

## INTERNATIONAL CIVIL AVIATION ORGANIZATION



### SAM REGION ATS CONTINGENCY FRAMEWORK PLAN (MCATS/SAM)

*This Framework Plan was developed by the SGI/GESEA CONT PLAN Task Force to address the issue of air traffic service (ATS) contingencies.*

*It is expected that this Plan will go along with other activities of regional technical entities that have been implementing plans for other issues related to air navigation services (ANS).*

*The SAM Region should seek to develop harmonised guides for addressing contingencies through broader regional plans, covering all air traffic management (ATM) tasks and/or ANS as a whole.*

Version: Original

4 November 2020

**SAM REGION ATS CONTINGENCY FRAMEWORK PLAN  
(MCATS/SAM)**

CHANGE CONTROL

<b>Version</b>	<b>Date</b>	<b>Change</b>	<b>Pages</b>
Original	4 November 2020	Approved SAM/IG/25	

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## 1.- SCOPE AND STRUCTURE

1.1 The SAM ATS Contingency Framework Plan (hereinafter referred to as MCATS/SAM) falls within a hierarchy of planning documents defining global vision and strategy, and regional implementation action. See Figure 1.

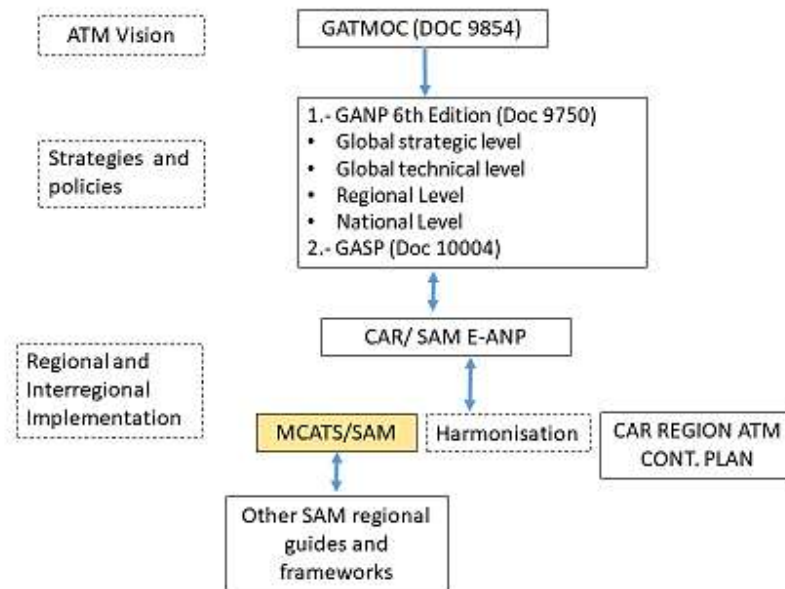


Figure 1: Regional planning, documents and linkages

1.2 The MCATS/SAM is structured to provide:

- a) elements and guidelines for ATS contingency planning at regional level, so as to facilitate harmonisation of State plans;
- b) regional ATFM planning elements;
- c) performance improvements;
- d) considerations for research and future development; and
- e) milestones, timetables, priorities and actions.

1.3 The MCATS/SAM describes a hierarchy of contingency plans based on an ordered scale of impacts on adjacent States or at regional level. It also describes the types of contingencies with respect to the conditions of ATS provision and the availability of a given space, as detailed below:

- a) Hierarchy of contingency plans:
  - i. **Level 1**, for domestic (internal State) plans dealing with non-regional

- airspace and routes, and operations at domestic airports, having no effect on air navigation service providers or units in adjacent States;
- ii. **Level 2**, for coordinated/harmonised (inter-State) contingency plans involving two or more States; and
  - iii. **Level 3**, detailing contingency arrangements designed to enable contingency (alternate) routes at regional and/or sub-regional level, which will allow aircraft operators to cross or avoid airspace within the relevant flight information regions (FIRs).
- b) Types of contingencies:
- i. **Type A – Airspace safe, but restricted or no ATS (ZERO ATS)**, due to causal events such as industrial action/strike, pandemic, earthquake, calamity, nuclear emergency affecting the provision of ATS;
  - ii. **Type B – Airspace not safe**, due to causal events such as volcanic ash cloud, extreme weather events, nuclear emergency, military activity that is hazardous for civil aviation; and
  - iii. **Type C – Airspace not available**, due to events such as pandemic causing limited access to airports, national security reasons, and other causes resulting from a political decision by the State.

*Note. - Type B and C events involve airlines diverting to avoid affected airspace, based on measures issued in collaboration by ATS and ATFM services.*

1.4 MCATS/SAM refers to Level 1 and Level 2 contingency plans. Level 3 contingency plans, including contingency routes and flight level allocation schemes (FLAS), will be developed by the 14 States of the SAM Region through a specific regional agreement.

1.5 The appendices to the plan contain guidelines and guides which, if applicable, can be tailored to the needs of States, with regard to the following subjects:

**Appendix A** – Glossary of terms

**Appendix B** – ATS contingency planning principles

**Appendix C** – Basic plan elements

**Appendix D** – Contingency plan template

**Appendix E** – Terms of reference of the coordination and support team (CST)

**Appendix F** – Regional list of points of contact (Phone tree)

**Appendix G** – Volcanic ash contingency plan for the ICAO South American Region (VACP/SAM)

**Appendix H** – Extreme weather contingencies

**Review of the MCATS/SAM**

1.6 The MCATS/SAM requires periodic updating in March and November of each year to incorporate changes in contingency arrangements and details of the phone tree that lists the points of contact (name of the person and/or position or job title that assumes the function). Updating of the appendices to the plan is carried out by the ICAO SAM Regional Office on receipt of updated information from States, and is not dependent on re-versioning or approval by the regional technical groups (SAMIG meetings, etc.).

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

1.8 The ICAO SAM Regional Office shall establish and implement a systematic procedure for the request, publication and annual review of the ATS contingency plans of the States.

**2.- OBJECTIVES**

2.1 The objectives of the MCATS/SAM are to:

- a) provide a contingency response framework for SAM States to ensure the controlled continuation of aircraft operations in affected UIRs/FIRs, including flow between unaffected FIRs, during contingency events;
- b) ensure timely, harmonised and appropriate responses to all events resulting in the disruption to the provision of ATS, or in which ATS is involved, thereby disrupting the normal movement of aircraft;
- c) provide a higher degree of certainty to airspace and aerodrome users during contingency operations; and
- d) facilitate the harmonisation of plans among States/territories/organisations on the common boundary of the CAR/SAM Regions.

2.2 In order to meet these objectives, the MCATS/SAM:

- a) provides uniform policy and guidance for responding to reasonably foreseeable operational constraints, including short-, medium- and long-term actions, prevention of contingency system overload and guidelines for implementation and reactivation;
- b) reviews the status of ATS contingency plans and the level of contingency preparedness of SAM States;
- c) identifies areas where ATS contingency planning requires improvement to comply with ICAO standards and recommended practices (SARPs) defined in Annex 11 - *Air Traffic Services*, and accepted best practices;
- d) analyses contingency procedures applied in other ICAO Regions and harmonises, where applicable, with similar work in adjacent airspaces;
- e) takes into account the different levels of contingency response necessary for a range of precipitating events;

- f) provides principles for ATS contingency planning;
- g) details recommended contingency responses to events such as extreme weather and geological phenomena, pandemics, national security and industrial relations issues;
- h) provides States with templates for contingency planning; and
- i) defines the terms of reference of the Coordination and Support Team (CST) in Appendix E.

### 3.- CONTINGENCY PLAN PROVISIONS

#### **Requirement for contingency plans**

3.1 Annex 11 to the Convention on International 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.

3.2 Annex 11 contains standards (SARPs) and guidance material for ATS contingency measures, as follows:

#### 2.32 *Contingency arrangements*

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

3.3 In addition, Attachment C to Annex 11 contains guidelines on the development, promulgation and implementation of contingency plans.

3.4 Conclusion 13/68 of the Thirteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/13, held in Santiago, Chile, on 14-18 November 2005) established an action plan for the development of ATS contingency plans in the CAR and SAM Regions.

The action plan was defined in the following phases:

Phase I – Development of ATS contingency plans;

Phase II – Harmonisation of ATS contingency plans with neighbouring States; and

Phase III – Submission of ATS contingency plans to ICAO Regional Offices.

3.5 The GREPECAS/13 meeting also formulated a thematic guide for ATS contingency plans, which is used as a reference for this Framework Plan.

**Contingency planning principles**

3.6 ATS contingency planning principles are the basis for the development of Level 1, Level 2 and Level 3 contingency plans in response to Type A, B and C contingency events, inter-state contingency agreements, contingency route structures, flight level allocation and aircraft longitudinal separation schemes, communication transfer arrangements, and for any delegation of ATC separation and ATS and SAR alerting services. See **Appendix B**.

**Basic plan elements**

3.7 The plan contains the basic elements of the plan, which define the minimum recommended considerations for inclusion in Level 1, Level 2 and Level 3 contingency plans. Basic plan elements cover administration, plan management, airspace, ATS procedures, pilot/operator procedures, communication facilities and procedures, aeronautical support services, including AIS (AIM), NOTAM and MET, and contact details. **Appendix C** lists the agreed basic elements.

3.8 Prior to their implementation, ATS contingency plans should be validated through an appropriate safety assessment in the context of the State safety management system.

*Note. - Appendix D contains a template for the development of Level 2 contingency plans. States can adapt this template for the development of Level 1 plans.*

**State contingency plan coordination and operation functions**

3.9 Each State, in accordance with the air navigation service management model, should establish a central ATS contingency coordinating committee (CCC) for the drafting, maintenance, activation and implementation of contingency plans, and for the creation and convening of an ATS operational contingency group (AOCG).

3.10 The central coordinating committee should include relevant representation from the regulatory authority, the air navigation service provider - ANSP (including those responsible for the SMS), the competent military authority, other relevant national authorities, representatives of airspace users, the airport meteorological authority, the airport authority and other relevant authorities and agencies.

3.11 The ATS operational contingency group (AOCG) will be convened by the CCC with a primary responsibility to oversee day-to-day operations under the contingency arrangements, and coordinate ATS operational activities, 24 hours a day, throughout the contingency period. The terms of reference of the AOCG will be determined by the CCC. The AOCG should include any input required from experts in the following areas:

- a) Air traffic services (ATS)
- b) Air traffic flow management (ATFM) service
- c) Search and rescue (SAR) service
- d) Communication, navigation and surveillance (CNS)
- e) Aeronautical meteorology (MET)
- f) Aeronautical information management (AIM)
- g) Airports and ground aids (AGA)
- h) Safety management system (SMS)

3.12 AOCG functions shall include:

- a) review and update the Contingency Plan as required;
- b) keep up to date at all times of the contingency situation;
- c) organise contingency teams in each of the specialised areas;
- d) keep in contact with and update all airspace and system users, customers and other relevant stakeholders;
- e) exchange up-to-date information with the adjacent ATS authorities concerned included in the coordination and support team (CST) to coordinate contingency activities;
- f) notify the designated organisations of the contingency situation sufficiently in advance and/or as soon as possible after its occurrence;
- g) take necessary action for issuing NOTAMs (ASHTAMs) 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 (ASHTAMs) should be issued 48 hours in advance of the contingency events, using templates; and
- h) liaise with the ICAO SAM Regional Office, as required.

3.13 Terms of reference, and procedures for the activation of the ATS operational contingency group (AOCG) function should be developed.

**Coordination and support team (CST)**

3.15 The Coordination and Support Team - CST (see **Appendix E** for sample terms of reference of the team) brings together the States/ANSPs of the air traffic services adjacent to the State/Administration in a contingency situation. Upon receipt of information on possible activation, pre-activation or effective activation of an ATS contingency plan, the ICAO South American Regional Office organises, coordinates and convenes the CST. The Team is of temporary nature, and will be dissolved when the ATS contingency plan that gave rise to it is terminated.

The main responsibilities of the CST are to:

- a) support coordination and exchange of information in case of contingencies affecting, or likely to affect, airspace, airports, communications and/or the provision of air navigation services in the SAM Region;
- b) serve as the entity for support and coordination and for the exchange of reliable and up-to-date information. Monitor and exchange relevant up-to-date information with States directly involved, States that are potential participants in contingency arrangements, and other relevant stakeholders;
- c) liaise with States and international organisations, users and entities involved (see **Appendix F**, Regional list of points of contact (Phone tree));
- d) discuss with States and international organisations and communicate the contingency procedures initiated (*e.g.*, airspace closure, aerodrome closure, system redundancy, or new contingency routes established); and
- e) ensure the flow of information to ICAO (Headquarters and Regional Office focal points) and IATA (Headquarters and Regional Office focal points).

**Exercises/Drills of contingency plan implementation**

3.16 Each SAM State will coordinate with the ICAO South American Regional Office to conduct, at least once a year, exercises/drills of the implementation of its Level 2 contingency plans. These activities will have an agile format and will include the participation of one or more adjacent (external) ATS units involved in the contingency plan, in order to:

- a) verify the validity of the phone tree, verify the currency of focal point data, including IATA.
- b) review the technical data of the plan, including ATS communications and frequencies, transfer points/airways, aircraft separation, NOTAM procedures, use of the TIBA procedure and auto-transfer, etc.
- c) ascertain the efficiency and availability of communications between focal points.

The State is responsible for defining the participation of observers on behalf of entities, organisations, military institutions, users and stakeholders, as it deems appropriate.

**Volcanic ash contingency planning**

3.17 The ATM/MET/AIM Contingency Plan - Volcanic Ash meeting was held at the ICAO South American Regional Office in Lima, Peru, on 22-26 June 2015. The detailed documentation of the meeting, including the aforementioned guide, is available at:

[http://www.icao.int/SAM/Pages/ES/MeetingsDocumentation\\_ES.aspx?m=2015-ATMMETAIMVA](http://www.icao.int/SAM/Pages/ES/MeetingsDocumentation_ES.aspx?m=2015-ATMMETAIMVA)

3.18 The meeting, through Conclusion ATM/MET/AIM-VA-01, approved the text of the "Volcanic Ash Contingency Plan for the ICAO South American Region (VACP/SAM)". Accordingly, States have a guide available (see **Appendix G**) for drafting their national volcanic ash contingency plans.

3.19 The text of the VACP/SAM considers the various aspects and actions that States should take into account when volcanic activity affects one or more of their flight information regions (FIRs). The objective of this plan is to offer a general scheme of action for these contingencies through recommendations, procedures, information, examples, etc., to assist in the safe and orderly flow of air traffic in the SAM Region.

**Extreme weather contingency planning**

3.20 The provisions for the development of Extreme Weather Contingency Procedures for the SAM Region are shown in **Appendix H** (in preparation).

4.- PERFORMANCE IMPROVEMENT

**Level 1 contingency plans (see Appendix D)**

4.1 Each State should establish an ATS contingency central coordinating committee (CCC) for the development, maintenance, activation and execution of contingency plans, and for the

establishment and convening of an ATS operational contingency group (AOCG).

4.2 Terms of reference and procedures for the activation of the ATS operational contingency group (AOCG) should be developed.

4.3 Level 1 contingency plans that include the basic elements of the regional ATS Contingency Plan should be developed, in accordance with the principles, and implemented at all ATS units.

4.4 Human performance-based training activities and procedures for response to ATS contingency operations for all staff providing ATS-related services, including ATC, flight information, aeronautical information, aeronautical telecommunications, and ATS equipment maintenance personnel should be developed and implemented.

4.5 Programmes for the conduction of regular, inter-unit coordinated desktop exercises of all Level 1 contingency plans should be implemented.

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

4.7 Details of contingency ATS routes and related flight level allocation schemes should be published in Section ENR 3.5 of the State flight information publication (AIP). In addition, this information should be made available on websites for easy access by airlines, operators and interested parties and, where applicable, for expediting the updating of data on contingency routes.

**Level 2 contingency arrangements (see Appendix D)**

4.8 Each State should establish an ATS contingency central coordinating committee (CCC) for the development, maintenance, activation and execution of contingency plans, and for the establishment and convening of an ATS operational contingency group (AOCG).

4.9 Terms of reference and procedures for the activation of the ATS operational contingency group (AOCG) should be developed.

4.10 Level 2 contingency arrangements should be established for all cases where the pre-activation or activation of a Level 2 contingency plan could impact upon ATS within the area of responsibility of a neighbouring State.

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

4.12 Human performance-based training activities and procedures for response to ATS contingency operations for all staff providing ATS-related services, including ATC, flight information, aeronautical information, aeronautical telecommunications and ATS equipment maintenance personnel should be designed and implemented.

4.13 Programmes for the conduction of regular, inter-unit coordinated desktop exercises of all Level 2 contingency plans should be implemented.

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

4.15 Details of ATS contingency routes and related flight level allocation schemes should be published in Section ENR 3.5 of the State flight information publication (AIP). In addition, this information should be made available on websites for easy access by airlines, operators and interested parties and, where applicable, for expediting the updating of data on contingency routes.

4.16 The relevant sections of the contingency plans that could have an impact on international flights should be made available on the internet public website of the ANSP, and the hyperlink provided to the ICAO SAM Regional Office for inclusion in the SAM ATS Contingency Plan.

### **Level 3 contingency plans (regional – sub-regional)**

4.17 Level 3 contingency plans, including contingency routes and flight level scheme (FLAS) will be developed by the 14 SAM States through a specific regional agreement (not included in the MCATS/SAM). **Appendix B** contains some considerations for these Level 3 plans; however, it is envisaged that this regional matter will be addressed starting in 2022.

### **Volcanic ash contingencies**

4.18 Volcanic contamination, the most severe of which is caused by volcanic ash, represents a hazard to the safety of air operations. Mitigation of volcanic ash hazards in the atmosphere and/or at the aerodrome cannot be done in isolation, but through collaborative decision-making (CDM), involving all stakeholders. During an eruption, volcanic contamination can reach and surpass cruising altitudes of turbine engine aircraft in a matter of minutes and cover vast geographical areas in a few days. Encounters with volcanic ash can cause a number of hazards, including one or more of the following:

- a) Malfunction or failure of one or more engines, causing not only a reduction or total loss of thrust, but also failure of electrical, pneumatic and hydraulic systems;
- b) Blockage of sensors feeding avionic systems, causing unreliable airspeed indications and wrong warnings;
- c) Partial or total opaqueness of windshields;
- d) Contamination of cabin air with smoke, dust and/or toxic chemicals that require the crew to wear oxygen masks, which affects voice communications; it may also affect electronic systems;
- e) Erosion of external and internal components of the aircraft;
- f) Less efficient electronic cooling, leading to a number of failures in aircraft systems;
- g) The aircraft may have to be manoeuvred in a manner which conflicts with other aircraft; and
- h) The deposition of volcanic ash on a runway can degrade the braking performance of aircraft, especially if volcanic ash is wet; and, in extreme cases, it can result in runway closure.

4.19 Regulatory authorities of the State of the Operator or State of Registry, as appropriate, should establish appropriate operational procedures to be followed by the flight crew in case of operations in or near airspace contaminated with volcanic ash.

4.20 Operators are required by ICAO Annex 6 - *Operation of Aircraft*, to conduct a risk assessment of operations in volcanic ash and implement appropriate mitigation measures in accordance with their safety management system (SMS), as approved by the State of the Operator or State of Registry, as applicable. The manual on Flight Safety and Volcanic Ash - Risk Management of Flight Operations with known or forecast volcanic ash contamination (ICAO Doc 9974) contains more detailed guidance on safety risk assessment of flight operations in relation to volcanic ash contamination.

4.21 Volcanic ash can also affect the operation of aircraft on aerodromes. Volcanic ash deposition at an aerodrome, even in small quantities, can result in closure of the aerodrome until all deposited ash has been removed. In extreme cases, aerodromes could become totally inoperative, with repercussions on air traffic management (ATS); *e.g.*, landings at alternate aerodromes, re-routing of traffic flow, etc.

4.22 Consequently, a volcanic ash contingency plan, harmonised with the VACP/SAM (see **Appendix G**) should be incorporated into the State ATS contingency plan, so as to include interfaces with supporting services such as aeronautical information (AIS) and meteorology services.

4.23 It is imperative that information on volcanic activity be disseminated as soon as possible. To assist staff in expediting the origination and delivery of relevant messages such as SIGMETs, NOTAMs and ASHTAMs, templates should be made available for each stage of volcanic activity. In the VACP/SAM formulated as regional guidance, you will find examples of SIGMETs, NOTAMs and ASHTAMs containing operational measures and the different stages of volcanic activity. A list of ICAO-registered volcanoes, including the name of the volcano, its number and nominal position, should be made available to staff at the international NOTAM office (see Doc 9691, Manual on volcanic ash, radioactive material and toxic chemical clouds).

4.24 The VACP/SAM has been developed in accordance with a proposal of amendment to the Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM, Doc 4444), paragraph 15.8, Procedures for ATS units when a volcanic ash cloud is reported or forecast, which is already available.

#### **Action by the ATFM service during the ATS contingency**

4.25 [IN PREPARATION]

*NOTE. - It is expected that ATFM capability for the SAM Region will be implemented in accordance with the guidelines of the ATFM Concept of Operations for the CAR/SAM Regions.*

#### **Promulgation and status reporting of State ATS contingency plans**

4.26 National ATS contingency plans (Level 2) should be published in Spanish and English (Portuguese/English in the case of Brazil) in the ENR section of the corresponding AIP and/or on the website of the air navigation service provider.

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

1. Promulgation of the national ATS contingency plan, together with the hyperlink to the website of the plan, or a copy of the approved contingency plan;
2. State contingency points of contact; and



## APPENDIX A: GLOSSARY OF TERMS

For the purpose of this document, the following terms are considered:

- ✓ **ATS CONTINGENCY PLAN:** document containing provisions and procedures to be adopted during a contingency in order to maintain safe and orderly air traffic flow and continuity in the provision of air traffic services.
- ✓ **ATS CONTINGENCY:** temporary and unexpected operational scenario caused by total or partial disruption or potential disruption of air traffic services.
- ✓ **ATS DISRUPTION:**
  - Total disruption (or ZERO ATS): operational scenario where no air traffic service can be provided.
  - Partial disruption: operational scenario where the routine provision of ATC service is not possible and/or where only flight information and/or alert services can be provided.
- ✓ **TYPE OF CONTINGENCY:** set of criteria by which an ATS contingency is classified and, by virtue of this, certain procedures and contingency measures are implemented to deal with said situation.
- ✓ **FLIGHT LEVEL ALLOCATION SCHEME (FLAS):** procedure by which, in an ATS contingency, specific flight levels are assigned to certain route segments within a simplified route network in order to maintain the necessary lateral and vertical separation between aircraft.
- ✓ **CENTRAL COORDINATING COMMITTEE (CCC):** a committee established in a State to draft, maintain, activate and implement ATS contingency plans.
- ✓ **OPERATIONAL CONTINGENCY GROUP (AOCG):** group established and convened by the CCC to oversee operations related to the contingency, for the duration of the latter.

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## APPENDIX B: ATS CONTINGENCY PLANNING PRINCIPLES

1. All ATS units, including ATC sectors, units, centres and flight information and reporting offices that support them, should have Level 1 and Level 2 contingency plans to ensure the safe flow of international traffic in the event of total or partial ATS disruption, or unsafe airspace conditions, such as volcanic ash cloud, nuclear emergency or national security responses.
2. The overriding principle is that safety takes precedence over efficiency and optimal levels and routes.
3. Contingency operations will require 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 capability (*e.g.*, RVSM or non-RVSM) 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 of 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 or non-separated ATS contingency routes;
  - contingency communication arrangements including means of communication within contingency airspace and communication transfer arrangements for aircraft entering and leaving the airspace;
  - details of delegation of air traffic service arrangements (if any); and
  - Contingency points of contact.
6. Level 2 contingency arrangements (arrangements between adjacent administrations) should be included in bilateral or multilateral agreements between States in all cases where activation of any Level 1 contingency plan will impact the ATS of a neighbouring State.

7. Level 1 Contingency Plans should include, either in detail or by reference, any relevant Level 2 contingency arrangements.

8. For the purpose of activating the contingency plans due to malfunction or failure of CNS and/or automation systems supporting the ATS unit, pre-activation processes should be provided for gradual establishment of technical degradation levels leading to the activation of the contingency plan.

*Note. - By way of reference to the application of the concept of technical degradation, an extract from the 2018 Brazilian Air Force Directive is shown as an attachment at the end of this part, which, in its section 3, stipulates a degradation plan and phased implementation of measures in the case of ACCs.*

9. Close cooperation between neighbouring administrations, together with supporting mechanisms for the tactical definition and promulgation of contingency routes for the avoidance of Type B and C contingency airspace.

10. Collaborative air traffic flow management measures should be the first priority response to Type A contingency events, and for the management of deviating traffic during Type B and C events.

11. Contingency routes should be vertically separated whenever lateral route separation is less than the minimum specified by the State for contingency operations.

12. Contingency flight level allocation scheme planning should contemplate the allocation of optimum flight levels to routes used by long haul aircraft, depending on the traffic density on the route, wherever practicable.

13. Contingency ATS routes should provide minimum lateral separation of 100 NM between aircraft that are not vertically separated under a FLAS.

14. The longitudinal separation between aircraft during contingency periods shall be stipulated in the plans of each State, providing that the affected ATS may have the power to relax these limitations as it benefits safety and/or reduces the workload on the affected ATS unit and taking into account airspace volume and complexity, airspace sectors, service capacity limitations, staff availability, etc. The State should also assess the impact of such separations on air operations, and avoid the application of longitudinal separation at points of entry to the FIR "regardless of flight level", as this would mean disregarding the vertical aircraft separation method prescribed in Doc 4444 PANS ATM.

States will determine the minimum longitudinal separation between aircraft operating on the same path and/or contingency route and not vertically separated. This separation shall be expressed in terms of time or distance between aircraft, based on the following options/schemes applicable in oceanic and/or continental airspace:

- a) 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 authorised by the aeronautical authority and agreed in the corresponding letter of agreement (LoA) or other contingency arrangement;
- b) 10 minutes or 80 NM (taking into account the performance of aircraft operating in the region, the vast majority of which are PBN-certified and are equipped with TCAS/ACAS systems). However, this separation may be extended to 15 min or 120 NM after coordination between the FIRs involved or as agreed in the corresponding letter of agreement (LoA) or other contingency arrangement;

15. Contingency ATS routes and FLAS, as well as contingency procedures, should be agreed between geographically grouped neighbouring States to generate sub-regional contingency plans.
16. Contingency ATS routes should be published in the State AIP to permit storage of route details in airspace users' navigation databases.
17. States making temporary changes in airspace classification during ATS contingencies should include in the corresponding regulations the operational, technical and/or legal criteria for the implementation of changes in airspace classification. Likewise, provisions on this matter should be included in the letters of operational agreement with adjacent States.
18. Define ground and airborne navigation requirements if necessary.
19. Alternate aerodromes should be specified where necessary in Level 1 contingency plans for airport control towers and terminal airspace.
20. 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.
21. Airspace affected by volcanic ash cloud should not be closed to international civil aviation.
22. Amended ATS routes, whether published or specifically promulgated, may be prescribed as part of the air traffic flow management (ATFM) response to expected demand and capacity imbalance caused by aircraft avoiding the volcanic ash cloud.
23. Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area.
24. 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.

## **ATTACHMENT**

### **Excerpt from Directive DCA 63-1 / free translation from Portuguese into English**

#### DCA 63-1 (Air Force Command Directive) – Year: 2018 DEGRADATION PLAN, REGIONAL EMERGENCY PLAN AND CONTINGENCY PLAN

### **1 PRELIMINARY PROVISIONS**

#### **1.1 PURPOSE**

The purpose of this publication is to establish guidelines regarding the Degradation Plan, the Regional Emergency Plan and the National Contingency Plan, in order to ensure safety, the operation of air traffic

and aeronautical telecommunication services, as well as aircraft flow, in situations of degradation, crisis, social instability or disruption of various supporting services.

## 1.2 SCOPE

The provisions of this publication must be followed by all SISCEAB bodies.

## 1.3 RESPONSIBILITY

It is the responsibility of each body, as defined in this publication, to draw up, disseminate, update and activate/execute the Degradation Plan, Regional Emergency Plan and National Contingency Plan, with the aim of maintaining the safety, regularity and efficiency of the services provided by SISCEAB.

## 2 ABBREVIATIONS AND CONCEPTS

### 2.1 ABBREVIATIONS

ACAMS	- Airport control and monitoring system
CCAM	- Automatic message switching centre
CGNA	- Air navigation management centre
CINDACTA	- Integrated air defence and air traffic control centre
DCA	- Air Force Command directive
DCL	- Departure clearance (data link service)
DECEA	- Airspace control department
DTCEA	- Airspace control unit
MOP	- Operational model
PAME	- Aeronautical electronics equipment
RACAM	- Administrative network for automatic message switching
SDAD	- DECEA administration subdepartment
SDOP	- DECEA operations subdepartment
SDTE	- DECEA technical subdepartment
SISCEAB	- Brazilian Airspace Control System
SGTC	- Control tower management system
SRPV	- Regional flight protection service
TARIS	- Synthetic image radar display terminal
TATIC	- Total air traffic information control

### 2.2 CONCEPTS

For the purpose of this publication, the following concepts are used:

**DEGRADATION PLAN.** - A document defining the procedures to be adopted in case of failure of the power, telecommunications and surveillance systems, as well as in consoles, air navigation procedures and others, in order to minimise the impact on the provision of air traffic services.

**NOTE:** Aeronautical telecommunication systems comprise the following aeronautical services: radio navigation (*e.g.*, DME, VOR, etc.), mobile (VHF, DCL, etc.), fixed (AMHS / CCAM, RACAM, etc.) and broadcasting (ATIS, VOLMET, etc.).

## 3 DEGRADATION PLAN

### 3.1 OBJECTIVE

Define actions and procedures to minimise the operational impact on the provision of air traffic services by an ATS organization due to failures in its electrical, telecommunication and surveillance systems, as well as in consoles, air navigation procedures and others.

### 3.2 RESPONSIBILITY

3.2.1 It is the responsibility of the head of the ATS to propose the inclusion of the respective Degradation Plan in the MOP.

### 3.3 ACTIVATION

The Degradation Plan will define the circumstances and steps for activation to the responsible parties, as approved by the respective head of the ATS.

### 3.4 STRUCTURE

3.4.1 The Degradation Plan should include, where appropriate, at least the aspects described in the following sub-topics, regardless of the sequence of occurrence.

*NOTE: To better understand and support the decision of service teams, the Degradation Plan should also provide a brief description of the mode of operation of the main systems available, in case of failure of primary, secondary and alternate systems.*

3.4.1.1 In case of failure of primary (commercial) and/or secondary (batteries, generator, etc.) power, provide for:

- a) immediate activation of relevant technical support;
- b) assessment of the impact on agency services;
- c) actions and alternative means to address the power outage;
- d) the need to turn off equipment that is not being used;
- e) information on the degradation to adjacent ATS units and CGNA; and
- f) information on the end of degradation to local bodies, adjacent ATS units and CGNA.

3.4.1.2 In case of failure of the aeronautical mobile service, provide for:

- a) immediate activation of relevant technical support;
- b) assessment of the operation of secondary frequencies;
- c) actions and alternative means to address communication failures in the main and secondary frequencies;
- d) implementation of regulatory communications contingency procedures related to:
  - total failure of ground radio equipment;
  - blocked frequency; and
  - false and misleading transmissions on frequencies.
- e) determination of a reduction in ATS capacity;
- f) tactical flow management procedures;
- g) information to adjacent ATS units and CGNA; and
- h) information on return to normal service to local agencies, adjacent ATS units and CGNA.

3.4.1.3 In case of failure of the aeronautical fixed service, provide for:

- a) immediate activation of relevant technical support;
- b) assessment of the operation of the secondary voice communication system;
- c) actions and alternative means to address communication failures in primary and secondary voice communication systems;

- d) actions and alternative means to address the discontinuity in the exchange of ATS messages (loss of AMHS, CCAM, etc.);
- e) determination of a reduction in ATS capacity;
- f) tactical flow management procedures;
- g) information to adjacent ATS units and CGNA; and
- h) information on the return to normal service to local agencies, adjacent ATS units and CGNA.

3.4.1.4 In case of failure of surveillance systems (radar, console, ADS, cameras, etc.), provide for:

- a) activation of relevant technical support;
- b) use of other available operational positions;
- c) increased separation values, in cases of maintenance of the ATS surveillance service;
- d) exceptional application of emergency separation;
- e) procedures for transition to conventional control and circulation;
- f) maximising conventional control capacity;
- g) suspension of authorisation of certain local air operations (for example, special VFR, etc.);
- h) cancellation of issuance of standard authorisations;
- i) discontinuation of routes, procedures, airspace reservations and restrictions, for which the provision of ATS surveillance services is a necessary condition;
- j) procedures for accepting traffic transfers from adjacent agencies;
- k) procedures for requesting transfer of traffic to adjacent units;
- l) procedures to improve the operational monitoring function;
- m) information to aircraft about the loss of the surveillance service;
- n) coordination with all the local bodies involved;
- o) reduction of ATS capacity values;
- p) tactical flow management procedures;
- q) information to adjacent ATS units and CGNA;
- r) prioritisation of flights in coordination with CGNA; and
- s) information on the return to normal service to local agencies, adjacent ATS units and CGNA.

*NOTE: Cameras can be essential for the provision of ATC in parts of the manoeuvring area where the TWR has no direct visual contact or even in the case of a remote tower (R-TWR).*

3.4.1.5 In case of failure of ATS procedures, provide for:

- a) information to aircraft on the suspension of procedures affected by degradation (for example, PBN, RVSM, etc.);
- b) obtaining possible solutions from relevant professionals, mainly in case of damage due to technical or meteorological obstacles;
- c) coordination with all local and adjacent bodies involved;
- d) coordination for the dissemination of suspension of ATS aerodrome procedures through ATIS and/or NOTAM, if applicable;
- e) reduction of ATS or aerodrome capacity values;
- f) tactical flow management procedures;
- g) information to adjacent ATS units and CGNA; and
- h) information on return to normal service to local agencies, adjacent ATS units and CGNA.

3.4.1.6 In case of failure of air navigation aids, provide for:

- a) information to aircraft on the suspension of procedures/routes affected by failure of air navigation aids;
- b) coordination with all local bodies involved;

- c) coordination for the dissemination of suspension of air navigation procedures through ATIS and/or NOTAM, if applicable;
- d) reduction of ATS or aerodrome capacity values;
- e) tactical flow management procedures;
- f) information to adjacent ATS units and CGNA; and
- g) information on return to normal service to local agencies, adjacent ATS units and CGNA.

#### 3.4.1.7 In case of failure of other systems of the ATS unit (or their integration)

3.4.1.7.1 Where appropriate, provide for procedures for ATS personnel to address failures in information systems (MET, AIS, infrastructure, monitoring, database, etc.), flight progress management (SGTC, TATIC, ACAMS, etc.), surface surveillance, landing / take-off management, radar image repeater (TARIS, etc. ), data link (DCL, CPDLC, etc.), air conditioning and lighting of ATS bodies, as well as corporate networks and certain equipment such as the aerodrome rotating beacon, aeronautical lights and surface cameras.

#### 3.4.1.7.2 If such failures can affect aircraft flow, the Degradation Plan must also include:

- a) coordination with all the local bodies involved;
- b) tactical flow management procedures;
- c) information to adjacent ATS units and CGNA; and
- d) after the system/equipment has been restored, information on the return to normal service to local agencies, adjacent ATS units and CGNA.

3.4.1.8 The degradation procedures that provide for the transfer, in whole or in part, of communications and/or control to another ATS unit must be previously established in a letter of operational agreement between the entities concerned. These procedures, if any, must be transcribed or at least mentioned in the ATS degradation plan.

3.4.2 In addition to the provisions set forth in 3.4.1, the degradation plan of area control centres must contain a set of gradual measures, established in 6 (six) phases, from 0 to 5. However, the implementation of any of the measures, except those of phase 2, may be immediate if the situation of degradation so requires.

3.4.2.1 Phases 1, 2, 3, 4 and 5 correspond to the incremental implementation of adjustments or restrictions to aircraft flow related to the worsening inoperability of technical systems and/or operational difficulties, resulting in a reduced capacity to provide ATC.

3.4.2.2 Phase 0 - Occurs when there is degradation of systems and procedures, offset by redundancies in other systems and procedures available in the unit, and no adjustment or restriction to aircraft flow is required.

3.4.2.3 Phase 1 - Includes measures with little impact on aircraft flow. It results, for example, in rerouting and speed control measures in order to make adjustments and allow traffic to flow.

3.4.2.4 Phase 2 - It is characterised by the adoption of restrictive measures, with the designation of specific flight levels to ensure vertical separation of traffic, even before entering the degraded sector. Phase 2 measurements will be used only after Phase 1.

3.4.2.5 Phase 3 - It is characterised by the progression of restrictive measures, increasing time/distance spacing of traffic and/or rerouting certain traffic.

3.4.2.6 Phase 4 - Involves implementation of additional restrictive measures to further reduce the volume of traffic in a control sector, for example, interrupting take-offs from certain feeder aerodromes and/or making large en-route deviations.

3.4.2.7 Phase 5 - The adoption of the most severe restrictive measures will occur when the degradation of material and/or human resources is such that the provision of the ATC service is practically impossible. This phase will guide the total or partial suspension of traffic flow, and the activation of the national contingency plan for the FIR concerned must be coordinated with CGNA.

*NOTE: The total or partial suspension of vehicle flow due to a degradation condition is an extremely severe measure, and every effort should be made to solve the original problem in order to restore vehicle flow as soon as possible.*

3.4.3 Any case of degradation should be described in the ATS ATL.

### 3.5 UPDATING

3.5.1 The degradation plans of ATS units, contained in the respective MOP, shall be reviewed and compulsorily republished, once every two years or in a shorter period, when necessary, especially when new concepts, services, systems, procedures, equipment and/or assistance that may affect the HTA are implemented.

*NOTE: The two-year period mentioned in this item is from the date of approval of the current MOP.*

### 3.6 DISSEMINATION

Degradation plans containing procedures to be carried out by adjacent ATS units must be mutually known and defined in an operational letter of agreement.

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## APPENDIX C: BASIC PLAN ELEMENTS

### Element 1: Administration

- a) Record of signatories, version control and record of amendments.
- 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, as follows:
  - Pre-activation phase: includes immediate or short-term actions aimed at ensuring the safety of aircraft affected by the contingency and safeguarding the physical integrity of ATC personnel who may be affected by the contingency;
  - Activation phase: medium- and long-term actions to maintain a safe and orderly flow of air traffic compatible with contingency conditions;
  - Termination phase: actions upon termination of the contingency with a view to restoring service levels and traffic order as soon as possible, without jeopardising the safety of operations.

*Note 1.- Contingency events may arise without allowing sufficient time for pre-activation of contingency plans.*

*Note 2.- Termination of the contingency plan should provide for the issuance of a NOTAM and simultaneous communication by e-mail or telephone (ensuring acknowledgement of receipt) to stakeholders, including the CST, adjacent ACCs, national authorities, ICAO Regional Office, etc.*

- d) Details of the arrangements in place for management of the plan, including:
  - i. Provisions for the establishment of a central coordinating committee to authorise and oversee the activation of the plan and arrange for ATS restoration in case of an extended outage;
  - ii. ATS operational contingency group for 24-hour coordination of the operational and support 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 introduce 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 a safety incident investigation.

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

- Input to the PAR from all parties affected or involved in the response to the contingency is actively sought and considered;
- Bilateral or multilateral PARs 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 air traffic services 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 courses.

### 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.

*Note.- The State could decide to suspend any activation or restriction of reserved areas during the contingency.*

- h) Criteria for making changes to airspace classification and the associated separation and CNS requirements.
- i) Collaborative trajectory options for Type A, B and C events, and for large scale weather deviations (LSWD).

### Element 4: ATS procedures

- j) Details of rerouting 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 vertical separation minimum is applied where less than the specified lateral separation minimum 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 service 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, using assigned airspace entry times or, where ATFM capability exists, tactical ATFM measures.
- p) Procedures for adjacent service providers to establish longitudinal spacing at the point of entry, and issuance of coordinated measures to ensure such separation is maintained throughout the affected airspace.
- q) Reassignment of responsibility for the provision of air traffic services, to the extent possible, in non-sovereign airspace and to international aircraft traversing sovereign airspace.
- r) Coordination and communication 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 broadcasting position and other information, and for continuous listening watch, on specified pilot-pilot and watch very high 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 Table of Cruising Levels in Appendix 3 to

Annex 2 - *Rules of the Air*, except where modified by a flight level allocation scheme.

Element 6: Communication facilities and procedures

- x) Provision and operation of appropriate 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) Access and connection management for aircraft equipped with controller-pilot data link communications (CPDLC), where appropriate.
- aa) Use of automatic dependent surveillance - Contract (ADS-C) automatic position reporting instead of voice position reporting to ATS.

Element 7: Aeronautical support services, including AIS (AIM), NOTAM, and MET

- bb) Information in the AIP regarding contingency planning, and notification by ASHTAM/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 of the RCC responsible for the affected FIR, and coordination arrangements.
- ee) Contact details of ANSPs of adjacent States and other international organisations participating in the contingency plan.
- ff) Prior notification requirements for activation of Level 2 contingency arrangements in adjacent FIRs.

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

## APPENDIX D: CONTINGENCY PLAN TEMPLATE

### ATS CONTINGENCY PLAN FOR THE [XXXX] CTA/UTA/FIR

#### ***OBJECTIVE***

1. This contingency plan contains arrangements to ensure the continued safety of air navigation in the event of a partial 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 alternate routes, using mostly existing airways, which will allow aircraft operators to cross or avoid airspace within the (XXX) control area (CTA)/upper control area (UTA)/FIR.

#### ***AIR TRAFFIC MANAGEMENT***

##### ***ATS Responsibilities***

2. ATC tactical considerations during periods of overload may require reallocation of routes or route segments.
3. Alternate routes should be designed to maximise the use of existing ATS route structures and communication, navigation and surveillance services.
4. In the event that ATS cannot be provided in the (XXXX) CTA/UTA/FIR, the civil aviation authority (CAA) [or ANSP, as appropriate] 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 or 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 provisions made concerning 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 [or ANSP, as applicable] is unable to issue the NOTAM, the (alternate) CTA/UTA/FIR will take action to issue the NOTAM, within the framework of the LoA or Memorandum of Understanding (MoU) with another State/ANSP or international organisation, advising of airspace and service limitations, upon receipt of notification from the relevant CAA [or ANSP, as applicable] or ICAO Regional Office.

##### ***Separation***

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

***Level restrictions***

7. Where possible, aircraft on long-haul international flights will be given priority for cruising levels.

***Other measures***

8. Other measures related to airspace closure and the implementation of the contingency scheme in the (XXX) CTA/UTA/FIR may be adopted as follows:
  - a) suspension of all VFR operations;
  - b) delay or suspension of IFR operations by general aviation; and
  - c) delay or suspension of IFR commercial operations.

***TRANSITION TO THE CONTINGENCY SCHEME***

9. During times of uncertainty, when airspace closures seem possible, aircraft operators should be prepared for possible rerouting while en-route, be familiar with the alternate routes outlined in the contingency scheme, as well as what may have been 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 be aware that when airspace or airport closures are promulgated, individual airlines might have different company requirements as to their alternate routings. ATC should be alert to respond to any request by aircraft and react commensurate with safety.

***TRANSFER OF CONTROL AND COORDINATION***

12. Transfer of control and communication between ATS units should take place at the common FIR boundary, unless there is a mutual agreement between adjacent ATS units. ATS providers should also review existing coordination requirements in light of contingency operations or closure of airspace at short notice.

***PILOT AND OPERATOR PROCEDURES***

13. Pilots must be aware that, as a result of current international circumstances, a contingency routing requiring aircraft to operate off normal traffic flows may result in interception by military aircraft. Aircraft operators must therefore be familiar with international intercept procedures contained in ICAO Annex 2 –*Rules of the Air*, paragraph 3.8 and Appendix 2, Sections 2 and 3.
14. Pilots must continuously watch the VHF emergency frequency 121.5 MHz and should activate 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 no code has been assigned.
15. If an aircraft is intercepted by another aircraft, the pilot shall immediately:
  - a) comply with instructions given by the intercepting aircraft, interpreting and

responding to visual signals, in accordance with international procedures;

- b) if possible, notify the corresponding 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 the transponder to code 7700, unless instructed otherwise by the corresponding ATS unit.

16. In case some of the instructions received by radio from any source are in contradiction 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. If necessary, aircraft operators should obtain overflight approval from States for operating flights within their airspace jurisdiction. In a contingency situation, flights may be rerouted at short notice, and operators may not be able to give the required advance notice in a timely manner to obtain approval. States responsible for the airspace in which contingency routes are established should consider establishing special arrangements to facilitate the approval of flights under these contingency situations.

#### ***ATS OPERATIONAL CONTINGENCY GROUP (AOCG)***

18. The AOCG that has been assigned responsibility for monitoring events and that can order the execution of the contingency plan and the coordination of contingency arrangements is:

Name of entity:  
Contact person:  
Cell/mobile phone:  
E-mail:

19. During a contingency situation, the AOCG will liaise with adjacent ATS units through the ICAO Regional Office.

20. The ICAO Regional Office will:

- a) monitor the situation closely and coordinate with all States concerned and the IATA Regional Office, in order to ensure the provision of air navigation services to international aircraft operations in the SAM Region;
- b) take note of any incidents reported and take appropriate action;
- c) provide the required assistance in relation to any problems with the civil aviation administrations involved in the contingency plan; and
- d) keep the President of the ICAO Council, Secretary General, C/RAO, D/ANB and C/ATS constantly informed about events, including the activation of the

contingency plan.

**CONTINGENCY ALTERNATE ROUTE SCHEME**

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

<b>Existing ATS route</b>	<b>CONTINGENCY ALTERNATE ROUTES</b>	<b>FIR INVOLVED</b>
Instead of:	(ATS unit) provides ATC on the following routes: <b>R1:</b> <b>R2:</b> <b>R3:</b>	<b>XXX:</b> In coordination with <b>XXX</b>
Instead of:	(ATS unit) provides ATC on the following route: <b>R4:</b>	<b>XXX:</b> In coordination with <b>XXX</b>

Optionally, this table can be prepared based on the characteristics of existing flows between FIRs or between city pairs, according to the following model:

<b>Existing ATS route</b>	<b>CONTINGENCY ALTERNATE ROUTES</b>	<b>FIRs INVOLVED</b>
Flow from X FIR to Y FIR	(ATS unit) provides ATC on the following routes: <b>R1:</b> <b>R2:</b> <b>R3:</b>	<b>XXX:</b> In coordination with <b>XXX</b>
Flow from CITY G to CITY W	(ATS unit) provides ATC on the following route: <b>R4:</b>	<b>XXX:</b> In coordination with <b>XXX</b>

22. All aircraft should establish and maintain contact with the (XXX) (APP/ACC/FIC) ATS unit responsible for the airspace they are crossing, on the published VHF or HF frequencies.

**List of points of contact of all States involved, IATA and ICAO Regional Office**

<b>State /International organisation</b>	<b>Point of contact (name and/or position /designated job title)</b>	<b>Cell/mobile phone</b>	<b>E-mail</b>

IATA			
ICAO (Regional Office)			

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23. The following is a NOTAM model for the ZERO ATS situation, presented in English according to the plain language standards set forth in Annex 15.

*Note. - The ATS and AIS/AIM units issuing this NOTAM shall analyse the feasibility of transmitting a long message like the one shown in the model, given some limitations in the number of characters inherent in AFTN systems.*

NOTAM MODEL FOR ZERO ATS

Debido a total interrupción de los servicios de tránsito aéreo, el Plan de Contingencia ha sido activado dentro de la FIR FANTASY (SFAN).

Due to total disruption of air traffic services, the contingency plan has been activated within the FANTASY FIR (SFAN).

**A0087/20 NOTAMN**

Q) SFAN/QCAAS/IV/B/AE/000/999

A) SFAN

B) 200401 1345

C) 200403 2359 EST

E) FOR MORE INFORMATION AND FLIGHT PLANNING, SEE THE SIMPLIFIED ROUTE NETWORK AND OPERATING PROCEDURES OF FANTASY FIR CONTINGENCY PLAN, PUBLISHED IN AIP FANTASY, PART ENR 6.6 AND ALSO IN THE FOLLOWING WEBSITE: [WWW.FANTASYCAA.GOB.FAN](http://WWW.FANTASYCAA.GOB.FAN)

ATS ROUTES WITHIN FANTASY FIR ARE RECLASSIFIED AS CLASS G AIRSPACE, ONLY FIS AND ALR SERVICES AVBL. PILOTS MUST APPLY THE FOLLOWING:

1. INCLUDE IN THE LAST POSITION REPORT TO THE ADJACENT ACC THE ESTIMATED TIMES OVER ENTRY AND EXIT POINTS OF FANTASY FIR

2. THE AIRCRAFT MUST APPLY STRATEGIC LATERAL OFFSET PROCEDURES (SLOP) TO THE RIGHT OF THE CENTER LINE RELATIVE TO THE DIRECTION OF FLIGHT IN TENTHS OF A NAUTICAL MILE UP TO A MAXIMUM OF 0.5 NM.

3. KEEP THE NAVIGATION AND ANTI-COLLISION LIGHTS PERMANENTLY TURNED ON WHILE OPERATING IN THE FANTASY FIR;

4. KEEP THE TRANSPONDER ON AND SET ON CODE 2000, IF NO OTHER SSR CODE HAS BEEN ASSIGNED;

5. TRAFFIC INFORMATION BROADCASTS BY AIRCRAFT (TIBA) IN VHF FREQUENCY 121.5 MHZ.

5.1. WHEN THE AIRCRAFT HAS ONLY TWO SERVICEABLE VHF SETS, ONE SHOULD BE TUNED TO THE APPROPRIATE ATS FREQUENCY AND THE OTHER TO THE TIBA FREQUENCY 121.5 MHZ.

5.2. A LISTENING WATCH SHOULD BE MAINTAINED ON THE TIBA FREQUENCY 10 MINUTES BEFORE ENTERING THE FANTASY FIR UNTIL LEAVING THIS AIRSPACE. FOR AN AIRCRAFT TAKING OFF FROM AN AERODROME LOCATED WITHIN THE LATERAL LIMITS OF THE FANTASY FIR, LISTENING WATCH SHOULD START AS SOON AS APPROPRIATE AFTER TAKE-OFF AND BE MAINTAINED UNTIL LEAVING THE AIRSPACE.

5.3. A BROADCAST SHOULD BE MADE:

A. 10 MINUTES BEFORE ENTERING THE FANTASY FIR OR, FOR A PILOT TAKING OFF FROM AN AERODROME LOCATED WITHIN THE LATERAL LIMITS OF THE FANTASY FIR, AS SOON AS APPROPRIATE AFTER TAKE-OFF;

B. 10 MINUTES PRIOR TO CROSSING A REPORTING POINT;

C. 10 MINUTES PRIOR TO CROSSING OR JOINING AN ATS ROUTE;

D. AT 20-MINUTE INTERVALS BETWEEN DISTANT REPORTING POINTS;

E. 2 TO 5 MINUTES, WHERE POSSIBLE, BEFORE A CHANGE IN FLIGHT LEVEL;

F. AT THE TIME OF A CHANGE IN FLIGHT LEVEL; AND

G. AT ANY OTHER TIME CONSIDERED NECESSARY BY THE PILOT.

5.4. THE BROADCAST SHALL CONTAIN AIRCRAFT IDENTIFICATION, POSITION, ABANDONED LEVEL, CROSSING LEVEL AND ANY OTHER RELEVANT INFORMATION; THE BROADCASTS SHOULD NOT BE ACKNOWLEDGED UNLESS A POTENTIAL COLLISION RISK IS PERCEIVED.

5.5. RELATED OPERATING PROCEDURES:

CRUISING LEVEL CHANGES SHOULD NOT BE MADE, UNLESS CONSIDERED NECESSARY BY PILOTS TO AVOID TRAFFIC CONFLICTS, FOR WEATHER AVOIDANCE OR FOR OTHER VALID OPERATIONAL REASONS.

WHEN CRUISING LEVEL CHANGES ARE UNAVOIDABLE, ALL AVAILABLE AIRCRAFT LIGHTING WHICH WOULD IMPROVE THE VISUAL DETECTION OF THE AIRCRAFT SHOULD BE DISPLAYED WHILE CHANGING LEVELS.

IF, ON RECEIPT OF A TRAFFIC INFORMATION BROADCAST FROM ANOTHER AIRCRAFT, A PILOT DECIDES THAT IMMEDIATE ACTION IS NECESSARY TO AVOID AN IMMINENT COLLISION RISK, AND THIS CANNOT BE ACHIEVED IN ACCORDANCE WITH THE RIGHT-OF-WAY PROVISIONS OF ICAO ANNEX 2, THE PILOT SHOULD:

- A. UNLESS AN ALTERNATIVE MANOEUVRE APPEARS MORE APPROPRIATE, IMMEDIATELY DESCEND 150 M (500 FT), OR 300 M (1 000 FT) IF ABOVE FL 290 IN AN AREA WHERE A VERTICAL SEPARATION MINIMUM OF 600 M (2 000 FT) IS APPLIED;
- B. DISPLAY ALL AVAILABLE AIRCRAFT LIGHTING WHICH WOULD IMPROVE THE VISUAL DETECTION OF THE AIRCRAFT;
- C. AS SOON AS POSSIBLE, REPLY TO THE BROADCAST ADVISING ACTION BEING TAKEN;
- D. NOTIFY THE ACTION TAKEN ON THE APPROPRIATE ATS FREQUENCY; AND
- E. AS SOON AS PRACTICABLE, RESUME NORMAL FLIGHT LEVEL, NOTIFYING THE ACTION ON THE APPROPRIATE ATS FREQUENCY.

6. AUTO-TRANSFER PROCEDURES

TAKING INTO CONSIDERATION THAT THE FANTASY ACC IS NOT ABLE TO COORDINATE AIR TRAFFIC DUE TO TOTAL INTERRUPTION OF THE ATS THE FOLLOWING AUTO TRANSFERRING PROCEDURES SHALL BE APPLICABLE BY THE PILOT:

- A. TRY TO ESTABLISH CONTACT WITH THE ADJACENT ATS FACILITY AT LEAST FIVE (5) MINUTES BEFORE ETO ON THE EXIT REPORTING POINT OF THE FANTASY FIR TRANSFER;
- B. INFORM THE ATS UNIT THAT IT IS PERFORMING AN AUTO-TRANSFER; AND
- C. TRANSMIT THE FOLLOWING INFORMATION: AIRCRAFT IDENTIFICATION, ORIGIN, DESTINATION, ROUTE, FLIGHT LEVEL, TRANSPONDER CODE, RVSM APPROVAL STATUS AND ESTIMATED TO THE AUTO-TRANSFER REPORTING POINT.

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APPENDIX F: REGIONAL LIST OF POINTS OF CONTACT (PHONE TREE)

*Note: The list includes the cell/mobile number of the designated POC officer as a primary means of communication or, alternatively, the cell/mobile number corresponding to the position or designated job title.*

*(Revision, 4 november 2020)*

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<p style="background-color: #d3d3d3; text-align: center;"> </p>	

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**APPENDIX G: VOLCANIC ASH CONTINGENCY PLAN FOR THE  
ICAO SOUTH AMERICAN REGION (VACP/SAM)**



**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**SOUTH AMERICAN REGIONAL OFFICE**

**VOLCANIC ASH CONTINGENCY PLAN FOR THE ICAO SOUTH AMERICAN  
REGION (VACP/SAM)**

The full text of this Plan is part of the report of the 2015 ATM/MET/AIM/VA meeting and is posted on the website of the ICAO South American Regional Office at:

[http://www.icao.int/SAM/Pages/ES/MeetingsDocumentation\\_ES.aspx?m=2015-ATMMETAIMVA](http://www.icao.int/SAM/Pages/ES/MeetingsDocumentation_ES.aspx?m=2015-ATMMETAIMVA)

APPENDIX H: EXTREME WEATHER CONTINGENCIES

[IN PREPARATION]