

Section 9 Emergency Procedures

Chapter 1 Aircraft Emergencies

1 Introduction

- 1.1 The circumstances of each aircraft emergency can vary to such an extent that detailed instructions cannot be given for every situation.
- 1.2 The procedures outlined in this section are intended as a general guide and controllers must use their own judgement when handling a particular emergency.
- 1.3 Procedures described in CATS-ATS Standards and Procedures may also be varied to meet an emergency situation, however, any reduction in separation, necessary to cope with an emergency, should be restored as soon as possible. Special arrangements, developed locally for handling emergencies, shall be documented in the Station Standing Instruction Manual.

2 Controllers Responsibility

- 2.1 Controllers must always be alert to the possibility of an aircraft emergency. A quick reaction to the situation may be necessary in certain circumstances; however, calm co-ordinated actions are essential in all situations.
- 2.2 Controllers shall offer as much assistance as possible to any aircraft which is considered to be in an emergency situation.
- 2.3 An emergency may require alerting action to be taken immediately or it may develop to that point later.
- 2.4 The shift supervisor or Officer-In-Charge, if available, should be informed as soon as practicable and, where more than one ATSU is involved, complete co-ordination must be maintained between units.
- 2.5 The supervisor or senior member of the shift should take charge of the operation. Controllers must be ready to give all possible assistance to the ACC, ARCC and other ATSUs.
- 2.6 In circumstances where an aircraft is experiencing an emergency or has declared minimum fuel, or in any other situation wherein the safety of the aircraft is not assured, the type of emergency and the circumstances experienced by the aircraft shall be reported by the transferring unit to the accepting unit and any other ATS unit that may be concerned with the flight and to the associated rescue coordination centres, if necessary.
- 2.7 ATSU shall, as necessary, use all available communication facilities to endeavour to establish and maintain communication with an aircraft in a state of emergency, and to request news of an aircraft.

3 Recognising an Emergency Situation

- 3.1 When not directly advised by the pilot of an emergency situation on board, a Controller may suspect that an aircraft is in an emergency situation when:

- a) Radio contact is not established at the time it is expected to be established;

- b) Radio contact is lost;
 - c) A pilot makes a report about the malfunctioning of the aircraft or of unusual behaviour of persons on board;
 - d) The erratic behaviour of an aircraft or radar blip is observed;
 - e) The aircraft is overdue at an aerodrome; or
 - f) The pilot reports that the aircraft is short of fuel.
- 3.2 If the controller is in radio contact with the aircraft he should ask the pilot if he wishes to declare an emergency and, if not specified by the pilot, the class of emergency being declared.
- 3.3 More positive indications that an aircraft is in an emergency are described in the following paragraphs.

4 Distress and Urgency Messages

- 4.1 Pilots have been advised that, in the event of an emergency situation, an ATSU can only provide the necessary priority and handling if the controller is made aware of the emergency by the crew's formal declaration on the RTF. Pilots have also been advised that the extent to which an ATSU will be able to offer assistance will depend on the amount of information provided and on its being transmitted at the earliest opportunity. Furthermore, it is preferable that if pilots believe that they are facing an emergency situation, to declare it as early as possible and cancel it later if they decide that the situation allows.
- 4.2 There are two classes of emergency message:
- a) Distress: A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance; transmitted as MAYDAY, MAYDAY, MAYDAY; or
 - b) Urgency: A condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but which does not require immediate assistance; transmitted as PAN-PAN, PAN-PAN, PAN-PAN.
- 4.3 The message will contain as many as possible of the following items:
- a) Name of the station addressed (time and circumstances permitting);
 - b) Identification of the aircraft;
 - c) Nature of the emergency;
 - d) Intention of the person in command;
 - e) Present position, level and heading;
 - f) Qualification of the pilot e.g. Student, IMC or full instrument rating (urgency messages);
 - g) As much other information as time permits.

- 4.4 When a pilot has given certain items of information normally associated with an emergency message but has not prefixed the transmission with 'MAYDAY' or 'PAN', the controller is to ask the pilot if he wishes to declare an emergency. If the pilot declines to do so, the controller may, if he thinks it appropriate, carry out the necessary actions as if the pilot had declared an emergency.
- 4.5 If a controller considers that another ATSU may be able to give more assistance and, in the circumstances, it is reasonable to do so, the pilot should be asked to change frequency. Pilots should ensure that they prefix the initial message on the new frequency with 'MAYDAY' or 'PAN' to confirm that the emergency situation still exists.

5 Indication on Radar

- 5.1 Pilots may select the following SSR transponder codes to indicate an emergency situation:-

Code 77 (7700) - Aircraft Emergency

Code 76 (7600) - Radio Failure

Code 75 (7500) - Hijack or other act of violence

Note: *Flight crew may also activate the appropriate emergency and /or urgency capability of ADS or transmit the appropriate emergency message via CPDLC.*

- 5.2 To indicate an emergency condition pilots are encouraged to select Code 7700 as soon as is practicable after declaring an emergency situation, and having due regard for the overriding importance of controlling aircraft and containing the emergency. However, if the aircraft is already transmitting a discrete code and receiving an air traffic service, that code may be retained at the discretion of either the pilot or the controller.
- 5.3 During communications between ATSU (air traffic service unit) and aircraft in the event of emergency, Human Factors principles shall be implemented.

6 Emergency Aircraft - Selection of Controlling Unit

- 6.1 On receipt of information which indicates that an aircraft is in an emergency, the controller must decide whether or not to transfer the aircraft to another ATSU or sector. The choice will depend upon the circumstances and no hard and fast rules apply. The following guidance material may help controllers to make this decision:-

6.2 Retaining Control

- 6.2.1 If the controller can offer immediate assistance the aircraft should normally be retained on the frequency. If necessary impose a radio silence on other aircraft or transfer them to another frequency.
- 6.2.2 Alternatively it may be more expedient to transfer the emergency aircraft to another frequency, particularly if a radio silence would endanger other traffic.
- 6.2.3 The aircraft should be retained on the original frequency if it is unreasonable to ask the pilot, or the pilot is not prepared to change frequency. The controller may be able to relay instructions and information from other ATSUs or sectors' to the pilot.

6.3 Transferring Control

6.3.1 If a controller considers that another unit or sector may be able to give more assistance than he can himself, and under the circumstances it is reasonable to ask the pilot to change frequency, he shall either:

- a) Consult the supervisor or Officer-in-Charge and transfer the aircraft according to his instructions; or
- b) Alert the nearest suitable ATSU and transfer the aircraft to a common frequency, giving assistance to that ATSU as required.

6.3.2 Before transferring aircraft, controllers should obtain sufficient information from the pilot to be convinced that the aircraft will receive more assistance from another ATSU. If a change of frequency is desirable the pilot must be instructed to revert immediately if there is no reply on the new frequency. Controllers should continue to listen out on the original frequency until the aircraft is known to be in two-way communication.

6.4 Intercepted Messages

6.4.1 If a controller intercepts a message from an aircraft which indicates that it is experiencing an emergency, the controller should, if possible, obtain a VDF bearing and pass it to the ATSU or sector being called and maintain a listening watch on the frequency until the controller is satisfied that two-way communication with the other ATSU or sector has been established.

6.4.2 If it appears that the message is not being acknowledged the controller shall:-

- a) Forward the message to the ATSU or sector being called by the most expeditious means;
- b) Attempt to establish two-way radio communication with the aircraft; and
- c) Render every assistance to the emergency aircraft.

7 Aircraft Emergencies - General Principles

7.1 Controllers shall use every means available to assist the pilot of an aircraft in emergency. Each situation must be dealt with according to the circumstances. The actions described below may be appropriate, but controllers should note that the list is not exhaustive nor in any preferred order.

7.2 Local Emergency Services

7.2.1 Alert local emergency services in the area of the expected forced landing. This should be done via the ACC supervisor unless the aircraft is within the radius of action of the aerodrome fire service.

7.2.2 If it is doubtful that an aircraft can reach an aerodrome, declare the distress phase. The ACC supervisor must be informed so that he can take alerting action with the ARCC.

7.3 **Nearest Aerodromes**

- 7.3.1 Advise the pilot of the nearest available aerodromes and suggest a suitable aerodrome for landing. The ACC will be able to assist in the selection.
- 7.3.2 Notify the aerodrome operator selected for the emergency landing so that suitable preparations can be made.
- 7.3.3 Warn other aerodromes in the vicinity which is on or close to the trajectory of the emergency aircraft to stand by.

7.4 **Plot Position**

- 7.4.1 Plot the position of the emergency aircraft and its subsequent track. Radar should be used until the aircraft is out of radar cover.
- 7.4.2 It may be advisable to plot the position and track on a map. VDF can be used to fix the position by obtaining bearings from other units having the same frequency.
- 7.4.3 Controllers should always pass position and bearing information about an emergency aircraft to other interested units; particularly the ACC.

7.5 **Uninterrupted Approach**

- 7.5.1 Ensure that an aircraft in an emergency has an uninterrupted approach to the selected aerodrome; rearrange the traffic pattern if necessary.

7.6 **Emergency Descent**

- 7.6.1 An aircraft making an emergency descent through other traffic shall be given priority. Controllers shall give all necessary assistance and information and take immediate action to safeguard other aircraft.
- 7.6.2 When necessary, controllers are to broadcast an emergency message on appropriate frequencies giving instructions to other aircraft during and after the emergency descent.
- 7.6.3 Immediately after such an emergency broadcast has been made the ACC, approach control unit and aerodrome control tower concerned shall forward further clearances to all aircraft involved as to additional procedures to be followed during and subsequent to the emergency descent. The ATS unit concerned shall additionally inform any other ATSU and control sectors which may be affected.

7.6.4 **Descents by Supersonic Aircraft Due To Solar Cosmic Radiation**

- 7.6.4.1 Air traffic control units should be prepared for the possibility that supersonic aircraft operating at levels above 15000m (49000ft) may, on rare occasions, experience a rise in solar cosmic radiation which requires them to descent to lower levels, possibly down to below the levels being used by subsonic aircraft. When such a situation is known or suspected, ATSUs should take all possible action to safeguard all aircraft concerned, including any subsonic aircraft affected by the descent.

Note: All supersonic aircraft in a particular portion of airspace will be affected at the same time and the event may be accompanied by a deterioration or loss of air ground communications. It is expected that the aircraft will alert air traffic control units before the radiation reaches critical level and will request a descent clearance when the critical level is reached. However, situations may occur in which the aircraft will need to descend without waiting for a clearance. In such cases, the aircraft are expected to advise ATSU's, as soon as possible, of the emergency action taken.

7.7 Alerting Action

7.7.1 Normal alerting action will be taken when necessary.

7.8 Other Aircraft

7.8.1 Advise other aircraft likely to be affected or able to assist.

7.9 Aircraft Operator

7.9.1 When an ATSU decides that an aircraft is in the uncertainty or alert the phase, it shall, when practicable advise an aircraft operator prior to notifying the Rescue Coordination Centre, except where distress phase is declared, in which case the RCC shall be notified without delay. All information notified to RCC shall, when practicable, be shared with an aircraft operator.

7.9.2 A message received from the operator (e.g. bomb warning, suspected damage to airframe, etc.) should be passed to the commander immediately using the operator's own words.

8 Fuel Jettisoning

8.1 Pilots of aircraft in flight are permitted to jettison fuel in an emergency. The decision to jettison fuel rests entirely with the pilot but may request guidance from air traffic control.

8.2 Controllers should recommend that jettisoning of fuel should be carried out at a height of at least 6000 feet above the surface, preferably in an area designated in the SSI Manual for fuel jettisoning.

8.3 Only in exceptional circumstances when it is unavoidable should fuel be jettisoned at lower altitudes.

8.4 Standard separation shall be applied between the aircraft jettisoning fuel and other aircraft, but no flight should be permitted below the level of the aircraft in the process of jettisoning fuel.

8.5 In some aircraft it may be necessary for an aircraft which is jettisoning fuel to switch off radios. Controllers should endeavour to find out before this happens and obtain an approximate time at which contact shall be re-established.

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Chapter 2 Unlawful Interference (Hijack) and Aircraft Bomb Threat

1 Introduction

- 1.1 Air traffic services personnel shall be prepared to recognise any indication of the occurrence of unlawful interference with an aircraft or a bomb threat.
- 1.2 Whenever unlawful interference with an aircraft is suspected, and where automatic distinct display of SSR Mode A Code 7500 and Code 7700 is not provided, the radar controller shall attempt to verify any suspicion by setting the SSR decoder to Mode A Code 7500 and thereafter to Code 7700.

***Note:** An aircraft equipped with a SSR transponder is expected to operate the transponder on Mode A Code 7500 to indicate specifically that it is the subject of unlawful interference. The aircraft may operate the transponder on Mode A Code 7700, to indicate that it is threatened by grave and imminent danger and requires immediate assistance.*

2 ATS Operations

2.1 General

Whenever unlawful interference with an aircraft is known or suspected, or a bomb threat warning has been received, controllers shall promptly attend to requests by, or to anticipated needs of, the aircraft, including requests for relevant information relating to air navigation facilities, procedures and services along the trajectory and at any aerodrome of intended landing, and shall take such action as is necessary to expedite the conduct of all phases of the flight.

2.2 Procedures to Be Followed By ATSU's or Sectors

- a) Transmit, and continue to transmit, information pertinent to the safe conduct of the flight, without expecting a reply from an aircraft;
- b) Monitor and plot the progress of the flight with the means that are available, and co-ordinate transfer of control with adjacent ATS units or sectors without requiring transmissions or other responses from the aircraft, unless communication with the aircraft remains normal;
- c) Inform and continue to keep informed, appropriate ATS units and sectors, including those in adjacent FIRs, which may be concerned with the progress of the flight;

***Note:** In applying this provision, account must be taken of all the factors which may affect the progress of the flight, including fuel endurance and the possibility of sudden changes in route and destination. The objective is to provide, as far in advance as is practicable in the circumstances, each ATSU or sector with appropriate information as to the expected or possible penetration of the aircraft into its area of responsibility.*

- d) When an ATSU knows or believes that an aircraft is subjected to unlawful interference, no reference shall be made in ATS air-ground communication to the nature of the emergency unless it has been referred to in communications from the aircraft involved and it is certain that such reference shall not aggravate the situation.

- e) Notification:
- i) The operator or its designated representative;
 - ii) The appropriate rescue co-ordination centre in accordance with appropriate alerting procedures;
 - iii) The designated security authority;
 - vi) The appropriate Authority designated by the state.

Note: *It is assumed that the designated security authority and/or the operator will in turn notify other parties concerned in accordance with pre-established procedures.*

- v) Relay appropriate messages, relating to the circumstances associated with the unlawful interference, between the aircraft and designated authorities.

2.3 Procedures For Bomb Threat

2.3.1 The following additional procedures shall apply if a threat is received indicating that a bomb or other explosive device has been placed on board a known aircraft. The ATS unit receiving the threat information shall:

- a) If in direct communication with the aircraft, advise the flight crew without delay of the threat and the circumstances surrounding the threat; or
- b) If not in direct communication with aircraft, advise the flight crew by the most expeditious means through other ATS units, sectors or other channels.

2.3.2 The ATSU in communication with the aircraft shall ascertain the intentions of the flight crew and report those intentions to other ATSUs or sectors which may be concerned with the flight.

2.3.3 The aircraft shall be handled in the most expeditious manner whilst ensuring, to the extent possible, the safety of other aircraft and that personnel and ground installations are not put at risk.

2.3.4 Aircraft in flight shall be given a re-clearance to a requested new destination without delay. Any request to climb or descend for the purpose of equalising or reducing the differential between the outside air pressure and cabin air pressure shall be approved as soon as possible.

2.3.5 Controllers shall not provide any advice or suggestions concerning action to be taken by the flight crew in relation to an explosive device.

2.4 Designated or Isolated Parking Area

2.4.1 An aircraft on the ground should be advised to remain as far away from other aircraft and installations as possible, and if appropriate, to vacate the runway. The aircraft should be instructed to taxi to a designated or isolated parking area in accordance with the SSI Manual. Should the flight crew disembark passengers and crew immediately, other aircraft, vehicles and personnel should be kept at a safe distance from the threatened aircraft

- 2.4.2 An aircraft known or believed to be the subject of unlawful interference or which for other reasons needs isolation from normal aerodrome activities shall be cleared to the designated isolated parking position.
- 2.4.3 Where such an isolated parking position has not been designated, or if the designated position is not available, the aircraft shall be cleared to a position within the area or areas selected by prior agreement with the aerodrome authority.
- 2.4.4 The taxi clearance shall specify the taxi route to be followed to the parking position. This route shall be selected with a view to minimise any security risks to the public, other aircraft and installations at the aerodrome.

3 Flight Crew Operations in the Event of Unlawful Interference

3.1 General

The following procedures are intended as guidance for use by aircraft when unlawful interference occurs and the aircraft is unable to notify an ATS unit of this fact.

3.2 Procedures

- 3.2.1 Unless considerations aboard the aircraft dictate otherwise, the pilot-in-command should attempt to continue flying on the assigned track and at the assigned cruising level at least until able to notify an ATS unit or within radar coverage.
- 3.2.2 When an aircraft subjected to an act of unlawful interference must depart from its assigned track or its assigned cruising level without being able to make radiotelephony contact with ATS, the pilot-in-command should, whenever possible:
- a) Attempt to broadcast warnings on the VHF emergency frequency and other appropriate frequencies, unless considerations aboard the aircraft dictate otherwise. Other equipment such as on-board transponders and data links should also be used when it is advantageous to do so and circumstances permit; and
 - b) Proceed in accordance with applicable special procedures for in-flight contingencies, where such procedures have been established and promulgated in the Regional Supplementary Procedures (Doc 7030); or
 - c) If no applicable regional procedures have been established, proceed at a level which differs from the cruising levels normally used for IFR flight by:
 - 1) 500 ft in an area where a vertical separation minimum of 1 000 ft is applied; or
 - 2) 1 000 ft in an area where a vertical separation minimum of 2 000 ft is applied.

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Chapter 3 Aircraft Lost (Strayed or unidentified aircraft)

1. Introduction

Every possible assistance is to be given to a pilot who reports that he is lost or uncertain of his position. A controller should not be influenced by the fact that any action that he takes may ultimately prove to have been unnecessary.

Note 1: A strayed aircraft is an aircraft which has been strayed significantly from its intended track or which reports that it is lost.

Note 2: An unidentified aircraft is an aircraft which has been observed or reported to be operating in a given area but whose identity has not been established.

2. General

2.1 A flight reporting that it is uncertain of its position or lost, or encountering adverse meteorological conditions, should be considered to be in a state of emergency and handled as such. The controller shall, under such circumstances, communicate in a clear, concise and calm manner and care shall be taken, at this stage, not to question any fault or negligence that the pilot may have committed in the preparation or conduct of the flight. Depending on the circumstances, the pilot should be requested to provide any of the following information considered pertinent so as to better provide assistance:

- a) Aircraft flight conditions;
- b) Position (if known) and flight level/ altitude;
- c) Airspeed and heading since last known position, if pertinent;
- d) Pilot experience;
- e) Navigation equipment carried and if any navigation aid signals are being received;
- f) SSR Mode and code selected if relevant;
- g) Departure and destination aerodromes;
- h) Number of persons on board;
- i) Fuel endurance.

2.2 If communications with the aircraft are weak or distorted, it should be suggested that the aircraft climb to a higher level, provided meteorological conditions and other circumstances permit.

2.3 Navigation assistance to help the pilot determine the aircraft position may be provided by use of radar, VHF direction-finder, navigation aids or sighting by another aircraft. Care must be taken when providing navigation assistance to ensure that the aircraft does not enter cloud.

Note: *The possibility of a flight becoming strayed as a result of encountering adverse meteorological conditions must be recognised.*

2.4 As soon as an ATSU becomes aware of a strayed aircraft it shall take all necessary steps as follows;

2.4.1 When an aircraft's position has been established, the ATSU or sector shall:

a) advise an aircraft of its position and corrective action to be taken; and

b) provide, as necessary other ATSUs and sectors with relevant information concerning the lost or strayed aircraft and any advice given to that aircraft.

2.4.2 When an aircraft's position is not known, the air traffic services unit shall:

a) Attempt to establish two-way communication with the aircraft, unless such communication already exists;

b) use all available means to determine its position;

c) inform other ATSUs into whose area the aircraft may have strayed or may stray, taking into account all the factors which may have affected the navigation of the aircraft in the circumstances.

d) inform, in accordance with locally agreed procedures, appropriate military units and provide them with pertinent flight plan and other data concerning strayed aircraft;

e) request from the ATSU Unit and Military unit referred to in c) and d) respectively and from other aircraft in flight every assistance in establishing communication with the aircraft and determining its position.

Note: The requirements in d) and e) apply also to ATSU informed in accordance with c)

2.5 The pilot should be provided with reports and information on suitable aerodromes in the vicinity where visual meteorological conditions exist.

3. Radar and VDF

- 3.1 Radar assistance to **an aircraft** should only be provided upon the request or concurrence of the pilot. The type of radar service to be provided should be agreed upon with the pilot.
- 3.2 When providing radar assistance in adverse meteorological conditions, the primary objective should be to bring the aircraft into VMC as soon as possible. Caution must be exercised to prevent the aircraft from entering cloud.
- 3.3 VDF bearings should be used wherever possible, especially from other units to assist in fixing the position of the strayed/ lost aircraft.

4. Terrain Clearance

- 4.1 If reporting difficulty in maintaining or unable to maintain VMC, the pilot should be informed of the minimum flight altitude of the area where the aircraft is, or is believed to be. If the aircraft is below that level, and the position of the aircraft has been established with a sufficient degree of probability, a track or heading, or a climb, may be suggested to bring the aircraft to a safe level.
5. As soon as an ATSU becomes aware of an unidentified aircraft in its area, it shall attempt to establish the identity of the aircraft whenever this is necessary for the provision of air traffic services or required by the appropriate military authorities in accordance with locally agreed procedures. To this end, the ATSU shall take such of the following steps as are appropriate in the circumstances:
- 5.1
 - a) attempt to establish two-way communication with the aircraft;
 - b) inquire of other ATSU within the flight information region about the flight and request their assistance in establishing two-way communication with the aircraft;
 - c) inquire of ATSU serving the adjacent flight information regions about the flight and request their assistance in establishing two-way communication with the aircraft;
 - d) attempt to obtain information from other aircraft in the area.
 - e) inform the appropriate military unit as soon as the identity of the aircraft has been established.

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Chapter 4 Loss of Communications (Radio Failure)

1 Introduction

- 1.1 Radio failure procedure should not be considered in isolation and emergency action described in other chapters should be applied if they are appropriate. For example, if an aircraft fails to make a report when expected, overdue action may have to be taken at the same time, particularly if the aircraft cannot be tracked on radar.
- 1.2 Radio failure procedures shall be adopted when:
- a) An aircraft is observed to have selected SSR Mode A, code 7600, and the pilot does not respond to ATC communication;
 - b) Communication cannot be maintained with an aircraft on any flight which is being provided with an air traffic control or advisory service;
 - c) Communication cannot be established with an aircraft operating, or intending to operate, on an IFR flight plan within controlled or advisory airspace.
- 1.3 The following procedures are based on the assumption that the pilot will comply with the current procedures for radio failure detailed in the SA-AIP.

2 Standard Procedure for Controllers

- 2.1 After attempts to establish normal two-way radio communication have failed, controllers are to carry out the following standard radio failure procedures:
- a) Maintain separation between the radio failure aircraft and other known traffic;
 - b) Give pertinent information about the movements of the radio failure aircraft to other aircraft in the presumed vicinity;
 - c) Ask aircraft in the presumed vicinity to establish communication with the radio failure aircraft and relay messages;
 - d) Use all means possible to monitor the aircraft's progress;
 - e) Transmit, on the appropriate frequencies:
 - Level, route and EAT (or ETA) to which the radio failure aircraft is assumed to be adhering; and
 - The weather conditions at the destination aerodrome, a suitable alternate and, if practicable, in areas suitable for a descent through cloud.
 - f) When, in consultation with the aircraft operator, instructions to divert have been transmitted to the radio failure aircraft, inform the alternate aerodrome and request that they attempt to establish communication;

2.2 The following procedures are based on the assumption that the pilot will comply with the current procedures for radio failure detailed in the SA-AIP.

3 Standard Procedure for Controllers

3.1 After attempts to establish normal two-way radio communication have failed, controllers are to carry out the following standard radio failure procedures:

- a) Maintain separation between the radio failure aircraft and other known traffic;
- b) Give pertinent information about the movements of the radio failure aircraft to other aircraft in the presumed vicinity;
- c) Ask aircraft in the presumed vicinity to establish communication with the radio failure aircraft and relay messages;
- d) Use all means possible to monitor the aircraft's progress;
- e) Transmit, on the appropriate frequencies:
 - Level, route and EAT (or ETA) to which the radio failure aircraft is assumed to be adhering; and
 - The weather conditions at the destination aerodrome, a suitable alternate and, if practicable, in areas suitable for a descent through cloud.
- f) When, in consultation with the aircraft operator, instructions to divert have been transmitted to the radio failure aircraft, inform the alternate aerodrome and request that they attempt to establish communication;

3 Standard Radio Failure Procedures for Aircraft

3.1 If an aircraft fails to indicate that it is able to receive and acknowledge transmissions, separation shall be maintained between the aircraft having the communication failure and other aircraft, based on the assumption that the aircraft will:

3.1.1 If in visual meteorological conditions:

- a) Continue to fly in visual meteorological conditions;
- b) Land at the nearest suitable aerodrome; and
- c) Report its arrival by the most expeditious means to the appropriate air traffic control unit.

3.1.2 If in instrument meteorological conditions or when conditions are such that it does not appear likely that the pilot will complete the flight in accordance with paragraph 3.1.1:

- a) Unless otherwise prescribed on the basis of a regional air navigation agreement, in airspace where radar is not used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes

following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan; or,

- b) In airspace where radar is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following:
 - i) The time the last assigned level or minimum flight altitude is reached; or
 - ii) The time the transponder is set to Code 7600; or
 - iii) The aircraft's failure to report its position over a compulsory reporting point; whichever is later and thereafter adjust level and speed in accordance with the filed flight plan;

“Note: The aircraft will only comply with the above mentioned procedure should it encounter a radio failure on departure while flying within a radar-controlled environment, after having been issued with a non-standard clearance by ATC, due to an interim radar failure, or the departing aircraft not having the relevant serviceable navigational aids on board, for example. Where an aircraft has been issued with a Standard Instrument Departure (SID) and it encounters a radio failure on departure while flying within a radar-controlled environment, it will comply with the communication failure procedure as published on the relevant standard instrument departure chart corresponding to its departure route. “

- c) When being radar vectored or having been directed by ATC to proceed offset using RNAV without a specified limit, proceed in the most direct manner possible to rejoin the current flight plan route no later than the next significant point, taking into consideration the applicable minimum flight altitude;
- d) Proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with e) below, hold over this aid or fix until commencement of descent;
- e) Commence descent from the navigation aid or fix specified in d) at, or as close as possible to, the EAT last received and acknowledged; or, if no EAT has been received and acknowledged, at, or as close as possible to, the ETA calculated from the current flight plan;
- f) Complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and
 - f) Land, if possible, within 30 minutes after the estimated time of arrival specified in e) or the last acknowledged expected approach time, whichever is later.

3.1.3 These procedures shall not apply to aircraft following Standard Instrument Departures (SID) or Standard Terminal Arrival Routes (STAR) where Radio Communication Failure is specified for these procedures.

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Chapter 5 ATC Contingencies (Radio Communication)

1 Introduction

The procedures outlined below are intended as a general guide to air traffic services personnel. ATC contingencies related to communications, i.e. circumstances preventing a controller from communicating with aircraft under control, may be caused by either a failure of ground radio equipment, a failure of airborne equipment, or by the control frequency being inadvertently blocked by an aircraft transmitter. The duration of such events may be for prolonged periods and appropriate action to ensure that the safety of aircraft is not affected should therefore be taken immediately.

2 Blocked Frequency

- 2.1 In the event that the control frequency is inadvertently blocked by an aircraft transmitter, the following steps should be taken:
- a) Attempt to identify the aircraft concerned;
 - b) If the aircraft blocking the frequency is identified, attempts should be made to establish communication with that aircraft, e.g. on the emergency frequency 121.5 MHz, by SELCAL, through the aircraft operator's company frequency if applicable, on any VHF frequency designated for air-to-air use by flight crews or any other communication means or, if the aircraft is on the ground, by direct contact;
 - c) If communication is established with the aircraft concerned, the flight crew shall be instructed to take immediate action to stop inadvertent transmissions on the affected control frequency.

3 Unauthorised Use of ATC Frequency

- 3.1 Instances of false and deceptive transmissions on ATC frequencies which may impair the safety of aircraft can occasionally occur. In the event of such occurrences, the ATC unit concerned should:
- a) Correct any false or deceptive instructions or clearances which have been transmitted;
 - b) Advise all aircraft on the affected frequency (-ies) that false and deceptive instructions or clearances are being transmitted;
 - c) Instruct all aircraft on the affected frequency (-ies) to verify instructions and clearances before taking action to comply;
 - d) If practical, instruct aircraft to change to another frequency; and
 - e) If possible, advise all aircraft affected when the false and deceptive instructions or clearances are no longer being transmitted.
- 3.2 Flights crews shall challenge or verify with the ATC unit concerned any instruction or clearance issued to them which they suspect may be false or deceptive.

- 3.3 When the transmission of false or deceptive instructions and clearances is detected, the appropriate authority shall take all necessary action to have the transmitter located and the transmission terminated.

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Chapter 6 Interception of Civil Aircraft

1. Introduction

Each State will normally react according to its own interpretation of the risk being faced. A trigger element could be a single event or a combination of small errors such as;

- a) Unauthorised deviation from the cleared flight profile.
- b) Loss of radio contact, particularly if associated with a flight profile deviation.
- c) Unauthorised SSR Transponder code changes or extended use of the Ident function.
- d) Use of non-standard phraseology by the flight deck crew or other actions that could be construed as a covert attempt to alert agencies to a situation on board.
- e) Notification of a threat from an official or non-official source.

2 Procedures relating to the interception of civilian aircraft

2.1 As soon as an air traffic services unit learns that an aircraft is being intercepted in its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances.

- a) Attempt to establish two-way communication with the intercepted aircraft on any available frequency, including the emergency frequency 121.5 MHz, unless such communication already exists.
- b) Inform the pilot of the intercepted aircraft of the interception.
- c) Establish contact with the intercept control unit maintaining two-way communication with the intercepting aircraft and provide it with available information concerning the aircraft.
- d) Relay messages between the intercepting aircraft or the intercept control unit and the intercepted aircraft, as necessary.
- e) In close co-ordination with the intercept control unit take all necessary steps to ensure the safety of the intercepted aircraft; and
- f) Inform ATSU's serving adjacent flight information regions if it appears that the aircraft has strayed from such adjacent flight information regions.

2.2 As soon as an ATSU learns that an aircraft is being intercepted outside its area of responsibility, the ATSU shall take the following steps as are appropriate in the circumstances:

- a) Inform the ATSU serving the airspace in which the interception is taking place, providing this unit with available information that will assist in identifying the aircraft and requesting it to take action in accordance with paragraph 2.1;
- c) Relay messages between the intercepted aircraft and the appropriate ATSU, the intercept control unit or the intercepting aircraft.

Section 9 Emergency Procedures

Chapter 7 Communicable Diseases

1. Introduction:

Article 14 ICAO – Each contracting State agrees to take effective measures to prevent the spread by means of air navigation of cholera, typhus, smallpox, yellow fever, plague and any other such communicable disease as the contracting States shall from time to time decide to designate.

2. Procedures

- 2.1 The pilot in command shall notify ATC as soon as he/she becomes aware of a suspected case of a communicable disease on board his/her aircraft
- 2.2 The ATSU receiving notification of a suspected case of a communicable disease onboard and aircraft in flight shall advise, as soon as practicable
 - a. The designated Airport Authority of the next intended landing destination and;
 - b. The aircraft operator or its designated representative
- 2.3 Where the destination aerodrome is outside of an ATSU's jurisdiction clear coordination shall be maintained between the ATSU's involved stating the nature of the suspected case of the communicable disease on board the flight and such notification actions conducted by the ATSU's.
- 2.4 Each ATSU shall maintain a list of contact numbers of the relevant Airport Authorities within their jurisdiction.

Note: It is accepted that the designated Airport Authority and/or the operator will in turn notify other relevant parties concerned in accordance with pre-established procedures as laid down by that Airport Authority.

Section 9 Emergency Procedures

Chapter 8

PROCEDURES RELATED TO EMERGENCIES, COMMUNICATION FAILURE AND CONTINGENCIES

8.1 Introduction

8.1.1 Although all possible contingencies cannot be covered, the procedures below provide for the more frequent cases such as:

- a) Inability to comply with assigned clearance due to meteorological conditions, aircraft performance or pressurization failure;
- b) En-route diversion across the prevailing traffic flow; and
- c) Loss of, or significant reduction in, the required navigation capability when operating in airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations.

With regard to 7 a) and b), the procedures are applicable primarily when descent and/or turn back or diversion is required. The pilot shall take actions as necessary to ensure the safety of the aircraft and the pilot's judgement shall determine the sequence of actions to be taken, having regard to the prevailing circumstances. Air traffic control shall render all possible assistance.

8.2 General procedures

8.2.1 If prior clearance cannot be obtained, and, until such time as a revised clearance is received, the following contingency procedures should be employed and the pilot shall advise air traffic control as soon as practicable, reminding them of the type of aircraft involved and the nature of the problem. In general terms, the aircraft should be flown at a flight level and on an offset track where other aircraft are least likely to be encountered. Specifically, the pilot shall:

a) Leave the assigned route or track by initially turning at least 45 degrees to the right or to the left, in order to acquire a same or opposite direction track offset 15 NM (28 km) from the assigned track centreline. When possible, the direction of the turn should be determined by the position of the aircraft relative to any organized route or track system. Other factors which may affect the direction of the turn are;

- 1) The direction to an alternate airport;
- 2) Terrain clearance;
- 3) Any strategic lateral offset being flown; and
- 4) The flight levels allocated on adjacent routes or tracks;

b) Having initiated the turn;

1) If unable to maintain the assigned flight level, initially minimize the rate of descent to the extent that is operationally feasible (pilots should take into account the possibility that aircraft below on the same track may be flying a 1 or 2 NM strategic lateral offset procedures, (SLOP)) and select a final altitude which differs from those normally used by 150 m (500 ft) if at or below FL 410, or by 300 m (1 000 ft) if above FL 410; or

2) If able to maintain the assigned flight level, once the aircraft has deviated 19 km (10 NM) from the assigned track centreline, climb or descend to select a flight level which differs from those normally used by 150 m (500 ft), if at or below FL 410, or by 300 m (1 000 ft) if above FL 410;

c) Establish communications with and alert nearby aircraft by broadcasting, at suitable intervals on 121.5 MHz (or, as a backup, on the inter-pilot air-to-air frequency 123.45 MHz) and where appropriate on the frequency in use aircraft identification, flight level, position (including the ATS route designator or the track code, as appropriate) and intentions;

- 1) Maintain a watch for conflicting traffic both visually and by reference to ACAS (if equipped);
- 2) Turn on all aircraft exterior lights (commensurate with appropriate operating limitations); and
- 3) Keep the SSR transponder on at all times;

4) If the intention is to acquire a same direction offset track, the pilot should consider limiting the turn to a 45 degree heading change, in order not to overshoot the offset contingency track; or

d) If the intention is to acquire and maintain an opposite direction offset track, then;

1) Operational limitations on bank angles at cruising altitudes will normally result in overshooting the track to be acquired. In such cases a continuous turn should be extended beyond 180 degrees heading change, in order to re-intercept the offset contingency track as soon as operationally feasible; and

2) Furthermore, if executing such a turn back in a 56 km (30 NM) lateral separation route structure, extreme caution pertaining to opposite direction traffic on adjacent routes must be exercised and any climb or descent, as specified in 15.2.2.3 b) 2), should be completed preferably before approaching within 19 km (10 NM) of any adjacent ATS route.

8.2.2 OTHER ATC CONTINGENCY PROCEDURES

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8.2.2.1 Short-term conflict alert (STCA) procedures

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Local instructions concerning use of the STCA function shall specify, inter alia:

- a) The types of flight which are eligible for generation of alerts;
- b) The sectors or areas of airspace within which the STCA function is implemented;
- c) The method of displaying the STCA to the controller;
- d) In general terms, the parameters for generation of alerts as well as alert warning time;
- e) The volumes of airspace within which STCA can be selectively inhibited and the conditions under which this will be permitted;
- f) Conditions under which specific alerts may be inhibited for individual flights; and
- g) Procedures applicable in respect of volume of airspace or flights for which STCA or specific alerts have been inhibited.

8.2.2.2 In the event an STCA is generated in respect of controlled flights, the controller shall without delay assess the situation and, if necessary, take action to ensure that the applicable separation minimum will not be infringed or will be restored.

8.2.2.3 Following the generation of an STCA, controllers should be required to complete an air traffic incident report only in the event that a separation minimum was infringed.

8.2.2.4 The appropriate ATS authority should retain electronic records of all alerts generated. The data and circumstances pertaining to each alert should be analysed to determine whether an alert was justified or not. Non-justified alerts, e.g. when visual separation was applied, should be ignored. A statistical analysis should be made of justified alerts in order to identify possible shortcomings in airspace design and ATC procedures as well as to monitor overall safety levels.