International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

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Fifth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/5)
Mexico City, Mexico, 27 to 31 May, 2019

Agenda Item 2: **Review and Follow-up to Valid Conclusions/Decisions of the ANI/WG/04, NACC/WG/05 and GREPECAS/18 Meetings**
2.2 Deficiencies, Challenges and Regional Objectives

PROGRESS REPORT ON REGIONAL CONTINGENCY AND EMERGENCY PLANNING AND RESPONSE

(Presented by the Secretariat)

EXECUTIVE SUMMARY

This Working Paper provides an update of the initiatives being undertaken in the CAR Region to enhance the contingency planning, coordination and response at State and Regional level.

Action:	Suggested actions are included in Section 5.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Economic Development of Air Transport
References:	• Annex 11 to the Convention on International Civil Aviation, *Air Traffic Services* • Final Report – First Regional Contingency and Emergency Planning and Response Meeting (NAM/CAR/CONT/1) Mexico City, Mexico, 12 – 14 March 2019

1. Introduction

1.1 The Caribbean Region is periodically under the threat of hurricanes, which makes infrastructure and aviation operations vulnerable to their deadly impact, but at the same time, these same infrastructures are necessary for a rapid recovery from disasters. In this regard, the Region has taken appropriate measures to address the contingencies based on the ICAO Standards and Recommended Practices (SARPs).

1.2 The ICAO NACC Regional Office has been working to support the development of the capacities, in terms of planning and response to contingency situations, of States, Territories and International Organizations, linked to the provision of Air Traffic Services in the CAR Region.

2. Background

2.1 At the Thirteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS) which took place in Santiago, Chile, from 14 to 18 November 2005, the CAR and SAM Regions agreed basic guidelines, in line with Annex 11 SARPs, to address ATM contingency planning. Despite of the time elapsed since these regional guidelines, their implementation has not been consistent with the risk the Region is exposed and the compliance with the SARPs.

2.2 2017 and 2018 saw States and Territories of the CAR Region facing contingency situations, mostly related (but not limited) to natural phenomena, like hurricanes, floods, earthquakes, volcanic eruptions, etc. that pose a significant threat to air transport operations. These situations emphasized the need for the Region to take a different approach with regards to contingency planning.

2.3 At the Fourth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/4) held in Miami, United States, from 21 to 24 August 2018, the ICAO NACC Regional Office presented a proposal for CAR Regional Contingency Planning and Response Strategy, in order to enhance the preparedness, response and recovery from contingencies for the CAR Region.

2.4 To move forward with this strategy, the ICAO NACC Regional Office convened the First Regional Contingency and Emergency Planning and Response Meeting (NAM/CAR/CONT/1), held in Mexico City, Mexico, from 12 to 14 March 2019.

3. First Regional Contingency and Emergency Planning and Response Meeting (NAM/CAR/CONT/1)

3.1 This Meeting was attended by representatives of 14 States, Territories and International Organizations of the CAR Region. The objectives of this meeting are: to take concrete actions to address contingency and emergency situations from a regional perspective; to draft the CAR Regional Contingency Response Plan; and to make the necessary arrangements to prepare for the 2019 hurricane season. The Meeting also performed a basic table top exercise to analyse different contingency scenarios according to different high probability threats to the eastern Caribbean and Central America. This was a very good experience that needs to be enhanced and annually supported by all ATS providers in the CAR Region.

3.2 The Meeting agreed concrete actions that will not only enhance the regional preparedness for contingencies, but will also provide a closer follow-up to the ATM contingency arrangements in the Region. One of these actions was the creation of an Ad hoc Group, integrated by Dominican Republic, Mexico, Trinidad and Tobago, COCESNA and IATA to draft the Caribbean Region ATM Contingency Plan, presented in the **Appendix**. This Plan will provide the Region with a hierarchy of contingency plans and categories of contingencies; some of the challenges identified during the Meeting.

3.3 The objectives of the Plan are to:

a. provide a contingency response framework for Caribbean States and Territories to ensure the managed continuation of aircraft operations in affected FIRs, including transiting between unaffected Flight Information Regions (FIRs), during contingency events;

b. 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;

c. provide a greater degree of certainty for airspace and aerodrome users during contingency operations; and

d. establish the terms of reference for the CAR Regional Contingency and Emergency Response Coordination Team.

3.4 The NAM/CAR/CONT/1 Meeting also agreed that States, Territories and International Organizations that provide air traffic services in the CAR Region shall submit information on their contingency plans following the guidelines approved by GREPECAS, by 15 June 2019. This information, regarding the ATS contingency plans, will be published on the website that the ICAO NACC Regional Office will establish for such purposes.

3.5 The ICAO NACC Regional Office shall also establish a procedure for the systematic request, publication and annual review of the ATS contingency plans, for States, Territories and International Organizations that provide Air Traffic Services in the CAR Region by 15 June 2019.

4. Conclusion

4.1 A much more proactive approach is required from the CAR Region to maintain the continuity of air transport in contingency situations. Its location and the nature of the services it provides give strategic importance to sustaining important activities for the preservation of lives and the economic development of the States.

4.2 The ICAO NACC Regional Office is aware of this reality, which is why it works in a determined manner to promote the development of capacities and to comply with the regional agreements.

5. Suggested actions

5.1 The Meeting is invited to:

a) review and endorse the first draft of the CAR Region ATM Contingency Plan, and provide comments and guidance to complete it;

b) encourage the States that have not yet done so, to develop their ATM contingency plans, following the guidelines established by GREPECAS, and submit them to the ICAO NACC Regional Office; and

c) take any other action deemed appropriate.

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APPENDIX

INTERNATIONAL CIVIL AVIATION ORGANIZATION

CAR REGION ATM CONTINGENCY PLAN

Draft Version 1.0 May 2019

This Plan was developed by the Regional Contingency and Emergency Planning and Response Ad-hoc Group

Approved by:
NAM/CAR Air Navigation Implementation Working Group

Published by:
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TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

AAR	Aerodrome Arrival Rate or Airport Acceptance Rate
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ADS-B	Automatic Dependent Surveillance-Broadcast
ADS-C	Automatic Dependent Surveillance-Contract
AIDC	ATS Inter-facility Data Communications
AIM	Aeronautical Information Management
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Service
AMHS	Aeronautical Message Handling System
AIXM	Aeronautical Information Exchange Model
ANSP	Air Navigation Service Provider
AN-Conf	Air Navigation Conference
AOM	Airspace Organization and Management
APCH	Approach
APV	Approach with Vertical Guidance
APW	Area Proximity Warning
ASBU	Aviation System Block Upgrade
ASD	Aircraft Situation Display
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
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

CPDLC	Controller Pilot Data-link Communications
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
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	Organized Track System
PARS	Preferred Aerodrome/Airspace and Route Specifications
PASL	Preferred ATM Service Levels
PBN	Performance-based Navigation
PIA	Performance Improvement Areas

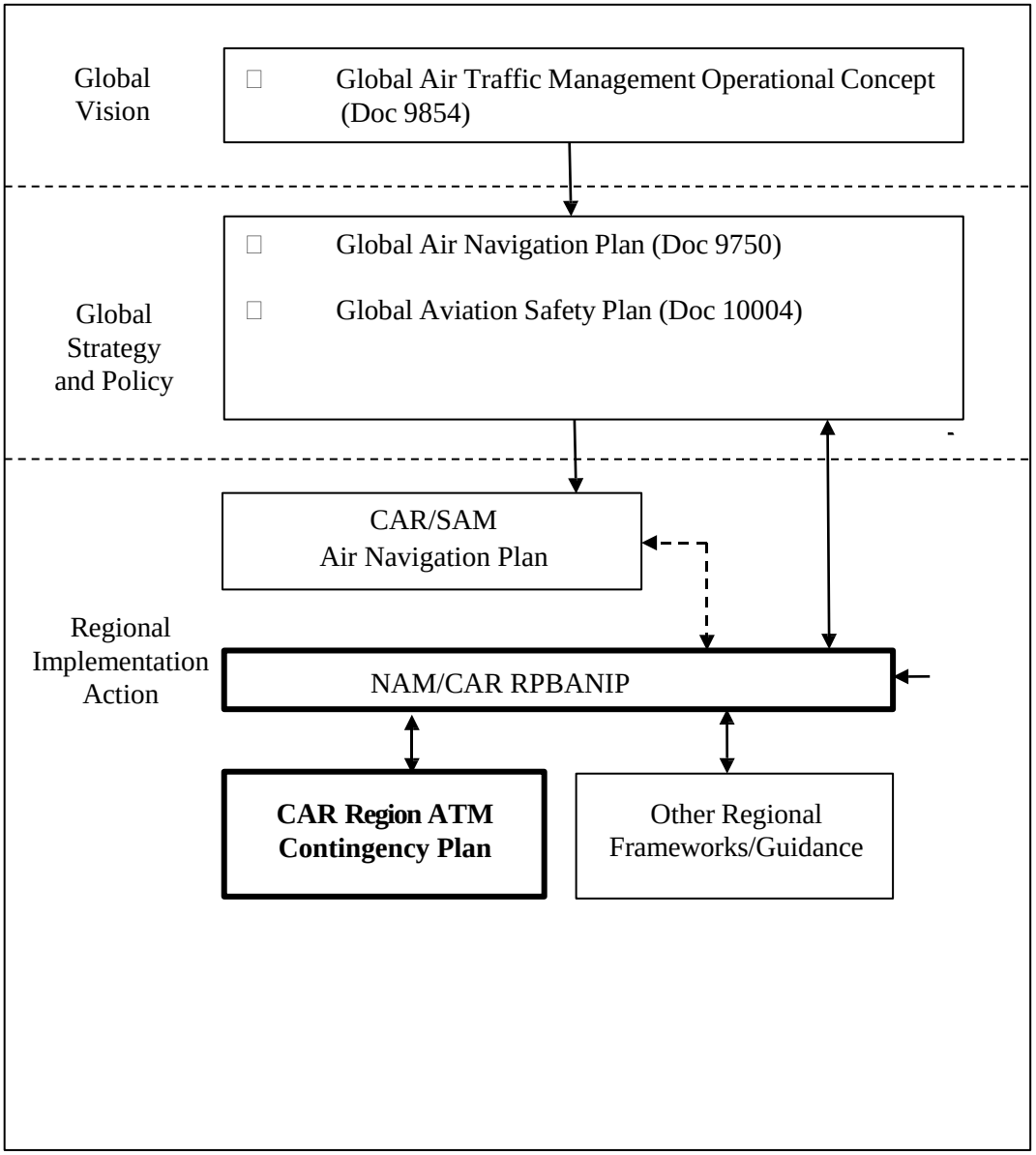
PKP	Passenger Kilometres Performed
PVT	Passenger Value of Time
RAIM	Receiver Autonomous Integrity Monitoring
RAM	Route Adherence Monitoring
RANP	Regional Air Navigation Plan
RPK	Revenue Passenger Kilometres
RNAV	Area Navigation
RNP	Required Navigation Performance
RVSM	Reduced Vertical Separation Minimum
SATVOICE	Satellite Voice Communications
SAR	Search and Rescue
SBAS	Space Based Augmentation System
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

SCOPE OF THE PLAN

Plan Structure

1.1 The CAR 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



1.2 The Plan is structured to provide:

- Regional ATM contingency planning elements;
- Linkage with other regional planning schemes;
- Guidelines for ATM contingency planning;
- Guidelines for regional coordination to respond to contingencies;
- 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 internal State plans dealing with internal/domestic coordination actions for the air navigation service providers;

ii. **Level 2**, for coordinated (inter-State) contingency plans involving two or more States; and

iii. **Level 3,** to detail contingency arrangements in the event of partial or total disruption of Air Traffic Services (ATS) designed to provide alternative routes, using existing airways in most cases, which will allow aircraft operators to fly through or avoid airspace within the relevant Flight Information Regions (FIRs).

b) Categories of contingencies:

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 Contingency Plans are published by States, Territories and International Organizations providing ATS in the CAR Region to provide information and expected actions in the event of partial or total disruption of ATS.

1.5 The Plan's appendices provide details of:

Appendix A – ATM Contingency Planning Principles

Appendix B – Basic Plan Elements

Appendix C – Contingency Plan Template

Appendix D – CAR Regional Contingency and Emergency Response Coordination Team (CAR CERT) Terms of Reference

Appendix E – ATM Volcanic Ash Contingency Procedures for the NAM/CAR Regions

Appendix F – Regional Caribbean Contingency Procedures for Hurricanes

Appendix G – Regional ATM Contingency Readiness Analysis

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 NACC Regional Office on receipt of updates from States, and is not dependent on re-versioning or NAM/CAR Air Navigation Implementation Working Group (ANI/WG) approval.

1.7 It is intended that the ANI/WG and its contributory bodies conduct a complete review of the Plan every three years, or at shorter intervals as determined by the ANI/WG.

1.8 The ICAO NACC Regional Office shall establish and implement a procedure for the systematic request, publication and annual review of the ATM contingency plans, for States, Territories and International Organizations that provide Air Traffic Services in the CAR Region.

OBJECTIVES

Plan Objectives

2.1 The objectives of the Plan are to

i. provide a contingency response framework for Caribbean States and Territories 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 ATS, or in which ATS is involved, and hence to normal aircraft movement; and

iii. provide 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 the status of ATM Contingency Plans and contingency preparedness of CAR Region States and Territories;

iii. identifies areas where ATM contingency planning requires improvement to comply with ICAO Standards and Recommended Practices (SARPs) defined in Annex 11 – *Air Traffic Services* and accepted best practices;

iv. analyses contingency procedures in use in other ICAO Regions and harmonizes where practicable 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;

viii. provides contingency planning templates for States; and

ix. defines the terms of reference for the CAR Regional Contingency and Emergency Response Coordination Team (CAR CERT).

EXECUTIVE SUMMARY

Executive Summary – CAR Region ATM Contingency Planning and Response Capabilities

3.1 Annex 11 – *Air Traffic Services (ATS)* includes requirements and guidance material for ATS contingency measures:

> ***2.32 Contingency Arrangements***
>
> *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.*
>
> *Note 1.— Guidance material relating to the development, promulgation and implementation of contingency plans is contained in Attachment C.*
> *Note 2.— Contingency plans may constitute a temporary deviation from the approved regional air navigation plans; such deviations are approved, as necessary, by the President of the ICAO Council on behalf of the Council.*

3.2 The Thirteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/13 held in Santiago, Chile, 14 – 18 November 2005) Conclusion 13/68 established an action plan for the development of ATM contingency plans in the CAR and SAM Regions. This plan is made of the following phases:

- Phase I – Development of ATM contingency plans;
- Phase II – Harmonization of ATM contingency plans with and neighboring States/Territories/International Organizations; and
- Phase III – Submission of ATM contingency plans to the ICAO Regional Offices.

3.3 GREPECAS/13 also established agreed items for ATM Contingency Plans (Level 3 ATM Contingency Plans reference 1.3 letter a of this document).

3.4 Despite the clarity of the Annex 11 SARP, and guidance material, for contingency arrangements, the time since the GREPECAS regional guidance were established, and the imminent threat with regards to natural phenomena to which the CAR Region is exposed, the implementation of the aforementioned action plan could not be completed in a systematic manner.

3.5 Several events that occurred during 2017 made evident the weakness of the CAR Region to organize a strategic, harmonized and well-coordinated response to contingency situations that affected the provision of air traffic services. Under these circumstances, the need for an adequate preparation from ATS providers and proper oversight from CAAs was reaffirmed. The Region also learned that contingency planning should take into consideration different scenarios and that these could be

presented simultaneously and affect more than one FIR or ATS provider at the same time.

3.6 These circumstances also evidenced the lack of a regional contingency response mechanism and the limited compliance to the GREPECAS/13 agreements. Several Estates and Territories of the CAR Region still had not completed their ATM Contingency Plans, did not rehearse periodically their Plans or did not made a proper coordination with neighboring ATS Units.

3.7 At the same time, the ICAO NACC Regional Office had not established and implemented a procedure to manage and periodically review the ATM Contingency Plans for each CAR Region ATS provider, and to assess, periodically, the readiness of the CAR Region to respond to undesired circumstances that could affect the provision of the air navigation services.

3.8 Under the platform provided by ICAO, the CAR Region needs to periodically assess its contingency response readiness, in the three levels proposed in this plan, and decide joint actions to attend the identified challenges.

BACKGROUND INFORMATION

Requirement for Contingency Plans

4.1 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.

4.2 The GREPECAS/13 Meeting, held in Santiago, Chile, from 14 to 18 November 2005, established guidelines for the development of ATM contingency plans for the CAR/SAM Regions.

4.3 The Fourth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/4), held in Miami, United States, from 21 to 24 August 2018, approved the CAR Regional Contingency Planning and Response Strategy, in order to enhance the preparedness, response and recovery from contingencies in the CAR Region.

4.4 The First Regional Contingency and Emergency Planning and Response Meeting (NAM/CAR/CONT/1) Meeting, held in Mexico City, Mexico, from 12 to 14 March 2019, required the publication and periodic review of ATM Contingency Plans, to support contingency planning, coordination and response at State and Regional level.

Contingency Planning Principles

4.5 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, Flight Information Services (FIS) and SAR alerting services:

Basic Plan Elements

4.6 The plan includes Basic Plan Elements (BPE) which defines the minimum recommended considerations for inclusion in Levels 1, 2 and 3 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

4.7 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.

4.8 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.

4.9 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 should include any necessary specialist input from the following disciplines:

- Air Traffic Management (ATM)
  - ATC
  - ATFM
  - SAR
- Communication, Navigation and Surveillance (CNS)
- Aeronautical Meteorology (MET)
- Aeronautical Information Management (AIM)
- Airports and Ground Aids (AGA)
- Safety Management System (SMS)

4.10 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; and

viii. liaise with the ICAO NACC Regional Office, as required.

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

4.12 A template for Level 3 Contingency Plans is provided in **Appendix C**.

Volcanic Ash Cloud Contingency Planning

4.13 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.

4.14 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.

4.15 The Air Traffic Management (ATM) Volcanic Ash Contingency procedures for the NAM/CAR Regions (**Appendix E**) sets out standardized guidelines and procedures for the development of volcanic ash contingency plans and the provision of information to airlines and en-route aircraft before and during a volcanic eruption.

4.16 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)

4.17 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.

CURRENT SITUATION

Analysis

5.1 The ICAO NACC Regional Office should perform a detailed assessment of the contingency readiness of the CAR Region based on the individual information provided by States, Territories and International Organizations.

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.

Level 1 (Domestic or Internal State) Plans

6.1 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.

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

6.3 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.

6.4 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.

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

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

6.7 Details of contingency ATS routes and associated flight level allocation schemes should be published in the State Aeronautical information Publication (AIP) Section ENR 3.5.

6.8 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 NACC 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

6.9 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.

6.10 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.

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

Level 3 Contingency Plans

6.12 Each State shall establish and publish its ATM Contingency Plan to comply with Annex 11 SARPs and Regional agreements. A Template for ATM Contingency Plan is provided in Appendix C. All States, Territories and International Organizations providing ATS in the CAR Region shall submit their Level 3 ATM Contingency Plan to the ICAO NACC Regional Office, to then be published in a website repository for such purpose.

Volcanic Ash Contingency Planning

6.13 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; and

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.

6.14 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:

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; and

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); and

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.

6.15 The Air Traffic Management (ATM) Volcanic Ash Contingency procedures for the NAM/CAR Regions (Appendix E) sets out standardized guidelines and procedures for the development of volcanic ash contingency plans and the provision of information to airlines and en-route aircraft before and during a volcanic eruption..

Promulgation and Status Reporting of State ATM Contingency Plans

6.16 National ATM Contingency Plans (Level 3) should be published on the website of the Air Navigation Service Provider.

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

1. Promulgation of the national ATM Contingency Plan, together with the hyperlink to the website location of the Plan;

2. State Contingency Points-of-Contact; and

3. The establishment of contingency arrangements with each neighbouring State.

Note 1: Information of a sensitive nature such as that related to matters of national security need not be included in published contingency plans.

Note 2: GREPECAS Air Navigation Deficiencies may be raised against the provisions of Annex 11 for States that do not report promulgation of their national ATM contingency plan.

6.18 States should report the status of implementation of the performance expectations of their ATM Contingency Plan at least once annually, not later than 31 May each year.

RESEARCH AND FUTURE DEVELOPMENT

7.1 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.

7.2 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); and

- 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.

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 Letter of Agreement (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.

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.

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;

- Bi-lateral or multi-lateral PAR for activation or testing of Level 2 contingency arrangements; and

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.

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.

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.

APPENDIX C

CONTINGENCY PLAN TEMPLATE

ATM REGIONAL CONTINGENCY PLAN FOR CTA/UTA/FIR

OBJECTIVE

This contingency plan contains arrangements to ensure the continued safety of air navigation in the event of partially or total disruption of Air Traffic Services (ATS) and is related to ICAO Annex 11- *Air Traffic Services* Chapter 2, paragraph 2.28. The contingency plan should be designed to provide alternative routes, using existing airways in most cases, which will allow aircraft operators to fly through or avoid airspace within the (XXX) CTA/UTA/FIR.

AIR TRAFFIC MANAGEMENT ATS RESPONSIBILITIES

Tactical ATC considerations during periods of overloading may require re-assignment of routes or portions thereof.

Alternative routes should be designed to maximize the use of existing ATS route structures and communication, navigation and surveillance services.

In the event that ATS cannot be provided within the (XXX) CTA/UTA/FIR, 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;
f) procedures to be followed by adjacent 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.

In the event that the CAA is unable to issue the NOTAM, the (alternate) CTA/UTA/FIR will take action to issue the NOTAM of closure airspace upon notification by corresponding CAA or the ICAO Regional Office.

Separation

Separation criteria will be applied in accordance with the Procedures for Air Navigation Services-Air Traffic Management (PANS-ATM, Doc 4444) and the Regional Supplementary Procedures (Doc 7030).

Level Restrictions

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

Other measures

Other measures related to the closure of airspace and the implementation of the contingency scheme in the (XXX) CTA/UTA/FIR may be taken as follows:

a) suspension of all VFR operations;
b) delay or suspension of general aviation IFR operations; and
c) delay or suspension of commercial IFR operations.

TRANSITION TO CONTINGENCY SCHEME

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 the contingency scheme as well as what may be promulgated by a State via NOTAM or AIP.

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.

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

The transfer of control and communication between ATS units should be at the common FIR boundary unless there is mutual agreement between adjacent ATS units. ATS providers should also review current coordination requirements in light of contingency operations or short notice of airspace closure.

PILOTS AND OPERATOR PROCEDURES

Pilots need to be aware that in light of current international circumstances, a contingency routing requiring aircraft to operate off of normal traffic flows, could result in an intercept 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.

Pilots need to 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 a discrete code assigned by ATC or select code 2000 if ATC has not assigned a code.
If an aircraft is intercepted by another aircraft, the pilot shall immediately:

a) follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with international procedures;

b) notify, if possible, the appropriate ATS unit;

c) attempt to establish radio communication with the intercepting aircraft by making a general call on the emergency frequency 121.5 MHz and 243 MHz if equipped; and
d) set transponder to code 7700, unless otherwise instructed by the appropriate ATS unit.

If any instructions received by radio from any source conflict with those given by the intercepting aircraft, the intercepted aircraft shall request immediate clarification while continuing to comply with the instructions given by the intercepting aircraft.

OVERFLIGHT APPROVAL

Aircraft operators should obtain overflight approval from States/Territories/International Organizations for flights operating through their jurisdiction of airspace, where required. In a contingency situation, flights may be rerouted at short notice and it may not be possible for operators to give the required advanced notice in a timely manner to obtain approval. States/Territories/International Organizations responsible for the airspace in which contingency routes are established should consider making special arrangements to expedite flight approvals in these contingency situations.

CONTINGENCY UNIT

The ATM national contingency unit assigned the responsibility of monitoring developments that may dictate the enforcement of the contingency plan and coordination of contingency arrangements is:

Name of Agency:
Contact Person:
Telephone:
Fax:
Email:

During a contingency situation, the National Contingency Unit will liase with the adjacent ATS units through the ICAO Regional Office.

The ICAO NACC Regional Office will:

a) closely oversight the situation and coordinate with all affected States/Territories/International Organizations and the IATA Regional Office, so as to ensure air navigation services are provided to international aircraft operations in the CAR Region;

b) take note of any incidents reported and take appropriate action;

c) provide assistance as required on any issue with the Civil Aviation Administrations involved in the contingency plan; and

d) keep the President of the Council of ICAO, the Secretary General, C/RAO, D/ANB and C/ATM continuously informed on developments, including activation of the contingency plan.

CONTINGENCY ROUTING SCHEME

Aircraft operators should file their flight plans using the alternative contingency routes listed in the scheme below in order to operate in the airspace under the jurisdiction of (XXX).

Present ATS ROUTE	**CONTINGENCY ROUTINGS**	**FIRs INVOLVED**
In lieu of:	**(ATS unit)** provides ATC on the following routings: ***CR1:*** ***CR2:*** ***CR3:***	**XXX**: In coordination with **XXX**
In lieu of:	**(ATS unit)** provides ATC on the following routing: ***CR4:***	**XXX**: In coordination with **XXX**

All aircraft should establish and maintain contact on published VHF or HF frequencies with the (*XXX*) ATS unit (APP/ACC/FIC) responsible for the airspace being traversed.

List of points of contact of all concerned States/Territories/International Organizations, IATA and ICAO Regional Office.

State /International Organization	***Point of contact***	**Telephone/Fax**	**E-mail**
		Tel. Fax.	
		Tel. Fax.	
		Tel. Fax.	
IATA		Tel. Fax:	
ICAO (Regional Office)		Tel.: Fax: AFTN:	

APPENDIX D

CAR REGIONAL CONTINGENCY AND EMERGENCY RESPONSE COORDINATION TEAM (CAR CERT) TERMS OF REFERENCE

To be developed.

APPENDIX E

ATM VOLCANIC ASH CONTINGENCY PROCEDURES FOR THE NAM/CAR REGIONS

The content of this Appendix is the AIR TRAFFIC MANAGEMENT VOLCANIC ASH CONTINGENCY PROCEDURES FOR THE NAM/CAR REGIONS

https://www.icao.int/NACC/Documents/eDOCS/ATM/ATM%20Volcanic%20Ash%20Contingency%20Plan%20EN.pdf

APPENDIX F

REGIONAL CARIBBEAN CONTINGENCY PROCEDURES FOR HURRICANES

The content of this section is the Regional Caribbean Contingency Procedures for Hurricanes

https://www.icao.int/NACC/Documents/eDOCS/ATM/CARRegionHurricaneATSCoordination.pdf

APPENDIX G

REGIONAL ATM CONTINGENCY READINESS ANALYSIS

To be developed