

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**CAR REGION AIR TRAFFIC MANAGEMENT
CONTINGENCY PLAN**

Version 1.3
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This Plan was developed by the Regional Contingency and Emergency
Planning and Response Ad hoc Group

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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
AIC	Aeronautical Information Circular
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Service
AIXM	Aeronautical Information Exchange Model
AMHS	Aeronautical Message Handling System
ANSP	Air Navigation Service Provider
AN-Conf	Air Navigation Conference
AOM	Airspace Organization and Management
APP	Approach
APV	Approach Procedure with Vertical Guidance
APW	Area Proximity Warning
ASBU	Aviation System Block Upgrade
ASD	Aircraft Situation Display
ASHTAM	Special series NOTAM notifying by means of a specific format change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations
A-SMGCS	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
BBB	Basic Building Blocks
CAA	Civil Aviation Authority
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
ENR	En-Route
EST	Coordinate Estimate
FAA	Federal Aviation Administration
FDPS	Flight Data Processing System
FFR	Flood and Fire Relief
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
LoA	Letter of Agreement
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
NOTAM	Notice to AirMen
OPMET	Operational Meteorological
OLDI	On-Line Data Interchange
OTS	Organized Track System
PARS	Preferred Aerodrome/Airspace and Route Specifications
PASL	Preferred ATM Service Levels

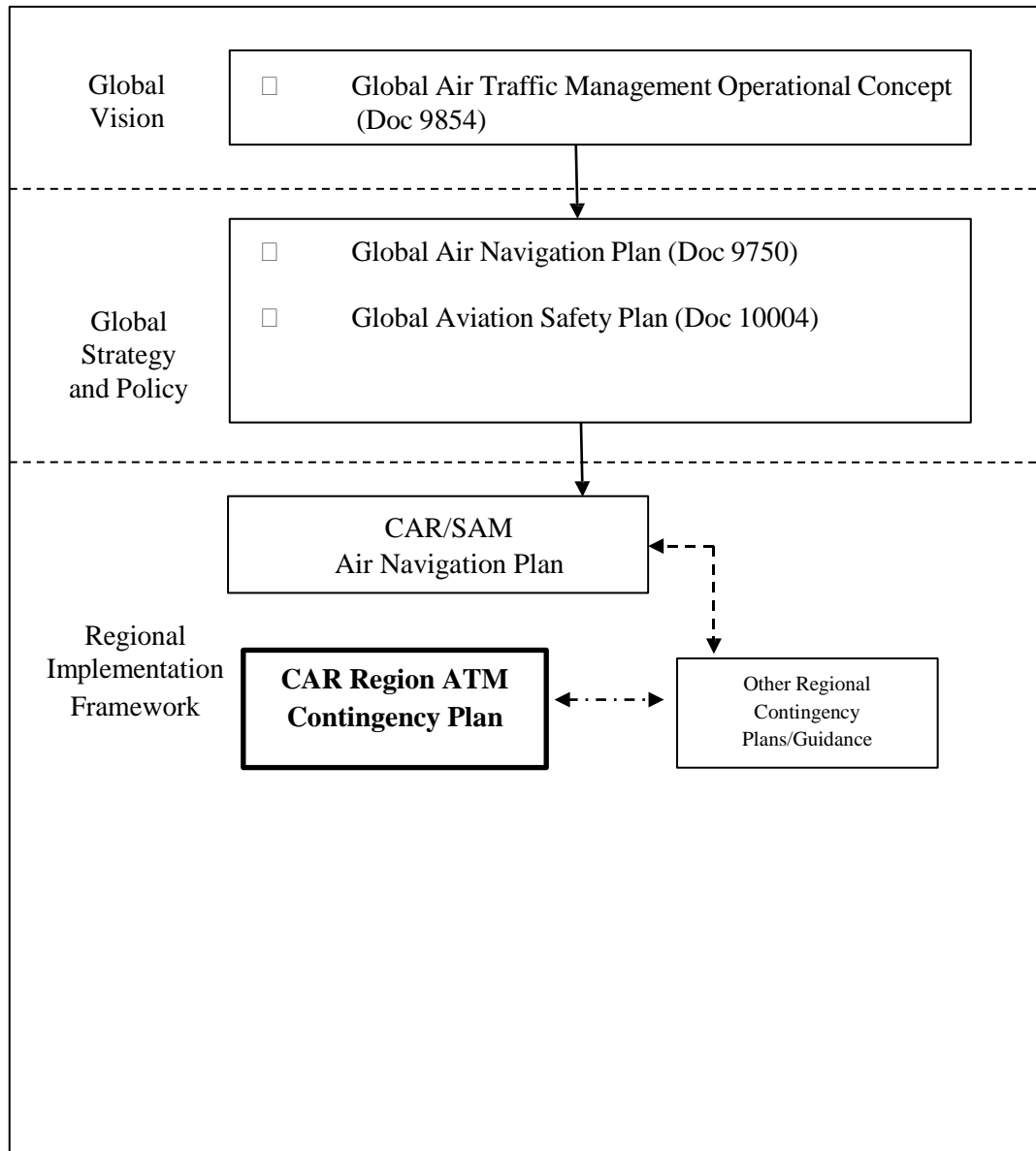
PBN	Performance-based Navigation
PIA	Performance Improvement Areas
PKP	Passenger Kilometres Performed
PVT	Passenger Value of Time
RAIM	Receiver Autonomous Integrity Monitoring
RAM	Route Adherence Monitoring
RANP	Regional Air Navigation Plan
RPK	Revenue Passenger Kilometres
RNAV	Area Navigation
RNP	Required 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
VFR	Visual Flight Rules
VHF	Very High Frequency
VNAV	Vertical Navigation
VAAC	Volcanic Ash Advisory Centre
VMC	Visual Meteorological Conditions
VOLMET	Meteorological information for aircraft in flight
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 Caribbean (CAR) Region Air Traffic Management (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 as follows:

a) Hierarchy of contingency plans:

- i. **Level 1**, for internal State plans dealing with internal/domestic coordination actions for the Air Navigation Service Providers (ANSPs);
- 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 – Safe Airspace, but Restricted or with 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 – Not Safe Airspace**, due to causal events such as volcanic ash cloud, nuclear emergency, or 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 Contingency and Emergency Response Coordination Team (CAR CERT) Terms of Reference (ToRs)

Appendix E – Caribbean Region Contingency Procedures for Hurricanes

Appendix F – Regional ATM Contingency Readiness Analysis

Purpose

1.6 The purpose of this document is to provide guidance and promote a regional harmonized response to contingencies that affect or may affect continuous provision of ATS in the CAR Region, and provide guidelines for the development of contingency planning based on conclusions and decisions by the CAR/SAM Planning and Implementation Regional Group (GREPECAS) and the NAM/CAR Air Navigation Implementation Working Group (ANI/WG).

1.7 States must take into account Annex 11 – *Air Traffic Services* requirements with regards to contingency arrangements as well as GREPECAS agreements for contingency planning, well referenced in the Plan.

1.8 Contingency Plans 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 their jurisdiction. Taking into consideration the nature of the CAR Region airspace and the need to keep operators and other stakeholders informed, the Plan encourages the publication of individual contingency plans and contingency routes to allow aircraft operators to fly through their airspace.

1.9 Notwithstanding, it is understood that States must have the latitude to meet their individual, unique needs, and may have/use a different terminology to reflect the same principles and objectives used in the Plan.

1.10 In addition, the need for States to satisfy their legal or security requirements with regard to the protection of information is recognized. Accordingly, the Plan does not aim to promote the publication of internal facility contingency planning information. Any information the State considers should not be published is within its right to act accordingly.

1.11 Any instance of “Airspace Not Available” in this document refers only to a State’s sovereign airspace, and is not applicable to “High Seas airspace”.

Plan Review

1.12 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 upon receipt of updates from States, and is not dependent on ANI/WG’s approval. Changes will be reflected in the document table of changes.

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

1.14 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 ATS in the CAR Region.

OBJECTIVES

Plan Objectives

- 2.1 The objectives of the Plan are:
- i. to provide a contingency response framework for Caribbean States and Territories to ensure the managed continuation of aircraft operations in affected Upper Flight Information Regions (UIRs)/FIRs, including transiting between unaffected FIRs during contingency events;
 - ii. to ensure timely, harmonized and appropriate responses to all events that may cause disruption to the provision of ATS, or in which ATS is involved, and hence to normal aircraft movement; and
 - iii. to 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. provides a framework for the review of the status of ATS Contingency Plans and contingency preparedness of CAR Region States and Territories;
 - iii. enables the identification of areas where ATS contingency planning requires improvement to comply with ICAO Standards and Recommended Practices (SARPs) defined in Annex 11, and accepted best practices;
 - iv. provides guidance for the analyses of 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 ATS contingency planning;
 - vii. recommends 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 (ToRs) for the CAR Contingency and Emergency Response Coordination Team (CAR CERT).

EXECUTIVE SUMMARY

Executive Summary – CAR Region ATM Contingency Planning and Response Capabilities

3.1 Annex 11 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 Conclusion 13/68 of the Thirteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/13 held in Santiago, Chile, 14 – 18 November 2005) 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 neighbouring States/Territories/International Organizations; and
- Phase III – Submission of ATM contingency plans to the ICAO Regional Offices.

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

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

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 Civil Aviation Authorities (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 UIR/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 States and Territories of the CAR Region had not yet completed their ATM Contingency Plans, did not periodically rehearse their Plans or did not make proper coordination with neighbouring 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 periodically assess, 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 address the identified challenges.

BACKGROUND INFORMATION

Requirement for Contingency Plans

4.1 Annex 11 to the Convention on Civil Aviation requires that ATS authorities 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 GREPECAS/13 Meeting 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), 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 the State and regional levels. This Meeting also agreed that the ICAO NACC Regional Office annually schedule the implementation of ATS contingency simulation exercises, in which scenarios that are attached to real cases are proposed, with a high probability of occurrence or as a result of identified improvement opportunities.

Volcanic Ash Cloud Contingency Planning

4.5 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 ATS and Air Traffic Flow Management (ATFM) procedures.

4.6 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.

4.7 The ATM Volcanic Ash Contingency Procedures for the NAM/CAR Regions 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.

4.8 Operators are required by ICAO Annex 6 – *Operation of Aircraft* to implement appropriate mitigation measures for volcanic ash in accordance with their Safety management systems (SMS), as approved by the State of the Operator/Registry. This document assumes that ICAO requirements regarding SMS 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 ICAO Doc 9974 – *Flight Safety and Volcanic Ash – Risk Management of Flight Operations with Known or Forecast Volcanic Ash Contamination*.

4.9 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 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 Annex 3 - Meteorological Service for International Air Navigation, Annex 15 – Aeronautical Information Services., and Doc 10066 - Aeronautical Information Management.

ASSESSMENT

Analysis

5.1 States shall assess the contingency readiness of their operations and provide the information resulting from this assessment to the ICAO NACC Regional Office.

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

CONTINGENCY PLANS

ATM Contingency Operations Capability

Contingency Planning Principles

6.1 Prior to implementation, ATM contingency plans should be verified by an appropriate safety assessment conducted under the State's SMS.

6.2 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 Air Traffic Control (ATC) separation, ATS and Search and Rescue (SAR) alerting services:

Basic Plan Elements

6.3 The Plan includes Basic Plan Elements (BPEs), which define the minimum recommended considerations for inclusion in Levels 1, 2 and 3 Contingency Plans. The BPEs include Administration, Plan Management, Airspace, ATM Procedures, Pilot/Operator Procedures, Communications Facilities and Procedures, Aeronautical Support services including Aeronautical Information Services (AIS) Aeronautical Information Management (AIM), NOTAM and Aeronautical Meteorology (MET), and Contact Details. **Appendix B** lists the agreed BPE.

Contingency Plan Coordination and Operations Functions

6.4 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.

6.5 The CCC function should include relevant representation from the regulatory authority, ANSP, Military Authority, other relevant national authority, airspace user representatives, airport authorities, meteorological authority, airport authority and other relevant authorities and agencies.

6.6 The 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 ToRs 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)
 - ATS
 - Air Traffic Flow Management (ATFM)
 - Search and Rescue (SAR)

- Communication, Navigation and Surveillance (CNS)
- Aeronautical Meteorology (MET)
- Aeronautical Information Management (AIM)
- Airports and Ground Aids (AGA)
- Safety Management System (SMS)

6.7 The AOCG functions should include:

- i. review and update of the Contingency Plan as required;
- ii. stay up to date with all aspects of the contingency situation;
- iii. organize contingency teams in each of the specialized areas listed under 6.5;
- 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 concerning contingency activities;
- vi. notify the designated organizations of the contingency situation 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 notification should be issued 48 hours in advance of the contingency events; and
- viii. liaise with the ICAO NACC Regional Office, as required.

6.8 ToRs and procedures for the activation of the AOCG function should be developed.

Level 1 (Domestic or Internal State) Plans

6.9 Each State should establish an ATM contingency CCC function for the development, maintenance, activation and conduct of contingency plans, and for the forming and convening of an AOCG function.

6.10 ToRs and procedures for the activation of the AOCG function should be developed.

6.11 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.

6.12 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.

6.13 Programs of regular table-top and inter-unit coordinated exercises of all Level 1 contingency plans should be implemented.

6.14 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.

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

6.16 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 CAR Region 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

6.17 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.

6.18 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.

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

Level 3 Contingency Plans

6.20 Each State shall establish and publish its ATM Contingency Plan to comply with Annex 11 SARPs and regional agreements. 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. A template for Level 3 Contingency Plans is provided in **Appendix C**.

Volcanic Ash Contingency Planning

6.21 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 to include in their 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.

6.22 States' airspace and airport management policies and procedures should be reviewed to ensure that (in accordance with the guidance provided in ICAO Doc 9974 and the provisions of ICAO Doc 4444 — *ATM — Air Traffic Management*, 15.8.1c and Note 2):

- a) Airspace affected by volcanic ash cloud should not be 'closed'.
- b) Specification in ASHTAM (NOTAM) of alternate routing or other ATFM¹ measures to manage airspace constraints arising from volcanic ash cloud should be solely for the purpose of ensuring the predictability and regularity of air traffic, and should be based on an assessment of capacity and demand in airspace affected by volcanic ash and/or by aircraft avoiding the volcanic ash cloud.
- c) ASHTAM (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, 5.4.2 and Doc 10066, 5.2.5, 5.4.2, Appendices 3, 5 and 7.
- 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 ASHTAM - 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.

6.23 The ATM Volcanic Ash Contingency procedures for the NAM/CAR Regions 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

6.24 National ATM Contingency Plans (Level 3) should be published on the website of the ANSP.

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

¹ ATFM capability for the CAR Region is expected to be implemented under the guidelines of the CAR/SAM ATFM Concept of Operations.

CAR Region ATM Contingency Plan

1. promulgation of the national ATM Contingency Plan, together with the hyperlink to the website location of the Plan, or a copy of the approved contingency 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.

6.26 States shall report the status of implementation of the performance expectations of their ATM Contingency Plan at least once annually, by 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 Required Navigation Performance (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 ATFM initiatives may be implemented to manage capacity to ensure safety.

APPENDIX A

ATM CONTINGENCY PLANNING PRINCIPLES

1. All ATS units, including ATC Sectors, Units, Centres and supporting Flight Information 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.
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. Reduced Vertical Separation Minimum (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 ATS 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 ATS Unit (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 is essential.
9. Collaborative ATFM 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 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.
11. 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.

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.
12. 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.
13. Contingency ATS routes and FLAS, and contingency procedures, should be agreed between geographically-grouped neighbouring States to form sub-regional contingency plans.
14. Contingency ATS routes should be published in State AIP to permit the storing of route details in airspace users' navigation databases.
15. 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 Visual Flight Rules (VFR) operations.
16. Define ground and airborne navigation requirements if necessary

17. Alternate aerodromes should be specified where necessary in Level 1 contingency plans for airport control towers and terminal airspace.
18. Aircraft operators are required by ICAO Annex 6 to implement appropriate mitigation measures for volcanic ash in accordance with their SMS, as approved by the State of the operator/registry.
19. Airspace affected by volcanic ash cloud should not be closed to international civil aviation.
20. Amended ATS routes, whether published or promulgated Ad hoc, may be prescribed as part of the ATFM response to expected demand and capacity imbalance caused by aircraft avoiding volcanic ash cloud.
21. Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area.
22. 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 ANSP, in accordance with their respective SMS.

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 ToRs, structure and contact details for each.
- e) Details of testing, review and reporting actions:
 - i. Schedule of table-top 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 NACC 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 programmes.

Element 3: Airspace

- g) Procedures and determinants for implementation and activation of Special Use Airspace (SUA) 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 (FLAS), 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.

CAR Region ATM Contingency Plan

- 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 ATS, 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 Very High Frequency (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 Instrument Flight Rules (IFR), including operating at IFR flight levels from the relevant Table of Cruising Levels in Appendix 3 of Annex 2 – *Rules of the Air*, except where modified by a FLAS.

Element 6: Communications Facilities and Procedures

- x) Provision and operation of adequate air-ground communications, Aeronautical Fixed Telecommunication Network (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 Controller Pilot Data-link Communications (CPDLC) aircraft, where appropriate.
- aa) Use of Automatic Dependent Surveillance-Contract (ADS-C) automatic position reporting in lieu of voice position reporting to ATS.

Element 7: Aeronautical Support Services including AIS (AIM), NOTAM and MET

- bb) AIP Information regarding the contingency planning, and notification by ASHTAM/NOTAM of anticipated or actual disruption of ATS 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 Rescue Coordination Centre (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

1. This contingency plan contains arrangements to ensure the continued safety of air navigation in the event of partially or total disruption of ATS and is related to ICAO Annex 11- *Air Traffic Services*. 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) Control Area (CTA)/Upper Control Area (UTA)/FIR.

AIR TRAFFIC MANAGEMENT

ATS Responsibilities

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

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

4. In the event that ATS cannot be provided within the (XXX) CTA/UTA/FIR, the Civil Aviation Authority (CAA) shall publish the corresponding NOTAM/ASHTAM indicating the following:

- a) time and date of the beginning of the contingency measures;
- b) airspace available for landing and overflying traffic, and airspace to be avoided;
- c) details of the facilities and services available or not available and any limits on ATS provision (e.g., ACC, Approach (APP), Tower (TWR) and Flight Information Service (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.

5. In the event that the CAA is unable to issue the NOTAM, the (alternate) CTA/UTA/FIR will take action to issue the NOTAM, under the LoA or Memorandum of Understanding (MoU) with other State or International Organization, of closure airspace upon notification by corresponding CAA or the ICAO NACC Regional Office.

Separation

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

Level Restrictions

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

Other measures

8. 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

9. 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, Aeronautical Information Circular (AIC), Supplement (SUP) or AIP.

10. 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.

11. 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

12. 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

13. 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.

14. 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.

15. 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.

16. If 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

17. 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

18. 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:

19. During a contingency situation, the National Contingency Unit will coordinate with the adjacent ATS units and liaise with the ICAO NACC Regional Office as appropriate.

20. The ICAO NACC Regional Office shall:
- a) closely oversee the situation and coordinate with all affected States/Territories/International Organizations and the IATA Regional Office, so as to facilitate the provision of air navigation services 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 CAAs involved in the contingency plan; and
 - d) keep the President of the Council of ICAO, the Secretary General, Strategic Planning Coordination and Partnerships (SPCP) Office and Director/Air Navigation Bureau (D/ANB) continuously informed on developments, including activation of the contingency plan.

CONTINGENCY ROUTING SCHEME

21. 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

22. 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 NACC Regional Office.

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

APPENDIX D

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

BACKGROUND

1. The Caribbean Region, due to its geographical location, is annually under the threat of hurricanes and their devastating effects, without being immune to other types of hazards, natural or man-made, which may cause limitation, partial or total interruption of ATS, aviation ground support services, safety oversight, aerodromes availability and serviceability, as well as communications services, and other services which can preclude relieve and humanitarian flights and all other such accessibility. A proper and timely response to contingencies is vital for air navigation and all related services and the continuity of air transportation in the CAR Region and neighbouring regions.

2. Recent experience proved the need to take concrete actions to address emergency and contingency situations from a regional perspective. Hurricanes, earthquakes, volcanic eruptions, public health events (pandemics), social unrest, equipment failures, among others, recurrently represent a threat to the continuity of ATS, aerodrome operations, and all related services to ensure connectivity and safe and secure operations. The critical need and the benefit of contingency plans are constantly demonstrated. However, coordination and constant communication is required in order to obtain a coherent and aligned regional contingency response. This contingency response must also involve industry, as a key ally with resources strategically deployed to support the development of its day to day operations.

3. In line with that, the International Air Transport Association (IATA) and the ICAO NACC Regional Office took the initiative to propose the establishment of the CAR Contingency and Emergency Response Coordination Team (CAR CERT), which takes into consideration the main threats that periodically attack the region, to provide regional operational steps to address them. This Team should be the cornerstone for the Caribbean Contingency Planning and Response.

4. The Fourth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/4), held in Miami, United States, from 25 to 28 June 2018, endorsed and requested collaboration for the establishment and implementation of the CAR CERT. The purpose of this document is to establish the ToRs, and the operational framework, for the CAR CERT, in order to enhance regional response to ATS-related contingencies, improving communication and coordination when most needed.

OBJECTIVES

- a) Enhance and expedite individual and regional response to contingencies or possible contingencies scenarios that may affect the ATS and all other activities related to ensuring that air transport operations can be maintained to provide continual ATS provision in the CAR Region, identifying threats and communicating possible solutions.

- b) Support the exchange of information between States, Territories, International Organizations, industry, and other relevant stakeholders, to improve the regional response to contingencies that affect or may affect the adequate evolution of air traffic and all air transport issues in the CAR Region.
- c) Support the adequate implementation of the measures established in the individual contingency plans for States, Territories and International Organizations providing aviation/air transport services in the CAR Region.
- d) Assist States/international airports in the development and implementation of airport emergency plans, to make sure each airport emergency plan is a coordinated programme between the airport and the surrounding community. This is desirable as the planning and procedures needed to handle major emergency situations on the airport are similar to other types of major emergencies that can strike a community. Inasmuch as the airport may be the transportation hub for any community emergency situation (whether it is an aircraft accident, a natural disaster, an explosion, or even a severe storm); its role in any community emergency situation should be well established.

RESPONSIBILITIES AND SCOPE

- 1. Support coordination and information exchange, in cases of contingencies that affect, or may affect, airspaces, airports, communications, and/or air navigation service provision in the CAR Region.
- 2. Act as a support and coordination entity and exchange reliable and updated information. Monitor and exchange up-to-date relevant information with States/Territories directly concerned, States/Territories which are potential participants in contingency arrangements, and other relevant stakeholders.
- 3. Act as a liaison with the States, Territories and International Organizations, users and entities concerned.
- 4. Discuss with the States, Territories and International Organizations and communicate contingency procedures initiated, e.g. closure of airspace, closure of aerodromes, redundancy in the system, or new contingency routes established.
- 5. Ensure information flow into ICAO (Headquarters (HQ) and regional offices focal points), IATA (HQ and regional offices focal points).
- 6. Exchange information with International/Regional Organizations and humanitarian aid agencies.
- 7. Conduct post-operative review using pre-agreed metrics, gauge success and identify what needs to be improved for the future.
- 8. Carry out periodically communication drills and other simulation exercises to rehearse response to contingency scenarios.
- 9. Exchange periodic communication and coordination with States/airports to ensure that each airport has in place an airport emergency plan approved by the CAA.
- 10. Ensure that an emergency plan includes:
 - a) an orderly and efficient transition from normal to emergency operations;
 - b) delegation of airport emergency authority;
 - c) assignment of emergency responsibilities;

- d) authorization by key personnel for actions contained in the plan;
 - e) co-ordination of efforts to cope with the emergency; and
 - f) safe continuation of aircraft operations or return to normal operations as soon as possible.
11. Provide guidelines to States/airports for assessment of the airport preparedness to resume normal operations in all areas.

TYPE OF MONITORED AND SHARED/EXCHANGED INFORMATION

Information expected to be monitored, gathered and shared by the CAR CERT may include, not limited, to the following:

- 1. information regarding any situation, condition or phenomena that may threaten the safe and continuous provision of air traffic/air transport services in the CAR Region;
- 2. possible and/or actual contingency measures, proposed or implemented;
- 3. relevant information from ATM, AIM, AGA, Accident investigation and prevention (AIG), safety, security, etc. contingency plans;
- 4. expected impact to operations;
- 5. time and date of the beginning of the contingency measures;
- 6. airspace/airport availability for landing and overflying traffic and airspace to be avoided;
- 7. facilities available or not available and any limits on ACC, tower, airport, ground equipment, etc.
- 8. contingency routes;
- 9. status and services available by neighbouring States/ATS units;
- 10. procedures to be followed by pilots;
- 11. feedback from humanitarian aid, including ability to provide aid, flight permissions, and status on the ground;
- 12. any other details with respect to the disruption and actions being taken by aircraft operators; and
- 13. each airport emergency plan to be approved by CAA and mutual aid agreements maintained in current status with all agencies involved in an emergency response.

MEMBERSHIP

- 1. The CAR CERT shall be comprised by States, Territories and International Organizations that provide ATS in the CAR Region.
- 2. The CAR CERT will be led by the ICAO NACC Regional Office and co-chaired by IATA and ICAO Regional Offices (Miami and Mexico respectively). The ICAO NACC ATM/SAR Regional Officer, jointly with the AGA Regional Officer will serve as the Secretary and Co-Secretary of the CAR CERT.
- 3. The representatives for the ATS providers for UIR/FIRs and an airport representative from each State of the CAR Region will be permanent members. Upon activation according to address specific contingencies, other stakeholders may be temporarily included.

ACTIVATION

Activation of the CAR CERT for the Caribbean will be based on;

1. recommendation from IATA (feedback from airlines);
2. recommendation from ICAO (feedback from States, Territories and International Organizations);
3. as required by the implementation of ATM Contingency Plans;
4. recommendation by the Logistics Cluster;
5. information from the National Hurricane Centre;
6. feedback information from States/airports on airport preparedness planning; and
7. recommendations and guidelines from ICAO and the Airports Council International (ACI) for airport preparedness planning.

WORKING METHODS

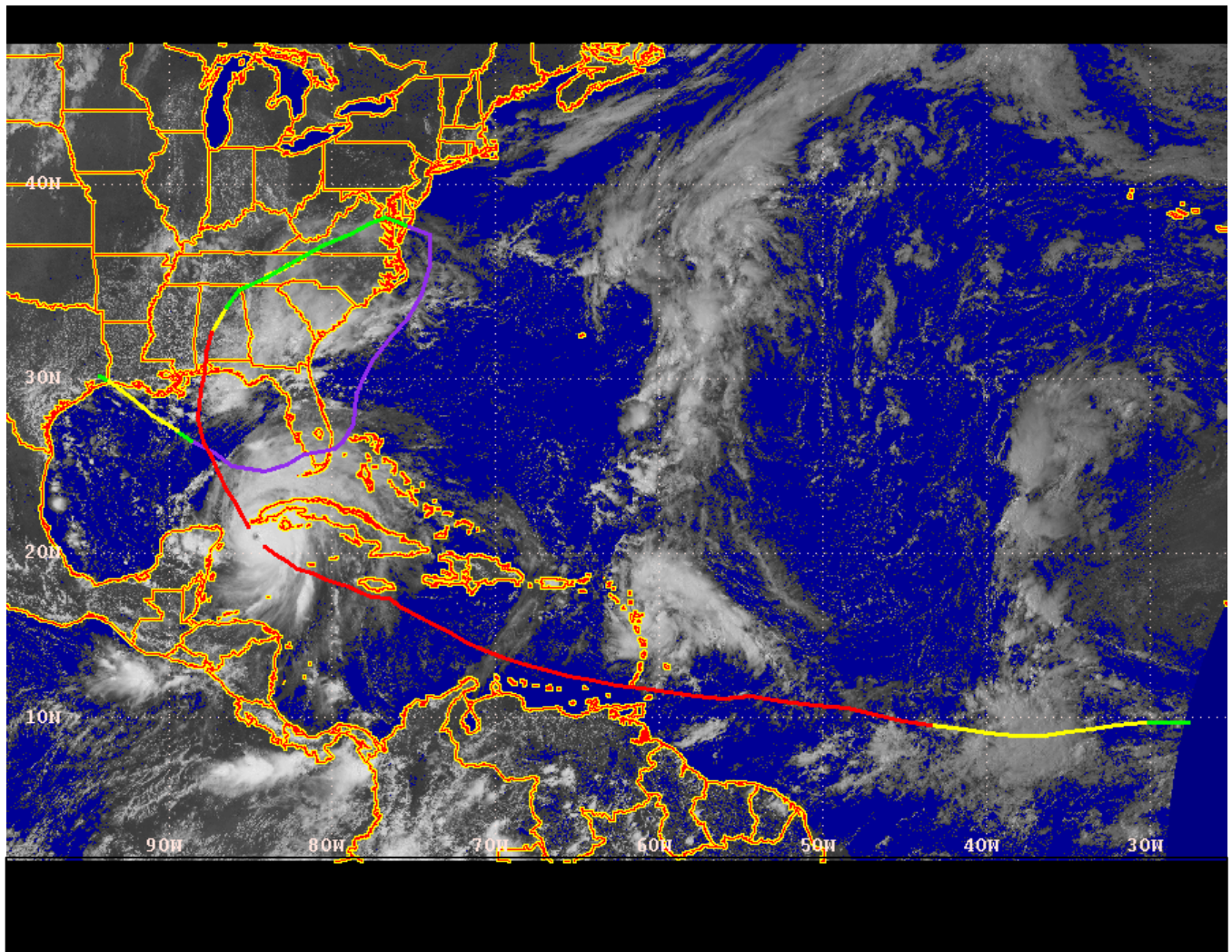
1. The CAR CERT will maintain permanent communication to monitor normal flow of air traffic in the CAR Region. The CAR CERT will conduct at least one test activation or table-top exercise every year during the month of May (actual date to be determined based on availability of majority of participant members).
2. The ICAO NACC ATM/SAR Regional Officer will lead tasks related with ATS and the ICAO NACC AGA Regional Officer will lead AGA and air transport related tasks.
3. Once activated, the CAR CERT will use the following for sharing/exchange of information;
 - a) e-mail notification;
 - b) daily teleconferences; and/or
 - c) others suggested by the CAR CERT.

APPENDIX E

**CARIBBEAN REGION CONTINGENCY
PROCEDURES FOR HURRICANES**

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1. Strategic Phase
2. Pre-tactical Phase
3. Tactical Phase
4. Air Traffic Flow Management Procedures
5. Air Traffic Control Procedures
6. General Guidance for the Development of ATS Contingency Plans for Hurricanes



**CAR Region
Contingency Procedures for Hurricanes**

BACKGROUND

1. The CAR Region is regularly impacted by hurricane activity. As a result, contingency procedures addressing hurricane activity in the Flight Information Regions (FIRs) were developed. These procedures establish a standardized guideline for the alerting of aircraft when hurricanes and hurricane forces are possible and identify procedures to be followed by the Area Control Centres (ACCs) when planning routings around these event areas.
2. Taking into account that safety considerations dictate avoidance of hurricane force areas, timely reports and responses to reports of hurricane event areas are essential.
3. Hurricane direction, speed and intensity are constantly changing. Therefore, all parties concerned are committed to ensure the safety of aircraft in flight by promulgating information as a matter of urgency including prompt reporting and dissemination of available information on the extent and severity of the hurricane area.
4. For every hurricane event being reported in areas which could affect Air Traffic Services (ATS) routes used by civil aviation, all ATS units receiving information of a hurricane event should carry out alerting actions, as appropriate.
5. This document has been developed with the intention to complement the individual ATM Contingency Plans for the CAR Region ATM Contingency Plan. Where actions by the Meteorological Watch Offices (MWOs) are described, those are for clarification only.

1. STRATEGIC PHASE

- 1.1 This phase is characterized by initial information on the extent and severity of the hurricane event. With all information available, the actions of this alerting phase should be carried out within 36 hours from the receipt of information of the event. The alerting phase actions should be carried out for every event. The purpose of this phase is to ensure the safety of aircraft in flight and to promulgate information as a matter of urgency.
- 1.2 During the Strategic Phase, aircraft operations may be tactically rerouted to avoid areas with hurricane force events. Adjacent ACCs should, upon reception of information from the MWO, issue an advisory through the Air Traffic Flow Management (ATFM) Unit (ATFMU), or other means available. Where ATFM has been implemented, the ATFMUs will determine how the initial communications will take place on the basis of bilateral agreements. In any case, operational letters of agreement and contingency plans will provide reference for communications mechanisms.

ORIGINATING ACC ACTIONS (in FIRs concerned)

- 1.3 With the occurrence of a significant hurricane event reported in areas which could affect ATS routes used by civil aviation, an ACC, on receiving information of an event, should carry out the following:

1. Identify an initial impact area with the size and location of the area designed so as to allow the assessment of impacts to routes that will be impaired by the effects of this event. The purpose of this initial impact zone is to identify navigational routes and assets that will be rendered unusable to better mitigate the impacts of the event on air traffic.
2. Advise the appropriate ATFMU/ACC. That ATFMU/ACC will then issue an ATFM advisory and, as necessary, will also notify other ACCs or ATFMUs.
3. Tactically re-clear flights which would penetrate the area onto available routes requested by the pilot. It should also negotiate any re-routings necessary for flights already coordinated but still within adjacent FIRs. It is also expected that adjacent ACCs will be asked to reroute flights not yet coordinated to keep them clear of the impact area.
4. Issue a Notice to Airmen (NOTAM). This must provide as precise information as is available regarding the activity of the hurricane. The name (where applicable), reference number and position of the hurricane should be included along with routes or portions of routes which could be affected and, as necessary, routes temporarily closed to air traffic. It is imperative that this information is disseminated as soon as possible. Some of the required information may not be available and alternative routes may yet have to be established.

5. In order to assist the staff in expediting the process of composing the NOTAM, a series of templates should be available for the activity. According with the circumstances, one of the templates can be used after being suitably modified. An example NOTAM is shown below:

(A0001/02 NOTAMNQ) BIRD/QWWXX/IV/NBO/W/000/999/6359N01942W120
A) BIRD
B) 0705281230
C) 0705291230 EST
E) Due to weather impacts associated with Hurricane RITA the following routes are closed xxx xxx xxx xxx xxx
F) GND G) FL999)

1.4 In addition to sending the NOTAM (and any subsequent NOTAM) to the normal distribution list, it will be sent to the relevant meteorological agencies after adding the World Meteorological Organization (WMO) header “NWIL31 BIRK ddhmm” (where ddhmm represents a date/time group).

ADJACENT ACC/ATFM UNITS ACTIONS

1.5 Aircraft will be tactically rerouted to avoid the impacted area and associated closed routes and disruptions to traffic should not be excessive. Any implemented measure must be properly analysed and implemented based on the estimated traffic prediction. Adjacent ACCs should take the following action to assist:

1. When advised, re-clear flights which will be affected by the impact area but are still under your control.
2. Unless otherwise instructed, continue normal operations except:
 - a) if one or more routes are closed by the impact, stop clearing aircraft on these routes and take steps to reroute onto open routes.
 - b) initiate an evaluation of the impacted area.

1.6 Upon reception of information on hurricane activity from the WMO, ACC/ATFMU will issue an advisory or a NOTAM as appropriate. The adjacent ACCs or ATFM units will determine how the initial communications will take place on the basis of bilateral agreements.

ATFM UNIT ACTIONS

1.7 Depending on the impact of the event, during any Phase, the appropriate ATFM unit may take initiative to organize teleconferences to exchange latest information on the developments with the MWOs, Air Navigation Service Providers (ANSPs) concerned and aircraft operators.

2. PRE-TACTICAL PHASE

2.1 This phase will last until such time as proactive standing procedures can be adopted. The actions detailed in this phase are designed to allow early intervention in the flight path of aircraft already airborne and the promulgation of a routing scheme taking account of the situation.

2.2 It is impossible to be prescriptive for every eventuality, thus the actions consider the 'worst case' scenario of a busy traffic flow affected by the hurricane.

ORIGINATING ACC ACTIONS (within its own FIR)

2.3 This phase begins once aircraft under the control of the ACC have been tactically rerouted around the impact area. Aircraft for which the ACC have received an estimate from adjacent ACCs at the start of the Alerting Phase will be rerouted by those agencies and an initial NOTAM will have been issued. During this phase the ACC should:

1. Maintain close liaison with its associated MWO. The MWO should issue a Significant Meteorological Information (SIGMET) message on the forecast movement of the hurricane at least every 3 hours, valid for 6 hours, with an outlook appended providing information on the trajectory for up to 12 hours beyond the validity period. In the interest of expediency this outlook may be omitted from the initial SIGMET.

2. Based on these forecasts and in cooperation with the appropriate ATFMU and adjacent ACCs, air traffic flow management measures should be devised and updated to ensure that routings are proactively managed to remain available as long as practical to assist normal air traffic requests and, eventually and as needed, facilitate in evacuation, disaster relief efforts and SAR operations.
3. Issue a NOTAM. By this stage it will be possible to define the affected area based on a prediction from the MWO. It is important that the content of the NOTAM is coordinated and agreed with adjacent ACCs. Consideration should be given to including the following text in item E of the NOTAM:

“ATFM MEASURES MAY CHANGE SUBJECT TO THE TRACK AND IMPACT OF HURRICANE XXXXXX. MAINTAIN WATCH FOR NOTAM/SIGMET FOR THE AREA”
4. Should the track of the hurricane significantly change during this phase and the airspace no longer impacted, a NOTAM cancelling the last active NOTAM shall be issued stating the cause for cancellation. Otherwise, begin planning for the Proactive Phase in conjunction with ATFM Units and the affected ACCs.

ADJACENT ACC ACTIONS

- 2.4 During the Phase 2 the adjacent ACCs should take the following action:
1. Maintain close liaison with the appropriate ATFM unit and the originating ACC to design, implement and keep up to date ATFM measures which will ensure routes are managed allowing options and support to all users.
 2. In the event that tactical measures additional to those issued by the appropriate ATFM unit are required, the Air Traffic Control (ATC) watch supervisors should, in cooperation with the originating ACC, impose such measures. Details are included in the ATFM measures section of this document.
 3. Maintain an evaluation of the affected area.
 4. Begin planning for the Proactive Phase in conjunction with the appropriate ATFM unit and ACCs concerned.

3. TACTICAL PHASE

3.1 Standing procedures should be in place to route traffic around the impacted area. During this phase, numerous combinations of airspace may be impacted with routes and options limited. It may be impossible to prescribe all measures to be taken for any particular situation, nor is it possible to detail the actions to be taken by any particular ACC.

- 3.2 The following guidance actions may be used during this phase:
1. ACCs affected by the movement of the hurricane should continue to issue NOTAMs at appropriate intervals. ACCs concerned and the appropriate ATFM unit should continue to publish details on measures taken.
 2. Should the impacted area move wholly outside the originating ACC's airspace to affect adjacent or other FIRs only, the ACCs in charge of that airspace should take over responsibility for the promulgation of NOTAMs.
 3. Depending on the impact of the event, the appropriate ATFM/ACC unit may take initiative to organise teleconferences to exchange the latest information on the developments with the ANSPs concerned and aircraft operators.
 4. During this phase, discussions on contingency planning and responsibilities may deal with possible catastrophic loss of ATC services, facilitating evacuation flights, coordinating disaster relief traffic and SAR operations. The need to involve users is acknowledged by the impact that TFM initiatives will have on the user's abilities to provide services to impacted areas and protect aircraft fleets. The ATM contingency plan of each State/Territory/Service Provider is the main guide for action in these circumstances.
 5. When the impact has passed, a NOTAM cancelling the active NOTAM shall be promulgated.

4. ATFM PROCEDURES

4.1 Upon reception of information on hurricane activity from the WMO, the ATFM unit will coordinate to issue an advice or NOTAM as appropriate.

4.2 In close coordination with ACCs concerned, the appropriate ATFM unit may apply ATFM initiatives to prioritize services and mitigate impacts by relieving congestion on overloaded routes ensuring the orderly flow of traffic with an equitable distribution of delays. The measures should be reviewed and updated in agreement with respective ACCs on receipt of any forecast from the WMO.

4.3 When ATFM initiatives are applied, the appropriate ATFM unit should coordinate issue of Aeronautical Information Management (AIM) or NOTAM as appropriate, explaining in plain language why the measures have been implemented. Operators should also be advised to maintain watch for NOTAMs and SIGMETs for the area.

4.4 Depending on the impact of the hurricane, the appropriate ATFM unit may take initiative to organize routine teleconferences to exchange the latest information on the developments with the ANSPs concerned and aircraft operators.

5. AIR TRAFFIC CONTROL PROCEDURES FOR ACCs

5.1 If hurricane impacts are reported or forecast in the FIR for which the ACC is responsible, the following procedures are followed:

1. Proceed as established in the appropriate ATM Contingency Plan published.
2. Relay all available information immediately to pilots whose aircraft could be affected to ensure that they are aware of the impact area.
3. Suggest appropriate re-routings and advise users of airspace closures; the final responsibility for inflight decisions rests with the pilot in command.

6. GENERAL GUIDANCE FOR THE DEVELOPMENT OF ATS HURRICANE CONTINGENCY PLANS

6.1 The CAR/SAM Regions, through the CAR/SAM Planning and Implementation Regional Group (GREPECAS), have agreed reference documents and procedures to develop, implement and publish the ATS Contingency Plans for each State/Territories of this Planning and Implementation Regional Group (PIRG). In an emergency plan certain steps need to be taken to provide a coordinated and controlled response for dealing with an event of this nature. Responsibilities should be clearly defined for the manager in charge, supervisors and air traffic controllers. The plan should also identify the officials who need to be contacted, the type of messages that are to be created, and how to conduct business.

6.2 Controllers need to be trained and be made aware that aircraft which encounter violent weather conditions can suffer a complete loss of power along with loss of structural integrity in the airframe.

6.3 Particular issues are as follows:

- 1) Impacted areas may extend for hundreds of miles horizontally and reach several miles vertically; therefore, pilots may not be able to fly around or climb above the area.
- 2) Conditions at airports will deteriorate as hurricane forces build. Pilots and controllers should be aware of the escalating impacts to basic services and navigational systems as forces approach. The loss of support services may render ATC systems unusable long before and long after weather impacts reach these areas.

6.4 The ACC in conjunction with the appropriate ATFM unit serves as the critical communication link between the pilot, dispatcher and meteorologist. During contingency episodes within the FIR, the ACC has two major communication roles. First and of greatest importance is its ability to communicate directly with aircraft en-route which will encounter hurricane forces. Based on the information provided in the SIGMET and advisory message, and working with MWO meteorologists, the air traffic controllers should be able to provide the pilot with current information and the projected trajectory of the area. Through the use of radio communication, ACCs have the capability to coordinate with the pilot alternative routes.

6.5 Similarly, through the issuance of a NOTAM, the ACC can disseminate information on the status and activity of hurricane activity. NOTAM and SIGMETs, together with special Air-reports (AIREPs) are critical to dispatchers for flight planning purposes.

6.6 Airlines need as much advance notification as possible for strategic planning of flights and the safety of the flying public. Dispatchers need to be in communication with pilots en-route so that a coordinated decision can be made between the pilot, the dispatcher and air traffic control regarding alternative routes that are available. It cannot be presumed, however, that an aircraft will be provided with the most desirable route. Other considerations have to be taken into account such as existing traffic levels on other routes and the amount of fuel reserve available for flights which may have to be diverted to other routes to allow for the affected aircraft to divert.

6.7 The NOTAM for hurricane activity provides information on its activity along with other information of operational significance. They are issued by the ACC through the respective international NOTAM office based on the information received from any one of the observing sources and/or advisory information provided by the associated MWO. In addition to providing the strength of a hurricane, the NOTAM also provides information on the location, extent and movement of it along with the air routes and flight levels affected. The NOTAM can also be used to close the airspace affected by the hurricane forces. Complete guidance on the issuance of the NOTAM is provided in Annex 15 — *Aeronautical Information Services*.

6.8 It is essential that the procedures which the ACC personnel should follow during this hurricane event described in the foregoing paragraphs are translated into the local staff instructions (adjusted as necessary to take account of local circumstances). It is also essential that these procedures/instructions form part of the basic training for all air traffic services personnel whose jobs would require them to take action in accordance with the procedures.

APPENDIX F

REGIONAL ATM CONTINGENCY READINESS ANALYSIS

To be developed