



International Civil Aviation Organization

The First Meeting of the Ad Hoc Afghanistan Contingency Group Meeting (AHACG/1)

Kuala Lumpur, Malaysia, 11-12 September 2014

Agenda Item 4: Civil/Military cooperation, contingency promulgation and implementation

CONTINGENCY OPERATION PROMULGATION AND IMPLEMENTATION

(Presented by the Secretariat)

SUMMARY

This paper presents information on potential contingency scheme promulgation and implementation issues that should be considered, prior to the endorsement of any such scheme.

1. INTRODUCTION

1.1 Annex 15 Aeronautical Information Services provides the requirements for promulgation of any major ATM changes, including temporary contingency arrangements.

2. DISCUSSION

Contingency Route and Procedure Promulgation

2.1 The effective date of any contingency routes and associated procedures must be an AIRAC date, as required by Annex 15. Promulgation must be by AIP Supplement (AIP SUP) issued **not less than 56 days before the effective date**, in order to ensure that updated FMS data can be loaded into aircraft in readiness. **Figure 1** demonstrates the promulgation timeline. NOTAM should only be used to define contingency routes in extreme circumstances arising at very short notice.

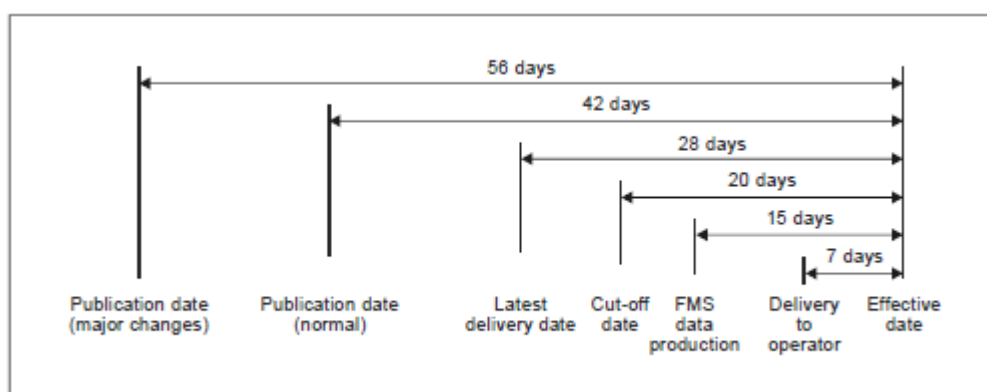


Figure 1: Processing Cycle for Airborne Navigation Databases

2.2 In the event that extreme circumstances require promulgation of contingency routes by NOTAM, it should be recognized that few States have implemented graphical NOTAM. An internet resource for hosting graphical representations of contingency routes and airspace should be arranged.

2.3 **Table 1** lists a selection of potentially useable AIRAC dates, and the latest promulgation date for each.

Latest Promulgation Date	AIRAC Date
18 September 2014	13 November 2014
16 October 2014	11 December 2014
13 November 2014	8 January 2015 ¹
11 December 2014	5 February 2015
8 January 2015	5 March 2015

Table 1: AIRAC Dates and Associated Latest Promulgation Dates (Annex 15/Doc 8126)

2.4 In the case of contingency routes it is not intended that flights on the routes are planned unless the contingency situation arises. The operational activation of the ATS routes should therefore be triggered by NOTAM. This must be clearly stated in any AIP SUP.

2.5 The contingency routes should be assigned either ATS route names from those allocated to the relevant Regional Office or, if so determined by ICAO and other relevant stakeholders, ATS route names that are clearly distinct from designators used for normal operations. In the latter case, advice on format, length and sequence of characters acceptable for flight management systems (FMS) must be sought from aircraft manufacturers or aeronautical information providers such as Jeppesen.

2.6 Details of contingency routes published in any AIP SUP must be in accordance with the requirements of Annex 15 ENR 3.2 – Appendix 1 requirements for Upper ATS routes (**Attachment A**). Lower ATS routes need not be considered for this particular contingency situation.

Contingency Procedures

2.7 **Attachment B** provides a draft contingency plan template which may be used as a source of initial direction in contingency procedure development and, adjusted as necessary, a template for the final, formal contingency plan. It may be adapted for use in drafting the AIP SUP referred to above.

Consultation and Communication

2.8 No contingency arrangement can be successful unless it has been consulted with all affected stakeholders, including *inter alia*, airlines, military, ATC units, and aerodrome operators. Each involved State must ensure that there is an adequate effort to identify potential problems that can be addressed in designing the contingency scheme, or mitigated as part of a safety analysis. In addition, such consultation improves buy-in and conformance.

2.9 Communication of any inter-regional contingency scheme that may disrupt passenger and airline movements is necessary to political decision-makers and also to the media if necessary. Each State must evaluate the potential consequences of the contingency operation and reassure/inform as required to reduce the enquiries and any confusion that result from an actual implementation.

¹ ICAO Doc 8126 – Aeronautical Information Services Manual States *It is recommended that the AIRAC cycle date occurring during the 28-day period from 21 December to 17 January inclusive not be used for AIRAC effective dates for the introduction of significant operational changes.*

Checklist of Implementation Activities

2.10 The following checklist is not exhaustive, and is intended to provide the meeting with some initial direction in its consideration of activities required to support the contingency planning process:

- Draft Contingency Plan (using the template provided?);
- Design contingency routes and Flight Level Allocation Scheme (FLAS);
 - Include determination of minimum aircraft communication/navigation capability requirements.
- Determine coordination and communication procedures;
- Determine minimum longitudinal, lateral and vertical separations (aircraft spacing, where no ATC service is provided);
- Determine capacity of contingency airspace; both the degraded airspace, and the airspace used for alternative routes.
 - A simplified method for determination of sector capacity is provided in ICAO Doc 9971 – Manual on Collaborative Air Traffic Flow Management, and is reproduced at **Attachment C**.
- Conduct traffic simulation of ATS contingency routes and, in the case of alternative airspace, normal traffic. The simulation should preferably be a fast-time simulation using known/anticipated traffic to determine whether demand will exceed capacity, and any mitigations.
- Conduct real-time simulation of contingency procedures using known/anticipated traffic demand, and any mitigations.
- Finalize procedures.
- Conduct Safety Analysis.
- Finalize Contingency Plan, related LOA or other agreement instruments, and promulgate AIP SUP.
- Prepare Draft trigger NOTAMs.
- Conduct simulator training of operational ATC staff.
- Conduct regular review of contingency plan, and refresher simulator training of ATC staff.

2.11 Periods of transition to/from contingency operations represent the period of most significant risk. It is critical that in any real-time simulation training and testing the transitions from normal operations to contingency operations, and the transition from contingency operations back to normal operations, is thoroughly tested and understood.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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Annex 15 Appendix 1 (excerpt): Upper ATS Routes and Area Navigation Routes

Upper ATS Routes

Detailed description of upper ATS routes, including:

- 1) route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
- 3) upper and lower limits and airspace classification;
- 4) lateral limits;
- 5) direction of cruising levels;
- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, and any navigation specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

Area Navigation Routes

Detailed description of area navigation (RNAV) routes, including:

- 1) route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) in respect of waypoints defining an area navigation route, additionally as applicable:
 - a) station identification of the reference VOR/DME;
 - b) bearing to the nearest degree and the distance to the nearest tenth of a kilometre or tenth of a nautical mile from the reference VOR/DME, if the waypoint is not collocated with it; and
 - c) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft);
- 3) geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between defined end-points and distance between each successive designated significant point;
- 4) upper and lower limits and airspace classification;
- 5) direction of cruising levels;

- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, and any navigation specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

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Air Traffic Management Contingency Plan

[ATS UNIT NAME]

Version X.X

Effective: [DD Month YYYY]

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FOREWORD

(EXAMPLE)

1.1 This Contingency Plan forms part of the overall national contingency planning for [STATE], in accordance with the provisions of Annex 11 to the Convention on Civil Aviation, ICAO Doc 9462 *ATS Planning Manual* and Doc 9673 *Asia and Pacific Regions Air Navigation Plan*, and the *Asia/Pacific Region ATM Contingency Plan*. The Plan, and any activation of the Plan, is authorized by [AUTHORITY].

1.2 The Plan provides for the safe continuation of international air traffic through the [XXXX] FIR during periods when ATS may be disrupted or unavailable, or when airspace may be affected by volcanic ash cloud, radioactive cloud, severe weather events or military activity.

1.3 The Plan has been developed in close cooperation and collaboration with airspace users, military authorities and civil aviation authorities responsible for adjacent FIRs.

1.4 The plan will be activated by NOTAM as far in advance as is practicable. In the event that such prior notification is impracticable the PLAN will be activated by the designated authority using the most expeditious alternative means available.

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ATM CONTINGENCY PLAN FOR [ATS UNIT]

1. OBJECTIVE

1.1 The Air Traffic Management (ATM) Contingency Plan for the [ATS UNIT] details arrangements to ensure the continued safety of air navigation in the event of partial or total disruption of air traffic services in the [AIRSPACE/SERVICE DESCRIPTION] in accordance with ICAO Annex 11 – *Air Traffic Services*, Chapter 2, paragraph 2.29. The Contingency Plan provides the ATS procedures and contingency route structure using existing airways in most cases that will allow aircraft operators to transit the [AIRSPACE DESCRIPTION].

1.2 [DESCRIBE HERE THE SCOPE OF THE PLAN, E.G. IF THE PLAN RELATES ONLY TO THE TRANSIT OF INTERNATIONAL AIR TRAFFIC]

1.3 xxxxx

2. [ATS UNITS, CENTRES, STATES AND FIRS AFFECTED]

2.1 In the event that the [AUTHORITY] activates this Contingency Plan, the civil aviation authorities of the [XXXX ADJACENT ATS UNITS, CENTRES, STATES OR FIRS AFFECTED] will be notified in accordance with the [LETTER OF AGREEMENT, MEMORANDUM OF UNDERSTANDING OR OTHER CONTINGENCY ARRANGEMENT]. The adjacent [ATS UNITS, CENTRES STATES OR FIRS] directly affected by this Contingency Plan are as follows:

- a) [STATE]

[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]
- b) [STATE]

[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]
- c) [STATE]

[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]
- d) [STATE]

[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]
- e) [STATE]

[FIR/ACC/ATS UNIT]
[FIR/ACC/ATS UNIT]

2.2 The contact details of the civil aviation authorities, organizations and ATS units are contained in **Appendix X**. These details should be kept up to date and relevant information provided to the [AUTHORITY] as soon as practicable.

3. MANAGEMENT OF THE CONTINGENCY PLAN

3.1 The contingency measures set out in this Plan are applicable in cases of foreseeable events caused by unexpected interruptions in ATS caused by natural occurrences or other circumstances, which, in one way or another, may impair or totally disrupt the provision of ATS and/or of the related support services in the [AIRSPACE].

3.2 The following arrangements have been put in place to ensure that the management of the Contingency Plan provides for [INTERNATIONAL IF SO LIMITED] flights to proceed in a safe and orderly fashion through the Upper Airspace of the XXXXX FIR.

Central Coordinating Committee

3.3 As soon as practicable in advance of, or after a contingency event has occurred, the [AUTHORITY] shall convene the Central Coordinating Committee (CCC) comprised of representatives from:

- 1) [REGULATORY AUTHORITY OR ORGANIZATION]
- 2) [AIR NAVIGATION SERVICE PROVIDER]
- 3) [MILITARY AUTHORITY]
- 4) [OTHER RELEVANT NATIONAL AUTHORITY]
- 5) [AIRSPACE USER REPRESENTATIVE/S]
- 6) [AIRPORT AUTHORITIES]
- 7) [METEOROLOGICAL AUTHORITY]
- 8) [AIRPORT AUTHORITY]
- 9) [OTHER RELEVANT AUTHORITIES/AGENCIES]

3.4 The CCC shall oversee the conduct of the Contingency Plan and in the event that the [SERVICE] is disrupted for an extended period, make arrangements for and facilitate the temporary relocation of the [SERVICE] to the [ALTERNATE FACILITY OR ATS UNIT/CENTRE] and the restoration of [SERVICE]. The terms of reference for the CCC will be determined by the [AUTHORITY].

3.5 Contact details of the members of the CCC are provided in **Appendix X**.

Plan Testing and Review

Notification to the CCC

ATM Operational Contingency Group

3.6 The ATM Operational Contingency Group (AOCG) will be convened by the CCC with a primary responsibility to oversee the day to day operations under the contingency arrangements, and coordinate operational ATS activities, 24 hours a day, throughout the contingency period. The terms of reference of the AOCG will be determined by the CCC. The AOCG will include any necessary specialist personnel from the following disciplines:

- Air Traffic Control
- Aeronautical Telecommunication (COM)
- Aeronautical Meteorology (MET)
- Aeronautical Information Services (AIS)
- ATS equipment maintenance service provider

The mission of the AOCG shall include:

- i) review and update of the Contingency Plan as required;
- ii) keep up to date at all times of the contingency situation;
- iii) organize contingency teams in each of the specialized areas;
- iv) keep in contact with and update the ICAO Asia and Pacific Regional Office, the IATA Regional Office and other airspace users;
- v) exchange up-to-date information with the adjacent ATS authorities concerned to coordinate contingency activities;
- vi) notify the designated organizations of the contingency situation sufficiently in advance and/or as soon as possible thereafter;
- vii) take necessary action for issuing NOTAMs according to this plan or as otherwise determined by the particular contingency situation. Where the contingency situation is sufficiently foreseeable the relevant NOTAMs will be issued 48 hours in advance of the contingency event s. NOTAM templates are provided in **Appendix X**.
- viii) maintain an activity log using the form in Appendix X

4. CONTINGENCY ROUTE and FLIGHT LEVEL STRUCTURE

4.1 In the event of disruption of the ATC services provided by [ATS UNIT, CENTRE OR FIR], contingency routes will be specified to ensure safety of flight and to facilitate limited flight operations commensurate with the prevailing conditions. Existing ATS routes form the basis of the contingency routes to be used, and a flight level allocation scheme (FLAS) introduced to minimize potential points of conflict and to limit the number of aircraft operating simultaneously in the system under reduced air traffic services. The contingency route structure [FOR INTERNATIONAL FLIGHTS if necessary] is detailed in **Appendix X**. Additional contingency routes may be introduced as and when circumstances require, such as in the case of volcanic ash cloud, radioactive cloud or severe weather event.

4.2 [INSERT IF RELEVANT In regard to domestic operations, if circumstances dictate,

all flights shall be temporarily suspended until a full assessment of the prevailing conditions has been determined and sufficient air traffic services restored. A decision to curtail or restart domestic operations will be made by the CCC].

4.3 Aircraft on long-haul international flights and special operations (e.g. Search and Rescue (SAR), State aircraft, humanitarian flights, etc), shall be afforded priority for levels at FL290 and above. Domestic and regional operators should plan on the basis that FL290 and above may not be available.

4.4 International operators affected by the suspension of all operations from [STATE OR FIR] airports will be notified by the relevant airport authority when operations may be resumed, and flight planning information will be made available pertaining to that airport. International flights who have received such approval may be required to flight plan via domestic routes to join international contingency routes.

4.5 International operators may elect to avoid the [AIRSPACE] by using ATS routes [DESCRIBE ATS ROUTES OR ADJACENT AIRSPACE].

5. AIR TRAFFIC MANAGEMENT AND CONTINGENCY PROCEDURES

Reduced ATS and Provision of Flight Information Services (FIS)

5.1 During the contingency period ATS including ATC may not be available, particularly communications and ATS surveillance services. In cases where services are not available, a NOTAM will be issued providing the relevant information, including an expected date and time of resumption of service. The contingency plan provides for limited flight information and alerting services to be provided by [ATS UNIT/S OR CENTRE/S].

5.2 [DESCRIBE ANY DIVISION OF RESPONSIBILITY OF ADJACENT ATS UNITS OR CENTRES FOR SERVICE PROVISION IN THE CONTINGENCY AIRSPACE]. [DESCRIBE THE LEVEL OF SERVICE AVAILABLE]. A chart depicting the airspace arrangement is provided in **Appendix X**.

ATS Responsibilities

5.3 During the early stages of a contingency event, ATC may be overloaded and tactical action taken to reroute aircraft on alternative routes not included in this Plan.

5.4 In the event that ATS cannot be provided in the [AIRSPACE] a NOTAM shall be issued indicating the following:

- a) time and date of the beginning of the contingency measures;
- b) airspace available for landing and overflying traffic and airspace to be avoided;
- c) details of the facilities and services available or not available and any limits on ATS provision (e.g., ACC, APPROACH, TOWER and FIS), including an expected date of restoration of services if available;
- d) information on the provisions made for alternative services;
- e) any changes to the ATS contingency routes contained in this Plan;

- f) any special procedures to be followed by neighbouring ATS units not covered by this Plan;
- g) any special 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.

5.5 In the event that the [XXXX International NOTAM Office is unable to issue the NOTAM, the alternate International NOTAM Office at [INSERT ALTERNATE] and/or [INSERT ALTERNATE] will take action to issue the contingency NOTAM upon notification by the [AUTHORITY].

5.6 Maintain a record using the form in Appendix X

Aircraft Spacing

5.7 Aircraft 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).

5.8 The longitudinal separation will be XX minutes/miles. However, this may be reduced to XX minutes/miles in conjunction with application of the Mach number technique where authorized by the [AUTHORITY] and agreed in the appropriate LOA or other Contingency Arrangement.

5.9 The route structure provides for lateral separation of XX NM and in cases where this is less, and for crossing routes, a minimum vertical separation of XX ft will be applied.

5.10 In the event that [ATS UNIT, CENTRE, FIR OR STATE] ATC services are terminated, a Flight Level Allocation Scheme (FLAS) utilizing, where necessary, RVSM separation minimum shall apply. Non RVSM-approved aircraft shall not operate in contingency airspace. Details of the flight level assignment on the contingency routes are contained in Appendix 1D.

Flight level restrictions

5.11 Where possible, aircraft on long-haul international flights shall be afforded priority for cruising levels.

Airspace Classifications

5.12 Depending on the degree of disruption airspace classifications may be changed to reflect the reduced level of services. Changes to airspace classification will be notified by NOTAM.

Aircraft position reporting

5.13 The primary means of communication will be by VHF or HF radio except for aircraft operating Automatic Dependent Surveillance - Contract (ADS-C) and Controller-Pilot Data Link Communications (CPDLC) systems. When CPDLC has been authorized for use by the relevant ATC authority this will become the primary means of communication, with HF as secondary. ADS-C shall replace any requirement for voice position reporting to ATC for aircraft so equipped, and in this case CPDLC or HF will be the secondary means of communication. Traffic Information Broadcast by Aircraft (TIBA) procedures shall apply in [DESCRIBE AIRSPACE/CIRCUMSTANCES]. Details of communications requirements are provided in **Appendix X**.

VFR operations and other exclusions/exemptions, etc

5.14 VFR flights shall not operate in the [DESCRIBE AIRSPACE] during contingency operations, except in special cases such as State aircraft, Medivac flights, and any other essential flights as authorized by the [AUTHORITY].

Procedures for ATS Units

5.15 The ATS units providing ATC services will follow their unit emergency operating procedures and activate the appropriate level of contingency procedures in line with the operational Letter of Agreement. These procedures include the following:

- a) Where ATS provided by the [ATS UNIT, CENTRE, FIR OR STATE] the may be reduced or disrupted by a short-notice contingency event, ATC will inform pilots of the emergency condition and advise if it is likely that the ACC will be evacuated and ATS suspended. In the event of it becoming necessary to evacuate the ACC building, the unit evacuation procedures will be activated, and time permitting, controllers will make an emergency evacuation transmission on the radio frequency in use providing pilots with alternate means of communication;
- b) during the period the contingency procedures are in effect, flight plan and other aircraft movement messages must continue to be transmitted by operators to the [ATS UNIT, CENTRE, FIR OR STATE] via the AFTN using normal procedures;
- c) on notification by [AUTHORITY], the ATS authorities operating the [NEIGHBOURING ATS UNITS, CENTRES, FIRS OR STATES] will activate the contingency procedures in accordance with their respective operational Letter of Agreement or other Contingency Arrangement;
- d) prior to entry to the [AFFECTED AIRSPACE] during contingency operations prior authorization must be obtained from [AUTHORITY], and flights must comply with the ATC clearance and communications instructions issued by the ATC authority responsible for the airspace immediately adjacent to the contingency airspace.
- e) Coordination of aircraft boundary estimates and flight levels by the adjacent ATC authority responsible for aircraft entering the [AFFECTED AIRSPACE] shall be in accordance with the respective operational Letter of Agreement or other Contingency Arrangement.
- f) the ACC responsible for aircraft entering the [AFFECTED AIRSPACE] will instruct pilots to maintain the last flight level assigned and speed (MACH number if applicable) while operating in the [AFFECTED AIRSPACE];
- g) the ACC responsible for aircraft entering the [AFFECTED AIRSPACE] will not authorize any change in flight level or speed (MACH number, if applicable unless specifically authorized under the operational Letter of Agreement or Contingency Arrangement.
- h) the ACC responsible prior to aircraft entering the [AFFECTED AIRSPACE] will inform aircraft that they must establish contact with the first ATS unit

after transiting the [AFFECTED AIRSPACE] not less than 10 minutes before the estimated time of entry to the [NEXT AIRSPACE/FIR],

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- i) the ACC responsible prior to aircraft entering the Jakarta FIR will inform aircraft that they must communicate with the next (downstream) ATC unit 10 minutes before the estimated time of entry into the next FIR; and
- j) aircraft may also chose to avoid the [AFFECTED AIRSPACE], and the controlling authorities of the adjacent FIRs concerned will promulgate any necessary alternative contingency routes by NOTAM.
- k) [DETAIL ANY ROUTE OR AIRSPACE –SPECIFIC ARRANGEMENTS]

Transition to and from contingency scheme

5.16 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 this Contingency Plan, as well as those which may be promulgated by a State via NOTAM or AIP.

5.17 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.

5.18 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

5.19 The transfer of control and communication should be at the common FIR boundary between ATS units unless there is mutual agreement between adjacent ATS units and authorization given to use alternative transfer of control points. These will be specified in the respective LOAs.

5.20 The ATS providers concerned should review the effectiveness of current coordination requirements and procedures in light of contingency operations or short notice of airspace closure, and make any necessary adjustments to the Contingency Plan and LOAs.

6. PILOTS AND OPERATOR PROCEDURES

Filing of flight plans

6.1 Flight planning requirements detailed in [STATE] AIP continue to apply during contingency operations, except where modified by the ATS route and requested flight levels detailed in this plan.

Overflight approval

6.2 Aircraft operators must obtain over-flight approval from the [AUTHORITY] prior to operating flights through the [AFFECTED AIRSPACE]. During the period of activation of this

Contingency Plan the adjacent ATS authority will provide normal ATC clearances for aircraft to enter the Jakarta FIR on the basis that operators have obtained prior approval, and the responsibility remains with the operator to ensure such approval has been obtained.

CNS Capability

Pilot operating procedures

- 6.3 Pilots shall continue to make or broadcast routine position reports in line with normal ATC reporting procedures.
- 6.4 Pilots of aircraft operating in the [AFFECTED AIRSPACE] during contingency operations shall comply with the following procedures:
- a) all aircraft proceeding along the ATS routes established in this Contingency Plan will comply with the instrument flight rules (IFR) and will be assigned a flight level in accordance with the flight level allocation scheme applicable to the route(s) being flown as specified in Appendix 1D;
 - b) flights are to flight plan using the Contingency Routes specified in Appendix 1D, according to their airport of origin and destination;
 - c) aircraft are to operate as close as possible to the centre line of the assigned contingency route;
 - d) a continuous communications watch shall be maintained on the specified contingency frequency as specified in Appendix 1F
 - e) aircraft position reports and other information as necessary shall be broadcast in accordance with TIBA procedures defined in AIP [STATE];
 - f) aircraft navigation and anti-collision lights shall be displayed;
 - g) except in cases of emergency or for reasons of flight safety, pilots are to maintain during their entire flight within [AFFECTED AIRSPACE], the last assigned flight level, mach number and SSR transponder code. If no transponder code has been assigned, aircraft shall squawk code [XXXX].
 - h) aircraft are to reach the flight level last assigned by the responsible ACC at least [XX] minutes before entering the [AFFECTED AIRSPACE] or as otherwise instructed by the ATC unit acting in accordance with the operational Letter of Agreement or other Contingency Arrangement;

- i) pilots are to include in their last position report prior to entering the [AFFECTED AIRSPACE], the estimated time over the entry point of the [AFFECTED AIRSPACE] and the estimated time of arrival over the relevant exit point;
- j) pilots are to contact the next adjacent ACC as soon as possible, and in any event not less than ten (10) minutes before the estimated time of arrival over the relevant exit point from the [AFFECTED AIRSPACE];
- k) pilots are to strictly adhere to the ICAO Traffic Information Broadcasts by Aircraft (TIBA), reproduced in **Appendix X**, on the specified VHF and HF frequencies listed in **Appendix X**. When necessitated by emergency conditions or flight safety requirements, pilots are to transmit blind on these frequencies, their current circumstances and the commencement and completion of any climb and descent or deviation from the cleared contingency route;
- l) whenever emergencies and/or flight safety reasons make it impossible to maintain the flight level assigned for transit of [AFFECTED AIRSPACE], pilots are to climb or descend well to the right of the centerline of the contingency route, and if deviating outside the [AFFECTED AIRSPACE], to immediately inform the ACC unit responsible for that airspace. Pilots are to broadcast details of any level change including aircraft identification, aircraft position and route, vacated flight level, intended flight level, flight level passed and cruising flight level maintained on [FREQUENCY];
- m) pilots are to maintain own longitudinal separation of 15 minutes from preceding aircraft at the same cruising level; and
- n) not all operational circumstances can be addressed by this Contingency Plan and pilots are to maintain a high level of alertness when operating in the contingency airspace and take appropriate action to ensure safety of flight.

Interception of civil aircraft

6.5 Pilots need to be aware that 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.

6.6 Pilots are to comply with instructions given by the pilot of the intercepting aircraft. In such circumstances, the pilot of the aircraft being intercepted shall broadcast information on the situation.

6.7 If circumstances lead to the closure of the [AFFECTED AIRSPACE] and no contingency routes are available, aircraft will be required to remain clear of the [AFFECTED AIRSPACE]. As much warning as possible will be provided by the appropriate ATS authorities in the event of the complete closure airspace..

6.8 Pilots shall 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 the last discrete code assigned by ATC or select code [XXXX] if no code was assigned.

7. COMMUNICATION PROCEDURES

Degradation of Communication - Pilot Radio Procedures

7.1 When operating within the contingency airspace, pilots should use normal radio communication procedures where ATS services are available. These will be in accordance with the communication procedures in this Plan or as otherwise notified by NOTAM.

7.2 If communications are lost unexpectedly on the normal ATS frequencies, pilots should try the next applicable frequency, e.g. if en-route contact is lost then try the next appropriate frequency, that is, the next normal handover frequency. Pilots should also consider attempting to contact ATC on the last frequency where two-way communication had been established. In the absence of communication with ATC, the pilot should continue to make routine position reports on the assigned frequency, and also broadcast positions in accordance with the TIBA procedures.

Communication frequencies

7.3 A list of frequencies to be used for the contingency routes and the ATS units providing FIS and air-ground communication monitoring for the Jakarta FIR is detailed at Appendix 1F

8. AERONAUTICAL SUPPORT SERVICES

Aeronautical Information Services (AIS)

8.1 [DETAIL THE AVAILABILITY OR ALTERNATE ARRANGEMENTS FOR AIS]

8.2 XXXXXXXXXX.

Meteorological Services (MET)

8.3 [DETAIL THE AVAILABILITY OF METEOROLOGICAL SERVICES AND THE METHODS OF DISTRIBUTION OF INFORMATION DURING CONTINGENCY OPERATIONS.]

8.4 XXXXXXXXXX..

9. SEARCH AND RESCUE

Notification and Coordination

9.1 The SAR authority responsible for the [AFFECTED AIRSPACE] is the [XXXXXX] Rescue Coordination Centre (RCC)

IDD	XXXXXXXXXXXX
Fax	XXXXXXXXXXXX
AFTN	XXXXXXXXXX

9.2 [INSERT SAR ALERTING ARRANGEMENTS AS NECESSARY. MAY INCLUDE CONSIDERATION OF NEIGHBOURING ATS UNITS PROVIDING FULL FLIGHT FOLLOWING, OR LIMITED TO RESPONSE TO IN-FLIGHT EMERGENCIES].

9.3 XXXXXXXX

SUB-PLANS

LIST OF APPENDICES

Appendix X – Contact Details

Appendix X – Coordinating Bodies

Appendix X – Specimen NOTAMs

Appendix X – International Route Structure for Jakarta
During Total Disruption

Appendix X – Chart of Contingency Routes

Appendix X – Contingency Frequencies for Control
and/or Flight Monitoring

Appendix X – Flight Planning

Appendix X – Traffic Information Broadcasts by
Aircraft Procedures

Appendix X – ICAO Interception Procedures

Appendix X – Recording and Reporting Form

DETERMINING SECTOR CAPACITY

Note.— Appendix D provides an example of a simplified methodology for determining sector capacity at an ACC. This methodology is based on the scientific process developed by the Federal Aviation Administration for establishing the sector capacity.

1. Sector capacity is determined using the average sector flight time in minutes from 7 a.m. to 7 p.m., Monday through Friday, for any 15-minute time period.

2. The formula used to determine sector capacity is:

$$\frac{(\text{average sector flight time in minutes}) \times (60 \text{ seconds})}{36 \text{ seconds}} = \text{sector capacity value}_{\text{optimum}}$$

3. The steps to follow are:

- a) manually monitor each sector, observe and record the average flight time in minutes;
- b) after that time is determined:
 - 1) multiply that value by 60 seconds in order to compute the average sector flight time in seconds;
 - 2) then divide by 36 seconds because each flight takes 36 seconds of a controller's work time; and
 - 3) the result is the sector capacity value (optimum).

4. Adjustments: the optimum value for a sector is then adjusted for factors such as:

- a) airway structure;
- b) airspace volume (vertically and laterally);
- c) complexity;
- d) climbing and descending traffic;
- e) terrain, if applicable;
- f) number of adjoining sectors that require interaction;
- g) military operations; or
- h) use Table II-App D-1.

Table II-App D-1. Simplified method

<i>Average sector flight time (in minutes)</i>	<i>Optimum sector capacity value (aircraft count)</i>
3	5
4	7
5	8
6	10
7	12
8	13
9	15
10	17
11	18
12 or more	18
