



Agenda Item 4: Analysis of ATS Contingency Plans

ICAO Documentation related with contingency plans

(Presented by the Secretariat)

<p style="text-align: center;">Summary</p> <p>This working paper presents the meeting information on ICAO documentation and regulations available with regard to contingency plans.</p>
<p style="text-align: center;">References:</p> <ul style="list-style-type: none">- Annex 11- PANS/ATM, Doc 4444
<p>ICAO Strategic objectives</p> <p>Strategic Objective A <i>Safety</i> Strategic Objective D <i>Efficiency</i></p>

1. Introduction

1.1 ICAO Annex 11 presents standards applicable from 27 November 2003 so that States/Territories/International Organizations prepare and promulgate contingency plans for their implementation in order to ensure air navigation safety in case of potential partial or total interruption of air traffic services (ATS) and/or related support services for international civil aircraft operations. Attachment D to Annex 11 contains the material on contingency planning, which includes information on responsibilities, preparatory actions, coordination, preparation, promulgation, application, etc. (See **Appendix A** to this working paper).

1.2 Also, Doc 4444, PANS-ATM, Chapter 15, provides contingency procedures to be observed by ATC units within their respective jurisdiction, such as communication failures, air-ground communication failures, ground radio failures, blocked frequency, unauthorized use of ATC frequency, failures in ATS surveillance equipment; emergency separation, use of automated alerts (STCA, MSAW, GPWS) ACAS; and other special procedures for in-flight contingencies.

2 Discussion

2.1 As per the Chicago Convention, States are responsible to ensure international civil aviation that ATS continue to operate and that main international air routes remain open in case of partial or total interruption of ATS through the preparation of an ATM Contingency Plan. Time is essential in the preparation of adequate measures, to coordinate contingency plans to hinder air navigation risks. ATM contingency plans are established through multilateral agreements in prevention to anticipated or real interruption of air traffic services or related support services.

2.2 Changes to air traffic flow require some time by States/Territories/International Organizations to prepare and disseminate contingency measures in advance. In this process, all parties involved should participate in the preparation of contingency plans and should be prepared to implement adequate measures, especially those parts which would affect international air operations, such as specifically the closing of the airspace, etc, prior to publication of the corresponding NOTAM. In other Regions, preventive measures due to natural risks such as tidal waves or volcanic eruptions, are being also considered.

2.3 Guidelines for the development of an ATM Contingency Plans, contained in **Appendix B** to this working paper, have been prepared recognising the fact that diverse circumstances may exist before and during contingency events, which cause interruptions to international civil aviation services, and that adequate measures must be included in the same plans including access to designated aerodromes due to humanitarian causes in reply to specific events. The objective of the guidelines is to assist States to preserve international air traffic flow in a safe and orderly manner in case of temporary interruption of international air traffic services and related support services defined in regional air navigation plans (ANPs).

2.4 There may be information required to help to a more clarification of the plan, which may be included in an Appendix, as a map or other re-routings for flight planning purposes by users and radar services and to provide by adjacent ATS units, while aircraft are being re-routed.

2.5 Also, contingency plans should have some actions related to flight plans, their presentations and particularly, if necessary, establish special arrangements for over-flight authorizations that may operate through airspace of jurisdiction of another State. In case of re-routing of a flight, it could be not feasible that operators give the warning required with sufficient time in advance and in time to obtain clearance. In this connection, adequate bilateral or multilateral procedures should be established to face this type of situations.

2.6 After coordination and in accordance to all ATM community parties involved, the ATM Contingency Plan should be delivered to ICAO to evaluate whether or not the approval of the ICAO President of the Council is necessary. To this end, ICAO Regional Offices request their ATS Contingency Plans to States, in order to coordinate them with ICAO Headquarters and with civil aviation authorities of interested States.

3 **Conclusion**

3.1 States/Territories/International Organizations as responsible to ensure air traffic services in specific portions of the airspace and also to implement measures to ensure international civil aviation safety in case of potential ATS partial or total interruption. To this end, States/Territories/International Organizations must prepare promulgate and implement contingency plans in coordination with other States/Territories/International Organizations and airspace users and with the corresponding ICAO Regional Office.

3.2 The role and experience of ICAO in the field of contingency planning enable to initiate and coordinate with States/Territories/International Organizations the most adequate regional contingency measures to ensure ATM safety management in case of partial or total interruption of air navigation services. States/Territories/International Organizations are required to prepare and present to the corresponding ICAO Regional Office their contingency plan, in order to achieve regional harmonization of these plans.

4 **Suggested action**

4.1 The meeting is invited to take note of the information provided, and if such were the case:

- a) Consider Attachment D to Annex 11 shown in Appendix A; and
- b) Use the model shown in Appendix B for the preparation of their respective contingency plans.

APPENDIX A

Attachment D to Annex 11

ATTACHMENT D. MATERIAL RELATING TO CONTINGENCY PLANNING

(see 2.29)

1. Introduction

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

1.2 The purpose of the guidelines is to assist in providing for the safe and orderly flow of international air traffic in the event of disruptions of air traffic services and related supporting services and in preserving the availability of major world air routes within the air transportation system in such circumstances.

1.3 The guidelines have been developed in recognition of the fact that circumstances before and during events causing disruptions of services to international civil aviation vary widely and that contingency measures, including access to designated aerodromes for humanitarian reasons, in response to specific events and circumstances must be adapted to these circumstances. They set forth the allocation of responsibility among States and ICAO for the conduct of contingency planning and the measures to be taken into consideration in developing, applying and terminating the application of such plans.

1.4 The guidelines are based on experience which has shown, *inter alia*, that the effects of disruption of services in particular portions of airspace are likely to affect significantly the services in adjacent airspace, thereby creating a requirement for international coordination, with the assistance of ICAO as appropriate. Hence, the role of ICAO in the field of contingency planning and coordination of such plans is described in the guidelines. They also reflect the experience that ICAO's role in contingency planning must be global and not limited to airspace over the high seas and areas of undetermined sovereignty, if the availability of major world air routes within the air transportation system is to be preserved. Finally, they further reflect the fact that international organizations concerned, such as the International Air Transport Association (IATA) and the International Federation of Airline Pilots' Associations (IFALPA), are valuable advisers on the practicability of overall plans and elements of such plans.

2. Status of contingency plans

Contingency plans are intended to provide alternative facilities and services to those provided for in the regional air navigation plan when those facilities and services are temporarily not available. Contingency arrangements are therefore temporary in nature, remain in effect only until the services and facilities of the regional air navigation plan are reactivated and, accordingly, do not constitute amendments to the regional plan requiring processing in accordance with the "Procedure for the Amendment of Approved Regional Plans". Instead, in cases where the contingency plan would temporarily deviate from the approved regional air navigation plan, such deviations are approved, as necessary, by the President of the ICAO Council on behalf of the Council.

3. Responsibility for developing, promulgating and implementing contingency plans

3.1 The State(s) responsible for providing air traffic services and related supporting services in particular portions of airspace is (are) also responsible, in the event of disruption or potential disruption of these services, for instituting measures to ensure the safety of international civil aviation operations and, where possible, for making provisions for alternative facilities and services. To that end the State(s) should develop, promulgate and implement appropriate contingency plans. Such plans should be developed in consultation with other States and airspace users concerned and with ICAO, as appropriate, whenever the effects of the service disruption(s) are likely to affect the services in adjacent airspace.

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

3.3 Similarly, the responsibility for appropriate contingency action in respect of airspace where the responsibility for providing the services has been delegated by another State continues to rest with the State providing the services until, and unless, the delegating State terminates temporarily the delegation. Upon termination, the delegating State assumes responsibility for appropriate contingency action.

3.4 ICAO will initiate and coordinate appropriate contingency action in the event of disruption of air traffic services and related supporting services affecting international civil aviation operations provided by a State wherein, for some reason, the authorities cannot adequately discharge the responsibility referred to in 3.1. In such circumstances, ICAO will work in coordination with States responsible for airspace adjacent to that affected by the disruption and in close consultation with international organizations concerned. ICAO will also initiate and coordinate appropriate contingency action at the request of States.

4. Preparatory action

4.1 Time is essential in contingency planning if hazards to air navigation are to be reasonably prevented. Timely introduction of contingency arrangements requires decisive initiative and action, which again presupposes that contingency plans have, as far as practicable, been completed and agreed among the parties concerned before the occurrence of the event requiring contingency action, including the manner and timing of promulgating such arrangements.

4.2 For the reasons given in 4.1, States should take preparatory action, as appropriate, for facilitating timely introduction of contingency arrangements. Such preparatory action should include:

- a) preparation of general contingency plans for introduction in respect of generally foreseeable events such as industrial action or labour unrest affecting the provision of air traffic services and/or supporting services. In recognition of the fact that the world aviation community is not party to such disputes, States providing services in airspace over the high seas or of undetermined sovereignty should take appropriate action to ensure that adequate air traffic services will continue to be provided to international civil aviation operations in non-sovereign airspace. For the same reason, States providing air traffic services in their own airspace or, by delegation, in the airspace of (an)other State(s) should take appropriate action to ensure that adequate air traffic services will continue to be provided to international civil aviation operations concerned, which do not involve landing or take-off in the State(s) affected by industrial action;
- b) assessment of risk to civil air traffic due to military conflict or acts of unlawful interference with civil aviation as well as a review of the likelihood and possible consequences of natural disasters. Preparatory action should include initial development of special contingency plans in respect of natural disasters, military conflicts or acts of unlawful interference with civil aviation that are likely to affect the availability of airspace for civil aircraft operations and/or the provision of air traffic services and supporting services. It should

be recognized that avoidance of particular portions of airspace on short notice will require special efforts by States responsible for adjacent portions of airspace and by international aircraft operators with regard to planning of alternative routings and services, and the air traffic services authorities of States should therefore, as far as practicable, endeavour to anticipate the need for such alternative actions;

- c) monitoring of any developments that might lead to events requiring contingency arrangements to be developed and applied. States should consider designating persons/administrative units to undertake such monitoring and, when necessary, to initiate effective follow-up action; and
- d) designation/establishment of a central agency which, in the event of disruption of air traffic services and introduction of contingency arrangements, would be able to provide, 24 hours a day, up-to-date information on the situation and associated contingency measures until the system has returned to normal. A coordinating team should be designated within, or in association with, such a central agency for the purpose of coordinating activities during the disruption.

4.3 ICAO will be available for monitoring developments that might lead to events requiring contingency arrangements to be developed and applied and will, as necessary, assist in the development and application of such arrangements. During the emergence of a potential crisis, a coordinating team will be established in the Regional Office(s) concerned and at ICAO Headquarters in Montreal, and arrangements will be made for competent staff to be available or reachable 24 hours a day. The tasks of these teams will be to monitor continuously information from all relevant sources, to arrange for the constant supply of relevant information received by the State aeronautical information service at the location of the Regional Office and Headquarters, to liaise with international organizations concerned and their regional organizations, as appropriate, and to exchange up-to-date information with States directly concerned and States which are potential participants in contingency arrangements. Upon analysis of all available data, authority for initiating the action considered necessary in the circumstances will be obtained from the State(s) concerned.

5. Coordination

5.1 A contingency plan should be acceptable to providers and users of contingency services alike, i.e. in terms of the ability of the providers to discharge the functions assigned to them and in terms of safety of operations and traffic handling capacity provided by the plan in the circumstances.

5.2 Accordingly, States which anticipate or experience disruption of air traffic services and/or related supporting

services should advise, as early as practicable, the ICAO Regional Office accredited to them, 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.

5.3 Detailed coordination requirements should be determined by States and/or ICAO, as appropriate, keeping the above in mind. In the case of contingency arrangements not appreciably affecting airspace users or service provided outside the airspace of the (single) State involved, coordination requirements are naturally few or non-existent. Such cases are believed to be few.

5.4 In the case of multi-State ventures, detailed coordination leading to formal agreement of the emerging contingency plan should be undertaken with each State which is to participate. Such detailed coordination should also be undertaken with those States whose services will be significantly affected, for example by re-routing of traffic, and with international organizations concerned who provide invaluable operational insight and experience.

5.5 Whenever necessary to ensure orderly transition to contingency arrangements, the coordination referred to in this section should include agreement on a detailed, common NOTAM text to be promulgated at a commonly agreed effective date.

6. Development, promulgation and application of contingency plans

6.1 Development of a sound contingency plan is dependent upon circumstances, including the availability, or not, of the airspace affected by the disruptive circumstances for use by international civil aviation operations. Sovereign airspace can be used only on the initiative of, or with the agreement or consent of, the authorities of the State concerned regarding such use. Otherwise, the contingency arrangements must involve bypassing the airspace and should be developed by adjacent States or by ICAO in cooperation with such adjacent States. In the case of airspace over the high seas or of undetermined sovereignty, development of the contingency plan might involve, depending upon circumstances, including the degree of erosion of the alternative services offered, temporary reassignment by ICAO of the responsibility for providing air traffic services in the airspace concerned.

6.2 Development of a contingency plan presupposes as much information as possible on current and alternative routes, navigational capability of aircraft and availability or partial availability of navigational guidance from ground-based aids, surveillance and communications capability of adjacent air traffic services units, volume and types of aircraft to be accommodated and the actual status of the air traffic services, communications, meteorological and aeronautical information

services. Following are the main elements to be considered for contingency planning depending upon circumstances:

- a) re-routing of traffic to avoid the whole or part of the airspace concerned, normally involving establishment of additional routes or route segments with associated conditions for their use;
- b) establishment of a simplified route network through the airspace concerned, if it is available, together with a flight level allocation scheme to ensure lateral and vertical separation, and a procedure for adjacent area control centres to establish longitudinal separation at the entry point and to maintain such separation through the airspace;
- c) reassignment of responsibility for providing air traffic services in airspace over the high seas or in delegated airspace;
- d) provision and operation of adequate air-ground communications, AFTN and ATS direct speech links, including reassignment, to adjacent States, of the responsibility for providing meteorological information and information on status of navigation aids;
- e) special arrangements for collecting and disseminating in-flight and post-flight reports from aircraft;
- f) a requirement for aircraft to maintain continuous listening watch on a specified pilot-pilot VHF frequency in specified areas where air-ground communications are uncertain or non-existent and to broadcast on that frequency, preferably in English, position information and estimates, including start and completion of climb and descent;
- g) a requirement for all aircraft in specified areas to display navigation and anti-collision lights at all times;
- h) a requirement and procedures for aircraft to maintain an increased longitudinal separation that may be established between aircraft at the same cruising level;
- i) a requirement for climbing and descending well to the right of the centre line of specifically identified routes;
- j) establishment of arrangements for controlled access to the contingency area to prevent overloading of the contingency system; and
- k) a requirement for all operations in the contingency area to be conducted in accordance with IFR, including allocation of IFR flight levels, from the relevant Table of Cruising Levels in Appendix 3 of Annex 2, to ATS routes in the area.

6.3 Notification, by NOTAM, of anticipated or actual disruption of air traffic services and/or related supporting

services should be dispatched to users of air navigation services as early as practicable. The NOTAM should include the associated contingency arrangements. In the case of foreseeable disruption, the advance notice should in any case not be less than 48 hours.

6.4 Notification by NOTAM of discontinuance of contingency measures and reactivation of the services set forth in the regional air navigation plan should be dispatched as early as practicable to ensure an orderly transfer from contingency conditions to normal conditions.

APPENDIX B**MODEL****ATM REGIONAL CONTINGENCY PLAN
FOR CTA/UTA/FIR**

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

AIR TRAFFIC MANAGEMENT**ATS Responsibilities**

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

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

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

- a) Time and date of the beginning of the contingency measures;
- b) Airspace available for landing and overflying traffic and airspace to be avoided;
- c) Details of the facilities and services available or not available and any limits on ATS provision (e.g., ACC, APP, TWR and FIS), including an expected date of restoration of services if available;
- d) Information on the provisions made for alternative services;
- e) ATS contingency routes;
- f) Procedures to be followed by adjacent ATS units;
- g) Procedures to be followed by pilots; and
- h) Any other details with respect to the disruption and actions being taken that aircraft operators may find useful.

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

Separation

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

Level Restrictions

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

Other measures

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

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

TRANSITION TO CONTINGENCY SCHEME

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

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

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

TRANSFER OF CONTROL AND COORDINATION

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

PILOTS AND OPERATOR PROCEDURES

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

Pilots need to continuously guard the VHF emergency frequency 121.5 MHz and should operate their transponder at all times during flight, regardless of whether the aircraft is within or outside airspace where secondary surveillance radar (SSR) is used for ATS purposes. Transponders should be set on a discrete code assigned by ATC or select code 2000 if ATC has not assigned a code.

If an aircraft is intercepted by another aircraft, the pilot shall immediately:

- a) Follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with international procedures;
- b) Notify, if possible, the appropriate ATS unit;
- c) Attempt to establish radio communication with the intercepting aircraft by making a general call on the emergency frequency 121.5 MHz and 243 MHz if equipped; and
- d) Set transponder to code 7700, unless otherwise instructed by the appropriate ATS unit.

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

OVERFLIGHT APPROVAL

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

CONTINGENCY UNIT

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

Name of Agency:

Contact Person:

Telephone:

Fax:

Email:

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

The ICAO Regional Office will:

- a) closely oversight the situation and coordinate with all affected States/Territories/International Organizations and the IATA Regional Office, so as to ensure air navigation services are provided to international aircraft operations in the CAR Region;
- b) take note of any incidents reported and take appropriate action;
- c) provide assistance as required on any issue with the Civil Aviation Administrations involved in the contingency plan; and
- d) keep the President of the Council of ICAO, the Secretary General, C/RAO, D/ANB and C/ATM continuously informed on developments, including activation of the contingency plan.

CONTINGENCY ROUTING SCHEME

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

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

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

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

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