GOVERNMENT OF INDIA
OFFICE OF DIRECTOR GENERAL OF CIVIL AVIATION

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Air Space and Air Navigation Services Standard
ADVISORY CIRCULAR

Subject: Procedures to follow in case of Air Ground Radio Communication Failure and guidelines for Air Traffic Service provider to apply such procedures in the provision of ATS.

1. INTRODUCTION

1.1 ICAO endeavors that State shall ensure safe and efficient aircraft operation in all kinds of scenarios including air ground communication failure. Accordingly, India has formulated procedure to be applied in relation to an aircraft experiencing air ground communication failure when providing Air Traffic Services. The procedures outlined herein are intended as general guidelines to Air Traffic Services provider.

In the event of an aircraft in, or appearing to be in Radio Communication failure situation, every assistance shall be provided by the controller, and the procedures prescribed herein may be varied according to situation. Therefore, all the stations are required to develop the RCF procedures taking into consideration the local requirements of that station and should be modified accordingly.

Additional procedures to be applied in relation to Radio Communication failure whilst using an ATS Surveillance System as described herein.

The progress of an aircraft experiencing Radio Communication failure shall be monitored (whenever possible), plotted on the situation display, until the aircraft passes out coverage of ATS Surveillance System and position information shall be provided to all ATS units which may be able to give assistance to the aircraft.

1.2 References:

a) DGCA CAR Section 9, Series 'C', Part-I
b) CAR Section 9, Series D, Part III
c) ICAO Doc 4444 (PANS-ATM)

2. GENERAL PROCEDURES TO BE FOLLOWED IN CASE OF RADIO COMMUNICATION FAILURE WHEN PROVIDING AIR TRAFFIC CONTROL SERVICES:

2.1 Air Traffic Control Clearances for departing aircraft may specify an initial or intermediate level other than that indicated in the filed flight plan for the en-route phase of flight, without a time or geographical limit for the initial level. Such clearances will normally be used to facilitate the application of tactical control methods by ATC, normally through the use of an ATS surveillance system.

2.1.1 Where Air Traffic Control clearances for departing aircraft containing no time or geographical limit for an initial or intermediate level are utilized, action to be taken by an aircraft experiencing air-ground communication failure in the event the aircraft has been radar vectored away from the route specified in its current flight plan should be prescribed included in the SID description or published in AIPs.

2.2 Additional requirements applying to communication failure during the application of the 50 NM longitudinal RNAV/RNP 10 separation minimum. During the application of the 93 km (50 NM) separation, when an aircraft fails to report its position, the controller shall take action within 3 minutes to establish communication. If communication has not been established within 8 minutes of the time the report should have been received, the controller shall take action to apply an alternative form of separation.

2.3 Action by air traffic control units when unable to maintain two-way communication with an aircraft operating in a control area or control zone shall be as follow:

2.3.1 As soon as it is known that two-way communication has failed, action shall be taken to ascertain whether the aircraft is able to receive transmissions from the air traffic control unit by requesting it to execute a specified manoeuvre which can be observed by radar or ADS-B or to transmit, if possible, a specified signal in order to indicate acknowledgement.

2.3.2 If the 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:

2.3.2.1 if in visual meteorological conditions:

2.3.2.1.1 continue to fly in visual meteorological conditions;

2.3.2.1.2 land at the nearest suitable aerodrome; and

2.3.2.1.3 report its arrival by the most expeditious means to the appropriate air traffic control unit; or

2.3.2.2 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 VMC.

2.3.2.2.1 unless otherwise prescribed on the basis of a regional air navigation agreement, in airspace where procedural separation is being applied, 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

2.3.2.2.2 in airspace where an ATS surveillance system 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:

2.3.2.2.2.1 the time the last assigned level or minimum flight altitude is reached; or

2.3.2.2.2.2 the time the transponder is set to Code 7600 or the ADS-B transmitter is set to indicate the loss of air-ground communications; or

2.3.2.2.2.3 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;

2.3.2.2.3 when being 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;

2.3.2.2.4 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 2.3.2.2.5 below, hold over this aid or fix until commencement of descent;

2.3.2.2.5 commence descent from the navigation aid or fix specified in 2.3.2.2.4 at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival resulting from the current flight plan;

2.3.2.2.6 complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and

2.3.2.2.7 land, if possible, within 30 minutes after the estimated time of arrival specified in 2.3.2.2.5 or the last acknowledged expected approach time, whichever is later.

2.3.3 Action taken to ensure suitable separation shall cease to be based on the assumption stated in 2.3.2 when:

2.3.3.1 it is determined that the aircraft is following a procedure differing from that in 2.3.2;or

2.3.3.2 through the use of electronic or other aids, air traffic control units determine that action differing from that required by 2.2 may be taken without impairing safety; or

2.3.3.3 positive information is received that the aircraft has landed.

2.3.4 As soon as it is known that two-way communication has failed, appropriate information describing the action taken by the air traffic control unit, or instructions justified by any emergency situation, shall be transmitted blind for the attention of the aircraft concerned, on the frequencies available on

which the aircraft is believed to be listening, including the voice frequencies of available radio navigation or approach aids. Information shall also be given concerning:

2.3.4.1 meteorological conditions favorable to a cloud-breaking procedure in areas where congested traffic may be avoided; and

2.3.4.2 meteorological conditions at suitable aerodromes.

2.3.5 Pertinent information shall be given to other aircraft in the vicinity of the presumed position of the aircraft experiencing the failure.

2.3.6 As soon as it is known that an aircraft which is operating in its area of responsibility is experiencing an apparent radiocommunication failure, an air traffic services unit shall forward information concerning the radiocommunication failure to all air traffic services units concerned along the route of flight. The ACC in whose area the destination aerodrome is located shall take steps to obtain information on the alternate aerodrome(s) and other relevant information specified in the filed flight plan, if such information is not available.

2.3.7 If circumstances indicate that a controlled flight experiencing a communication failure might proceed to (one of) the alternate aerodrome(s) specified in the filed flight plan, the air traffic control unit(s) serving the alternate aerodrome(s) and any other air traffic control units that might be affected by a possible diversion shall be informed of the circumstances of the failure and requested to attempt to establish communication with the aircraft at a time when the aircraft could possibly be within communication range. This shall apply particularly when, by agreement with the operator or a designated representative, a clearance has been transmitted blind to the aircraft concerned to proceed to an alternate aerodrome, or when meteorological conditions at the aerodrome of intended landing are such that a diversion to an alternate is considered likely.

2.3.8 When an air traffic control unit receives information that an aircraft, after experiencing a communication failure has re-established communication or has landed, that unit shall inform the air traffic services unit in whose area the aircraft was operating at the time the failure occurred, and other air traffic services units concerned along the route of flight, giving necessary information for the continuation of control if the aircraft is continuing in flight.

2.3.9 If the aircraft has not reported within thirty minutes after:

a) the estimated time of arrival furnished by the pilot;

b) the estimated time of arrival calculated by the ACC; or

c) the last acknowledged expected approach time,

whichever is latest, pertinent information concerning the aircraft shall be forwarded to aircraft operators, or their designated representatives, and pilots-in-command of any aircraft concerned and normal control resumed if they so desire. It is the responsibility of the aircraft operators, or their designated representatives, and pilots-in-command of aircraft to determine whether they will resume normal operations or take other action.

3 PROCEDURES TO BE APPLIED IN RELATION TO AIRCRAFT EXPERIENCING AIR GROUND COMMUNICATION FAILURE WHEN PROVIDING ATS SURVEILLANCE SERVICES:

3.1 Failure of equipment

3.1.1 AIRCRAFT RADIO TRANSMITTER FAILURE

3.1.1.1 If two-way communication is lost with an aircraft, the controller should determine whether or not the aircraft's receiver is functioning by instructing the aircraft on the channel so far used to acknowledge by making a specified manoeuvre and by observing the aircraft's track, or by instructing the aircraft to operate IDENT or to make SSR code and/or ADS-B transmission changes.

Note 1. — Transponder-equipped aircraft experiencing radiocommunication failure will operate the transponder on Mode A Code 7600.
Note 2. — ADS-B-equipped aircraft experiencing radiocommunication failure may transmit the appropriate ADS-B emergency and/or urgency mode.

3.1.1.2 If the action prescribed in 3.1.1.1 is unsuccessful, it shall be repeated on any other available channel on which it is believed that the aircraft might be listening.

3.1.1.3 In both the cases covered by 3.1.1.1 and 3.1.1.2, any manoeuvring instructions shall be such that the aircraft would regain its current cleared track after having complied with the instructions received.

3.1.1.4 Where it has been established by the action in 3.1.1.1 that the aircraft's radio receiver is functioning, continued control can be effected using SSR code/ADS-B transmission changes or IDENT transmissions to obtain acknowledgement of clearances issued to the aircraft.

3.1.2 COMPLETE AIRCRAFT COMMUNICATION FAILURE

When a controlled aircraft experiencing complete communication failure is operating or expected to operate in an area and at flight levels where an ATS surveillance service is applied, separation minimum based on ATS surveillance system (Radar and / or ADS-B separation) may continue to be used. However, if the aircraft experiencing the communication failure is not identified, separation shall be applied between identified aircraft and all unidentified aircraft observed along the expected route of the aircraft with the communication failure, until such time as it is known, or can safely be assumed, that the aircraft with radio communication failure has passed through the airspace concerned, has landed, or has proceeded elsewhere.

3.1.3 AIRCRAFT TRANSPONDER FAILURE IN AREAS WHERE THE CARRIAGE OF A FUNCTIONING TRANSPONDER IS MANDATORY

3.1.3.1 When an aircraft experiencing transponder failure after departure is operating or expected to operate in an area where the carriage of a functioning transponder with specified capabilities is mandatory, the ATC units concerned should endeavor to provide for continuation of the flight to the aerodrome of first intended landing in accordance with the flight plan. However, in certain traffic situations, either in terminal areas or en-route, continuation of the flight may not be possible, particularly when failure is detected shortly after take-off. The aircraft may then be required to return to the departure aerodrome or to land at the nearest suitable aerodrome acceptable to the operator concerned and to ATC.

3.1.3.2 In case of a transponder failure which is detected before departure from an aerodrome where it is not practicable to effect a repair, the aircraft concerned should be permitted to proceed, as directly as possible, to the nearest suitable aerodrome where repair can be made. When granting clearance to such aircraft, ATC should take into consideration the existing or anticipated traffic situation and may have to modify the time of departure, flight level or route of the intended flight. Subsequent adjustments may become necessary during the course of the flight.

3.2 ATS surveillance system failure

3.2.1 In the event of complete failure of the ATS surveillance system where air-ground communications remain, the controller shall plot the positions of all aircraft already identified, take the necessary action to establish procedural separation between the aircraft and, if necessary, limit the number of aircraft permitted to enter the area.

3.2.2 As an emergency measure, use of flight levels spaced by half the applicable vertical separation minimum may be resorted to temporarily if standard procedural separation cannot be provided immediately.

3.3 Degradation of aircraft position source data

In order to reduce the impact of a degradation of aircraft position source data, for example, a receiver autonomous integrity monitoring (RAIM) outage for GNSS, the appropriate ATS authority shall establish contingency procedures to be followed by control positions and ATC units in the event of data degradation.

3.4 Ground radio failure

In the event of complete failure of the ground radio equipment used for control, the controller shall, unless able to continue to provide the ATS surveillance service by means of other available communication channels, proceed as follows:

3.4.1 without delay inform all adjacent control positions or ATC units, as applicable, of the failure;

3.4.2 apprise such positions or units of the current traffic situation;

3.4.3 request their assistance, in respect of aircraft which may establish communications with those positions or units, in establishing and maintaining separation between such aircraft; and

3.4.4 instruct adjacent control positions or ATC units to hold or re-route all controlled flights outside the area of responsibility of the position or ATC unit that has experienced the failure until such time that the provision of normal services can be resumed.

3.4.5 In order to reduce the impact of complete ground radio equipment failure on the safety of air traffic, the appropriate ATS authority should establish contingency procedures to be followed by control positions and ATC units

in the event of such failures. Where feasible and practicable, such contingency procedures should provide for the delegation of control to an adjacent control position or ATC unit in order to permit a minimum level of services to be provided as soon as possible, following the ground radio failure and until normal operations can be resumed.

Sd/-
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