



*International Civil Aviation Organization*  
**Second Meeting of the Asia Pacific Accident Investigation Group  
(APAC-AIG/2)**

*(Hong Kong, 27-28 May 2014)*

**Agenda Item 2:** Report on recent accident/incident investigation related developments and activities

## **HANDLING OF SERIOUS INCIDENTS**

(Presented by Hong Kong, China)

### **SUMMARY**

ICAO Annex 13 requires that serious incidents be investigated. Attachment C to Annex 13 further provides a list of typical examples of serious incidents.

Different from an accident, an aircraft could still be operational after a serious incident has occurred. The operability of the aircraft and commercial need of the operators to continue their operations may render difficulties to investigators in their conduct of an investigation. This paper highlights some of the difficulties that an accident investigation authority may encounter in the event of a serious incident.

## **1. INTRODUCTION**

1.1 Annex 13 to the Convention on International Civil Aviation (ICAO Annex 13) stipulates the international standards and recommended practices for aircraft accident and serious incident investigation. It requires States / Administrations to investigate both accidents and serious incidents.

1.2 While the definition of “accident” is explicitly defined in ICAO Annex 13, the definition of “serious incident” states:

“An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down.”

1.3 To provide further guidance to the definition of “serious incident”, Attachment C to ICAO Annex 13 provides a list of typical examples of incidents that are likely to be serious incidents.

## 2. DISCUSSION

2.1 Different from an accident, an aircraft could still be operational after a serious incident has occurred. Its structure, systems and performance might not have been impaired by the occurrence. The aircraft, together with its crew, might still have the ability to continue the operations.

2.2 A few examples of such incidents as extracted from Attachment C to ICAO Annex 13 are as follows :

- Controlled flight into terrain only marginally avoided;
- Aborted take-offs on a closed or engaged runway, on a taxiway or unassigned runway;
- Take-offs from a closed or engaged runway, from a taxiway or unassigned runway;
- Landings or attempted landings on a closed or engaged runway, on a taxiway or unassigned runway;
- Fuel quantity level or distribution situations requiring the declaration of an emergency by the pilot, such as insufficient fuel, fuel exhaustion, fuel starvation, or inability to use all usable fuel on board.

2.3 After becoming aware of such an incident, there are several difficulties that an accident investigation agency may encounter in responding to the incident.

### ***Jurisdiction to conduct an investigation***

2.4 The serious incident may have occurred when the aircraft was flying over the territory of a State / Administration. The aircraft may eventually land in the territory of a State / Administration other than the State of Occurrence. In these circumstances, the responsibility to institute and conduct an investigation will fall upon the State of Occurrence according to the provisions of ICAO Annex 13. However, the initial response to the incident may involve various concerned parties (State of Occurrence, State of Landing, State of Registry, State of the Operator, the operator, etc.) and coordination will need to be made in a swift manner in order to establish the respective roles and responsibilities.

### ***Determination of Serious Incident***

2.5 As discussed in Paragraph 2.1 above, the aircraft that had a serious incident could still be operational. The airline involved might, and would likely still wish to continue its normal commercial operation, with minimal disruption to its scheduled services. In these circumstances, if the accident investigation authority decides to institute an investigation into the serious incident, the operation of the aircraft, and consequentially the journey of the passengers, may be affected.

2.6 While it is crucial for an accident investigation authority to determine if an incident needs to be investigated in a timely manner, this action may not be straightforward. Attachment C to ICAO Annex 13 has provided some useful guidance to the definition of serious incidents, however, given the unpredictable nature and variety of the different occurrences, accident investigators will still need to employ their best knowledge and judgment at the critical time to determine if “*there was a high probability of an accident*”.

### ***Collection of Evidence***

2.7 Certain perishable evidence relating to an incident, such as cockpit voice recorder (CVR) recordings, could be crucial to the understanding and determination of the circumstances of the event. However, these recordings could be overwritten in as little time as 30 minutes. A timely response to the incident is therefore vital to preserve the evidence available before it perishes. It follows that an effective reporting channel is required to enable the accident investigation authority to react and secure such perishable evidence in time.

2.8 It is inevitable that the process of collecting evidence for the investigation of serious incidents would unavoidably interrupt the operation of an aircraft. While some tasks may only delay the flight for a short period of time, others may impose a much longer delay. A typical example would be the downloading of flight data recorder and CVR data.

2.9 More particularly, CVRs which do not have in-situ downloading provision, will be required to be removed from the aircraft for data download. In cases where the accident investigation authority does not have an appropriate downloading facility nearby, the CVR installed on board will need to be replaced. Getting a replacement recorder to render the aircraft serviceable could be difficult, especially when the aircraft is away from its home base. It may impose a longer delay to aircraft operations.

### ***Practices and Procedures***

2.10 In the light of the above, Hong Kong, China has conducted a study on the handling of serious incidents, and has researched the practices and procedures of a number of accident investigation authorities. Although practices and procedures may not be identical, a common approach is to strike a balance between protection (safety) and production (aircraft operation).

2.11 The study concluded that to improve our readiness in the handling of serious incidents, the following should be undertaken within our procedures :

- Define more clearly the responsibility of each involved party in the coordination and conduct of an investigation;
- Reinforce the accident and incident reporting culture, channel and practices;
- Provide more guidance (e.g. more detailed examples) to our stakeholders and industry partners to enable a better understanding of the definition of serious incidents;
- Define more clearly the level of investigation according to the different nature of the serious incidents;
- Reinforce the emergency response procedures and training of all parties concerned, including but not limited to air navigation service providers, aerodrome authority, search and rescue agencies, aircraft operators, aircraft maintenance organizations, etc. to enable a swift and coordinated response.

## **3. ACTION BY THE MEETING**

3.1 The meeting is invited to note the content of this paper and share their experiences on this subject.