



International Civil Aviation Organization

**The Second Meeting of the APANPIRG ATM Sub-Group
(ATM /SG/2)**

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Agenda Item 6: AOP, MET, AIM, SAR

EFFICIENT SAR ACTIONS - REVIEW OF ANNEX 11 PROVISIONS

(Presented by India)

SUMMARY

The aircraft incidents/accidents in the recent past have highlighted the need for an effective and timely provision of Search and Rescue with the objective of saving the aircraft and its occupants. This paper highlights some of the urgent measures that may be considered by ICAO in this direction viz. amending the Annex 11 provisions related to various phases of emergency and associated actions to be taken by ATC and SAR unit, implementation of AIDC and use of SATVOICE as a back-up for voice communication.

1. INTRODUCTION

1.1 As per the provisions of Annex 11, alerting service aims at notifying appropriate Organizations regarding aircraft in need of Search and Rescue aid and assisting such Organizations.

1.2 Annex 11, para 5.2.1 defines three phases of flights viz., “Uncertainty phase”, “Alert Phase” and “Distress phase” to ascertain the status of the flight that might be experiencing emergency situation, requiring immediate assistance and Search and Rescue actions as appropriate to the situation with the objective of saving lives.

1.3 Uncertainty phase is primarily to ascertain and confirm that ‘no doubt exists as to the safety of the aircraft and its occupants’:

- no communication has been received from an aircraft within a period of thirty minutes after the time a communication should have been received, or from the time an unsuccessful attempt to establish communication with such aircraft was first made, whichever is the earlier, or
- when an aircraft fails to arrive within thirty minutes of the estimated time of arrival last notified to or estimated by air traffic services units, whichever is the later.

1.4 Alert phase is continuity of uncertainty phase, when there is no confirmation on the position and status of the aircraft, wherein subsequent attempts are continued to ascertain and establish the position and status of the aircraft while Rescue Co-ordination Centre is notified.

- following the uncertainty phase, subsequent attempts to establish communication with the aircraft or inquiries to other relevant sources have failed to reveal any news of the aircraft, or when

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- an aircraft has been cleared to land and fails to land within five minutes of the estimated time of landing and communication has not been re-established with the aircraft, or when
 - information has been received which indicates that the operating efficiency of the aircraft has been impaired, but not to the extent that a forced landing is likely

1.5 Distress phase, is that phase,

- following the alert phase, further unsuccessful attempts to establish communication with the aircraft and more widespread unsuccessful inquiries point to the probability that the aircraft is in distress, or when
- the fuel on board is considered to be exhausted, or to be insufficient to enable the aircraft to reach safety, or when
- information is received which indicates that the operating efficiency of the aircraft has been impaired to the extent that a forced landing is likely, or when
- information is received or it is reasonably certain that the aircraft is about to make or has made a forced landing,

1.6 Annex 11 para 5.5.1 further define that If an aircraft is in the distress phase, the Rescue Coordination Centre has to be notified immediately in accordance with the provisions contained in para 5.2.1 of Annex 11.

1.7 Annex 12 para 5.2 defines the procedures for Rescue Coordination Centres during emergency phases:

▪ 5.2.1 Uncertainty phase

Upon the occurrence of an uncertainty phase, the rescue coordination centre shall cooperate to the utmost with air traffic services units and other appropriate agencies and services in order that incoming reports may be speedily evaluated.

▪ 5.2.2 Alert phase

Upon the occurrence of an alert phase the rescue coordination centre shall immediately alert search and rescue units and initiate any necessary action.

▪ 5.2.3 Distress phase

Upon the occurrence of a distress phase, the rescue coordination centre shall:

- a) immediately initiate action by search and rescue units in accordance with the appropriate plan of operation;
- b) ascertain the position of the aircraft, estimate the degree of uncertainty of this position, and, on the basis of this information and the circumstances, determine the extent of the area to be searched.

2. DISCUSSION

2.1 The primary objective of the SAR actions is to organize and extend timely assistance to the aircraft in a state of emergency and averting a situation that might lead to distress situation endangering human lives. Such timely actions by ATC largely depend on:

- a) How effectively communication is established between ATC and the pilot(s) of the aircraft or other reliable sources such as Airline operations department of the aircraft confirming that the aircraft is experiencing emergency situation; and
- b) ATC surveillance data confirming the position of the aircraft / status of the flight and indication of any distress situation that might require immediate assistance.

2.2 On the contrary, if such inputs are not available to ATC, the standard procedures as defined in Annex 11 para 5.2.1 are to be followed through actions as applicable to 'Uncertainty phase' and 'Alert phase' prior to concluding that the aircraft is in 'Distress' and initiating actions for SAR.

2.3 The duration of 30 minutes of 'Uncertainty phase' is primarily to establish communication with the aircraft by various means and ascertain its position and status. A certain amount of complacency both in ATC and Airlines Operations Department cannot be ruled out, anticipating that the aircraft would eventually come in contact. This is followed by Alert phase wherein subsequent attempts to ascertain the status of the flight and rule out any possible distress situation, will also consume significant time. Though there is no definite time frame defined, this will result in lapse of valuable time to the tune of more than 30 minutes before initiating actions for SAR.

2.4 In the meantime, the aircraft could have experienced a Distress situation requiring immediate assistance. In effect, valuable time is lost in providing timely SAR.

2.5 This loss of valuable time is all the more critical in airspace without the support of ATS surveillance System. It is therefore considered necessary that the Annex 11 provisions on 'Uncertainty phase' and 'Alert phase' may be reviewed to reduce the timeframe and associated SAR actions that will have to be taken in an expeditious and pro-active manner without losing valuable time in saving the lives. It may be appropriate to combine both uncertainty and alert phase with *objective-oriented measures* and sequence of actions aiming at expeditiously ascertaining the situation and swiftly initiating Search and Rescue missions.

2.6 It is noteworthy that in the recent past there is significant enhancement all over the world, in

- a) ADS-B/Radar based surveillance coverage/services in the continental airspace across the world.
- b) ADS-C based surveillance and Data Link Communication services in the vast stretch of oceanic airspace
- c) the development of modern advanced ATM technology and avionics

2.7 These improvements / developments can be gainfully exploited to ascertain the position of the aircraft in distress and status of the flight by both ATC and airlines operations.

2.8 The voice co-ordination process while effecting transfer of control between two ATC Centres, especially in areas where adequate surveillance and communication capabilities are not available, a similar "lapse of time" would lead to delay in initiating Search and Rescue actions when an aircraft is in actual distress.

2.9 In view of the above, it would be prudent to review the current provisions of “Uncertainty Phase” and “Alert Phase” as defined in Annex 11, with the objective of ascertaining the position of the aircraft that may require immediate assistance and saving the lives of passengers and crew.

2.10 The following options could be considered to enable ATC to ascertain the position of the aircraft and status of the flight and alert the Rescue Co-ordination Centre without any loss of time.

- a) Mandate use of SAT-Voice to expeditiously communicate with ATC Centre, the need for immediate assistance., if no communication is possible on VHF/HF/Data-link,
- b) Use of AIDC between ATC centers to ascertain that aircraft is in positive contact with accepting unit.
- c) Manual activation of ELT in the event of aircraft experiencing distress situation requiring immediate assistance, if no communication could be established either with ATC or Airline operational control unit through other means.

3. ACTION BY THE MEETING

3.1 The meeting is invited to take note of the paper and

- a) Recommend that ICAO Headquarters considers amending the relevant provisions of Annex 11 related to “Uncertainty phase” and “Alert phase” with the objective of reducing the timeframe of these two phases; and
- b) endorse the recommendations in para 2.10 and any other recommendations the meeting may consider appropriate, for consideration of APANPIRG and ICAO Headquarters for suitable amendments in Annex 11 and other ICAO documents related to SAR.

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