have an effect on flight operations.	NONE	NONE	NONE	NONE
Review activities that require airline safety and security assessment	Notify IATA of affected FIR(s) and factors under review (security and/or safety)	When more than (30%) of airlines reporting, notify CCT	CCT established	NONE
Identify specific factors and pending trigger events	Inform IATA on review findings and possible trigger events	Inform CCT on findings and number of airlines reporting	Notify affected States/ANSPs on number of airlines reviewing current activity	NONE
Event triggered: reviewing avoidance options and select avoidance scenario	Inform IATA of selected scenario and volume/initial timelines.	Inform CCT	Notify affected States/ANSPs scenario and volume/timelines	Review scenarios and give feedback on feasibility
Prepare FPLs 48 hours prior of planned avoidance re-routes	Notify IATA	Notify CCT	Notify affected States/ANSPs	Prepare NOTAMs and contingency arrangements and procedures
Submit FPLs at least 24 hours prior to activation of planned avoidance re-routes	Notify IATA	Notify CCT	Notify affected States/ANSPs	Activate Contingency Plan/Publish NOTAMs

Table 1. Notification and coordination process

3.5 Tactical ATC considerations during periods of overloading may require re-assignment of routes or portions thereof, which might be coordinated through the CCT.

3.6 CCT should facilitate the agreement on alternative routes to maximize the use of existing available airspace, level of ATS, and communication, navigation, and surveillance.

3.7 In the event that ATS is disrupted, the Civil Aviation Authority shall publish the corresponding NOTAM 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, APP, TWR and FIS), including an expected date of restoration of services if available;

d) information on the provisions made for alternative services;

e) ATS contingency routes that have been activated as alternate routes;

f) procedures to be followed by neighbouring ATS units;

g) 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.

3.8 In the event that the State/ANSP is unable to issue NOTAMs, arrangements will be made for another NOTAM Office to issue the required NOTAMs.

3.9 **Draft NOTAMs** are included as templates in each playbook to be used in case of a contingency event.

3.10 **Contingency Routes (CRs)** might be developed in advance and be included in the Playbooks in case the traffic cannot be accommodated on the current ATS route structure.

3.11 Where possible, aircraft on long-haul international flights shall be given priority with respect to cruising levels.

3.12 It is recognized that operators may incur economic penalties during a contingency event. Therefore, ATFM measures should be implemented as far as possible to make operations more predictable.

Traffic Information Broadcast by Aircraft (TIBA) Procedures

3.13 Traffic Information Broadcast by Aircraft (TIBA) procedures shall be applied in accordance with ICAO Annex 11 – *Air Traffic Services*, Attachment B. The TIBA frequency for the APAC Region is 128.95MHZ.

— — — — — — — —

CHAPTER 4

PLAYBOOKS

4.1 Playbooks are designed to bridge the gap between the planning and implementation phases. They may include a set of pre-agreed contingency arrangements and procedures to be implemented by ACCs in response to contingency events.

4.2 The Playbooks have been developed based on a determination of the airspace availability and the level of air traffic services to be provided. The matrix below illustrates the link of each playbook with the contingency category:

	ATS Normal	**ATS Degraded**	**NO ATC (FIS)**	**NO ATS**
Airspace Available	**Normal situation**	CAT A PB1	CAT C PB4	CAT D PB5
Airspace Limited	CAT B PB2	CAT A PB3	CAT C PB4	CAT D PB5
Airspace NOT Available	CAT E PB6	CAT E PB6	CAT E PB6	CAT E PB6

Table 2. Playbook Matrix

4.3 The Playbook therefore covers a comprehensive range of contingency events; however, appropriate contingency arrangements and procedures might be required to address other contextual factors. Therefore, ANSPs are required to effectively engage with their neighboring States and ICAO, if needed via the CCT, to agree on the specific contingency arrangements and procedures for such events.

4.4 Contingency arrangements and procedures are required when the procedures agreed upon in the ATS letters of agreement (LoAs) between adjacent ACCs cannot be applied, hence they are considered as temporary updates to the LoAs..

4.5 The following playbooks as detailed in **Appendix C** were designed in the form of Checklists that can be populated and recused as required during contingency events. The PBs can be provided on a web-based platform or App for easy access and utilization:

PB1:
Airspace is available as usual, but ATS are degraded due to a Category A event such as industrial action, pandemic, earthquake, nuclear emergency, adverse weather, ATM system failure, GNSS spoofing that would affect to some extent the provision of ATS In this kind of events traffic will have access to the whole FIR, however, ACC will have a limitation in providing services as normal.

PB2
Airspace is limited due to a Category B event such as Volcanic Ash, nuclear emergencies, military activity, and weather, but ATS are normal. In this kind of events traffic would not have access to the affected portion of the airspace, accordingly, ATS will have to accommodate the traffic in the available airspace through the introduction of changes to the ATS route structure.

PB3
Airspace is limited, and ATS are degraded due to Category A events such as Volcanic Ash, nuclear

emergencies, military activity, ATM system failure and adverse weather. This kind of event require procedures to circumnavigate traffic away from the affected airspace taking into consideration the limitation of the ATS.

PB4

Airspace is available or limited but no air traffic control (ATC), only flight information services can be provided, due to a Category C event such as a pandemic, national security, industrial action ATM system failure. In this kind of events provision of air traffic control is affected but other ATS will remain available or arranged for. One of the contingency measures would be changing the airspace to class G.

PB5

Airspace is available or limited, but no ATS due to a Category D event such as complete loss of facility operational capability, total loss of manpower, and security. In this kind of events no ATS could be provided, however, traffic might still have access or operate within, to or from the affected FIR. This will require arrangements by neighboring ACCs to reroute traffic avoiding the affected FIR.

PB6

Airspace is not available or avoided due to a Category E event such as airspace closure by the State or airlines avoiding the airspace due adverse weather, military activities, natural disaster despite the status of ATS. This might look similar to PB5, however, in this is the kind of event when full access to the FIR is not available.

— — — — — — — —

CHAPTER 5

APAC ATM VOLCANIC ASH CONTINGENCY PLAN

5.1 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.

5.2 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.

5.3 The actions to be taken by relevant Volcanic Observatories, Volcanic Ash Advisory Centres, MWOs, AIS Units and ACCs are described in ICAO Doc 9766 – *Handbook on the International Airways Volcano Watch (IAVW)*.

5.4 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)

5.5 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.

5.6 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)[1] 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[2].

5.7 To ensure effective volcanic ash information, coordination and collaboration, States should:

a) 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;

b) participate in volcanic ash exercises; and

c) consider establishing an internal crisis management centre, where applicable, 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: This is supplemental to the provisions of Annexes 3 and 15.

5.8 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*. Colour-coded levels for volcanic activity are not provided by all volcanic observatories and/or Volcanic Ash Advisory Centres (VAACs) in the Asia/Pacific Region, and only one State issues ASHTAM. NOTAM format should be used to disseminate volcanic ash cloud information.

5.9 NOTAM issued for volcanic eruption or volcanic ash cloud should include all items of information listed in the ASHTAM format except item I (closure of airspace and/or air routes). Colour-coded activity level information may be included in NOTAM if available.

5.10 Each State should ensure that a list of volcanoes relevant to the State is maintained at all

International NOTAM Offices, with volcano name, number and nominal position.

5.11 ICAO Doc 9691 *Manual on Volcanic Ash, Radioactive material and Toxic Chemical Clouds* Appendix E – *Cross reference list of volcanoes and navigation aids* provides a list of ICAO registered volcanoes. The information provided includes the following note:

> *Note: Doc 9691 Appendix E requires that another list, the List of Volcanoes of the World for VAAC Use, available at http://www.volcano.si.edu/projects/vaac-data/ and maintained by the Global Volcanism Program of the Smithsonian Institution, should be used in case of any discrepancy between the Smithsonian database and the list published in Doc 9691 Appendix E.*

5.12 The Fourth Meeting of the Asia/Pacific Volcanic Ash Exercises Steering Group (VOLCEX/SG/4), held in Bangkok, Thailand, from 15 to 17 March 2016, recommended that the List of Volcanoes of the World for VAAC Use (Smithsonian Institution) be considered the definitive list of volcanoes for use in the Asia/Pacific Region.

5.13 The List of volcanoes is updated frequently, without notification. States should ensure that relevant NOTAM offices include in their local procedures provisions for frequent checks of the list to ensure any changes are recorded and used in ASHTAM/NOTAM and NOTAM Templates.

5.14 The APAC Region Volcanic Ash Plan is available on the ICAO APAC Office website [Link].

— — — — — — — —

APPENDIX A: APAC REGION ATM CONTINGENCY PLANNING PRINCIPLES

1. Area Control Centres (ACCs) and Flight Information Centres (FICs) should have a National ATM Contingency Plan to ensure the safe transit of international traffic in the event of disruption or potential disruption of ATS and related supporting services in the airspace for which they are responsible.

2. The overriding principle is that safety has primacy over efficiency and optimal levels and routes;

3. Contingency Operations might necessitate lower than normal airspace capacity to ensure safety.

4. System and ATC service redundancy is the most effective contingency capability.

5. Contingency Plan should define the following where applicable:

   a. Contingency Routes supported by Flight Level Allocation Scheme (FLAS) and minimum navigation and height-keeping (e.g. RVSM or non-RVSM) capability for access;

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

   b. 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;

   c. priority determination for routine scheduled and non-scheduled flights;

   d. flights excluded from operations in contingency airspace, and minimum navigation and height keeping (RVSM) capability required for access to the contingency airspace;

   e. specified minimum longitudinal spacing between consecutive aircraft entering the contingency airspace on non-separated ATS contingency routes;

   f. Contingency communication arrangements including means of communication within contingency airspace and communications transfer arrangements for aircraft entering and leaving the airspace;

   g. Details of delegation of air traffic services arrangements (if any);

   h. Contingency points of contact

6. Contingency Arrangements (arrangements between neighbouring administrations) should be included in bi-lateral or multi-lateral agreements between States in all cases where activation of Contingency Plan will impact upon a neighbouring State.

7. Close cooperation between neighbouring administrations, together with supporting mechanisms for the tactical definition and promulgation of contingency routes.

8. Contingency routes must be vertically separated whenever lateral route spacing is less than the minimum specified by the State for contingency operations.

9. FLAS 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.

10. Spacing between contingency ATS routes should be in accordance with the applicable separation described in the *Procedures Air Navigation Services – Air Traffic Management (Doc 4444) and Regional Supplementary Procedures (Doc 7030).* .

11. Minimum longitudinal separation 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 LoAs or other contingency arrangements.

12. Contingency ATS routes and FLAS, and contingency procedures, should be agreed between geographically grouped neighbouring States to form sub-regional contingency plans.

13. Contingency ATS routes should be published in State AIP to permit the storing of route details in airspace users' navigation databases.

14. Airspace classifications for ICAO Classes A, B and C airspace should remain unchanged as practicable 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.

15. Ground and airborne navigation requirements should be defined if necessary

16. Alternate aerodromes should be specified where necessary for the readiness of the airport control towers, approach units and airport operators.

17. Airspace affected by volcanic ash cloud should not be closed to international civil aviation, where operators comply with the relevant ICAO provisions.

18. 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.

19. Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area.

20. 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.

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. Establishment of ATM Contingency Group (ACG) for 24-hour responding to and management of contingency and coordination of operational and supporting activities under the contingency plan; and

ii. establishment of a Contingency Coordinating Committee composed of high-level representatives from aviation and other stakeholders to act as a central agency for the purpose of exchanging information and coordinating activities during disruption. The CCC provide required high-level support to ACG and taken necessary action to restore the situation.

e) Details of testing, review and reporting actions:

i. schedule of desktop and simulator testing;

ii. post-activation review (PAR) requirements:

- 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;
- bi-lateral or multi-lateral PAR for activation or testing of Level 2 and 3 contingency arrangements and procedures;

iii. timely reporting to ICAO APAC RO and other affected States of anticipated or experienced disruptions requiring activation of contingency plans.

f) inclusion of contingency plans, arrangements and procedures in ATS and other involved personnel training and refresher training programmes;

g) raising awareness of all parties involved in contingency.

Element 3: Airspace

h) Procedures for dynamic management of the airspace;

Guidance on the dynamic management of restricted, prohibited and danger areas as well enhanced

flexible sue of airspace are contained in the ICAO manual *on Civil-Military in Air Traffic Management* (Doc 10088).

i) Criteria for airspace classification changes and associated separation;

j) CNS status and performance requirements; and

k) Implementation of oriented track system in collaboration with neighbouring ACCs.

l) Procedures for the Prior Permission Required (PPR) aeronautical information publication when required to access the airspace.

Element 4: ATM Procedures

m) Details of re-routing to avoid the whole or part of the airspace concerned, normally involving establishment of:

i. strategic and tactical collaborative oriented track system 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 FLAS, to ensure that a standard minimum vertical separation is applied where less than a specified minimum lateral separation exists between routes.

n) details of how domestic traffic, departing and arriving flights and SAR, humanitarian and State aircraft flights will be managed during the contingency period.

o) procedures for transition from normal services levels to contingency services, and resumption of normal service.

p) procedures for joining or departing a contingency route.

q) details of reduced levels of service, if any, within the affected airspace.

r) 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.

s) procedures for adjacent service providers to establish longitudinal spacing at the entry point, and to maintain such separation through the airspace;

t) 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

u) coordination and communications transfer procedures for aircraft entering and leaving the affected airspace.

Element 5: Pilot/Operator Procedures

v) 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;

w) emergency procedures, including TIBA and/or in-flight requirements for broadcast of position and other information, and for continuous listening watch, on specified pilot- pilot and GUARD VHF frequencies;

x) requirements for display of navigation and anti-collision lights;

y) requirements for climbing and descending well to the right of the centreline of specifically

identified routes;

z) 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 FLAS.

Element 6: Communications Facilities and Procedures

aa) provision and operation of adequate air-ground communications, AFTN and ATS direct speech links;

bb) specification of radio frequencies to be used for particular contingency routes.

cc) log-on and connection management for CPDLC aircraft, where appropriate;

dd) use of ADS-C automatic position reporting in lieu of voice position reporting to ATS.

Element 7: Aeronautical Support Services including AIS and MET

ee) 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.

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

Element 8: Contact Details

gg) contact details for the RCC responsible for the affected FIR(s), and coordination arrangements.

hh) contact details of adjacent States ANSPs and other international organizations participating in the contingency plan.

ii) prior notification requirements for adjacent FIR activation of Level 2 and 3 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.

— — — — — — — —

[ACC]		
Play Book 1 This playbook contains arrangements to ensure the continued safety of flight operations during the disruption. The plan has been prepared in accordance with ICAO Annex 11 ─ *Air Traffic Services*, Chapter 2, paragraph 2.32 and Attachment C to provide the ATS procedures, contingency route structure, and other arrangements, to be used on a temporary basis, while air traffic services are being provided from **[ACC NAME]** ACC but with some limitation than normal situation.		
Airspace Available	**ATS or supporting services disrupted**	Name:
Due to: (select what apply)	Date:	Time:
ATCO shortage (or strike) ATM System failure VAC Natural Disaster	SUR COM Political unrest Conflict zone	GNSS interference/spoofing Cyber attack Weather Other
ATCO shortage ATM System failure	SUR COM Power supply	GNSS interference/spoofing Cyber attack Other
Explain the cause:		
Actions		Status
Adjacent ACCs	Contact	
ACC A		
ACC B		
ACC C		
IATA		
ICAO		
ATS OPERATIONAL PROCEDURES		
Issuing NOTAM		
REROUTING SCHEME		
Separation		
Flow Control		
Level Restrictions		
Airspace Classification		

TRANSFER OF CONTROL		
Position Reporting		
Instructions for Overflying traffic		
Procedures for flights to/from airports inside [Name of States]		
Filing of flight plans		
Pilot operating procedures		
Collision Avoidance		
OVERFLIGHT PERMISSION		
PPR		
INTERCEPTION OF CIVIL AIRCRAFT		
Search and Rescue		

— — — — — — — —

[ACC]		
Play Book 2 This playbook contains arrangements to ensure the continued safety of flight operations during the disruption. The plan has been prepared in accordance with ICAO Annex 11 ─ *Air Traffic Services*, Chapter 2, paragraph 2.32 and Attachment C to provide the ATS procedures, contingency route structure, and other arrangements, to be used on a temporary basis, while air traffic services are being provided from **[ACC NAME]** ACC but with some limitation than normal situation.		
Airspace Limited	**ATS normal**	Name:
Due to: (select what apply)	Date:	Time:
ATCO shortage (or strike) ATM System failure VAC Natural Disaster	SUR COM Political unrest Conflict zone	GNSS interference/spoofing Cyber attack Weather Other
Explain the cause:		
Actions		Status
Adjacent ACCs	Contact	
ACC A		
ACC B		
ACC C		
IATA		
ICAO		
ATS OPERATIONAL PROCEDURES		
Issuing NOTAM		
REROUTING SCHEME		
Separation		
Flow Control		
Level Restrictions		
Airspace Classification		
TRANSFER OF CONTROL		
Position Reporting		

Instructions for Overflying traffic		
Procedures for flights to/from airports inside [Name of States]		
Filing of flight plans		
Pilot operating procedures		
Collision Avoidance		
OVERFLIGHT PERMISSION		
PPR		
INTERCEPTION OF CIVIL AIRCRAFT		
Search and Rescue		

— — — — — — — — —

[ACC]		
Play Book 3 This playbook contains arrangements to ensure the continued safety of flight operations during the disruption. The plan has been prepared in accordance with ICAO Annex 11 ─ *Air Traffic Services*, Chapter 2, paragraph 2.32 and Attachment C to provide the ATS procedures, contingency route structure, and other arrangements, to be used on a temporary basis, while air traffic services are being provided from **[ACC NAME]** ACC but with some limitation than normal situation.		
Airspace Limited	**ATS or supporting services disrupted**	Name:
Due to: (select what apply)	Date:	Time:
ATCO shortage (or strike) ATM System failure VAC Natural Disaster	SUR COM Political unrest Conflict zone	GNSS interference/spoofing Cyber attack Weather Other
ATCO shortage ATM System failure	SUR COM Power supply	GNSS interference/spoofing Cyber attack Other
Explain the cause:		
Actions		Status
Adjacent ACCs	Contact	
ACC A		
ACC B		
ACC C		
IATA		
ICAO		
ATS OPERATIONAL PROCEDURES		
Issuing NOTAM		
REROUTING SCHEME		
Separation		
15 minutes		
Flow Control		
Level Restrictions		
Airspace Classification		

TRANSFER OF CONTROL		
Position Reporting		
Instructions for Overflying traffic		
Procedures for flights to/from airports inside [Name of States]		
Filing of flight plans		
Pilot operating procedures		
Collision Avoidance		
OVERFLIGHT PERMISSION		
PPR		
INTERCEPTION OF CIVIL AIRCRAFT		
Search and Rescue		

— — — — — — — —

[ACC]		
Play Book 4 This playbook contains arrangements to ensure the continued safety of flight operations during the disruption. The plan has been prepared in accordance with ICAO Annex 11 ─ *Air Traffic Services*, Chapter 2, paragraph 2.32 and Attachment C to provide the ATS procedures, contingency route structure, and other arrangements, to be used on a temporary basis, while air traffic services are being provided from **[ACC NAME]** ACC but with some limitation than normal situation.		
Airspace Available	**ATS or supporting services disrupted**	Name:
Due to: (select what apply)	Date:	Time:
ATCO shortage (or strike) ATM System failure VAC Natural Disaster	SUR COM Political unrest Conflict zone	GNSS interference/spoofing Cyber attack Weather Other
ATCO shortage ATM System failure	SUR COM Power supply	GNSS interference/spoofing Cyber attack Other
Explain the cause:		
Actions		Status
Adjacent ACCs	Contact	
ACC A		
ACC B		
ACC C		
IATA		
ICAO		
ATS OPERATIONAL PROCEDURES		
Issuing NOTAM		
REROUTING SCHEME		
Separation		
15 minutes		
Flow Control		
Level Restrictions		
Airspace Classification		

TRANSFER OF CONTROL		
Position Reporting		
Instructions for Overflying traffic		
Procedures for flights to/from airports inside [Name of States]		
Filing of flight plans		
Pilot operating procedures		
Collision Avoidance		
OVERFLIGHT PERMISSION		
PPR		
INTERCEPTION OF CIVIL AIRCRAFT		
Search and Rescue		

— — — — — — — —

[ACC]		
Play Book 5 This playbook contains arrangements to ensure the continued safety of flight operations during the disruption. The plan has been prepared in accordance with ICAO Annex 11 ─ *Air Traffic Services*, Chapter 2, paragraph 2.32 and Attachment C to provide the ATS procedures, contingency route structure, and other arrangements, to be used on a temporary basis, while air traffic services are being provided from **[ACC NAME]** ACC but with some limitation than normal situation.		
Airspace Available or limited	**Full loss of ATS**	Name:
Due to: (select what apply)	Date:	Time:
ATCO shortage (or strike) ATM System failure VAC Natural Disaster	SUR COM Political unrest Conflict zone	GNSS interference/spoofing Cyber attack Weather Other
ATCO shortage ATM System failure	SUR COM Power supply	GNSS interference/spoofing Cyber attack Other
Explain the cause:		
Actions		Status
Adjacent ACCs	Contact	
ACC A		
ACC B		
ACC C		
IATA		
ICAO		
ATS OPERATIONAL PROCEDURES		
Issuing NOTAM		
REROUTING SCHEME		
Separation		
15 minutes		
Flow Control		
Level Restrictions		
Airspace Classification		

TRANSFER OF CONTROL		
Position Reporting		
Instructions for Overflying traffic		
Procedures for flights to/from airports inside [Name of States]		
Filing of flight plans		
Pilot operating procedures		
Collision Avoidance		
OVERFLIGHT PERMISSION		
PPR		
INTERCEPTION OF CIVIL AIRCRAFT		
Search and Rescue		

— — — — — — — — —

[ACC]		
Play Book 6 This playbook contains arrangements to ensure the continued safety of flight operations during the disruption. The plan has been prepared in accordance with ICAO Annex 11 ─ *Air Traffic Services*, Chapter 2, paragraph 2.32 and Attachment C to provide the ATS procedures, contingency route structure, and other arrangements, to be used on a temporary basis, while air traffic services are being provided from **[ACC NAME]** ACC but with some limitation than normal situation.		
Airspace NOT Available	**ATS normal or degraded or not available**	Name:
Due to: (select what apply)	Date:	Time:
ATCO shortage (or strike) ATM System failure VAC Natural Disaster	SUR COM Political unrest Conflict zone	GNSS interference/spoofing Cyber attack Weather Other
ATCO shortage ATM System failure	SUR COM Power supply	GNSS interference/spoofing Cyber attack Other
Explain the cause:		
Actions		Status
Adjacent ACCs	Contact	
ACC A		
ACC B		
ACC C		
IATA		
ICAO		
ATS OPERATIONAL PROCEDURES		
Issuing NOTAM		
REROUTING SCHEME		
Separation		
15 minutes		
Flow Control		
Level Restrictions		
Airspace Classification		

TRANSFER OF CONTROL		
Position Reporting		
Instructions for Overflying traffic		
Procedures for flights to/from airports inside [Name of States]		
Filing of flight plans		
Pilot operating procedures		
Collision Avoidance		
OVERFLIGHT PERMISSION		
PPR		
INTERCEPTION OF CIVIL AIRCRAFT		
Search and Rescue		

— END —