

Doc 9962  
AN/482



# Manual on Accident and Incident Investigation Policies and Procedures

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Approved by the Secretary General  
and published under his authority

First Edition — 2011

International Civil Aviation Organization



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## FOREWORD

As a result of the ICAO Universal Safety Oversight Audit Programme (USOAP) audits and audit follow-ups, it was found that a number of States had developed and documented accident and incident investigation policies and procedures, often in the form of a manual on policies and procedures. In those cases, the manuals generally implemented the provisions of ICAO Annex 13 — *Aircraft Accident and Incident Investigation* as well as industry best practices and checklists for carrying out investigations. However, the USOAP audits also established that many States lacked this type of Annex 13 implementation tool and detailed guidance for carrying out investigations. The States that lacked such documented policies and procedures were found to have more audit findings than States that had a manual on policies and procedures in place.

During the Accident Investigation and Prevention (AIG) Divisional Meeting (2008) (AIG/08) held in Montréal from 13 to 18 October 2008, Recommendation 5/1 — *Amendment to Chapter 5, Annex 13* was developed by the meeting that urged amendment of Annex 13, Chapter 5, to include a new Recommended Practice as part of the responsibility of the State conducting the investigation as follows:

*“5.4.2 Recommendation.— The accident investigation authority should develop documented policies and procedures detailing its accident investigation duties. These should include: organization and planning; investigation; and reporting.”*

Moreover, the AIG/08 meeting developed Recommendation 5/2 — *Accident Investigation Policies and Procedures Document* which urged, *“That ICAO develop guidance in the form of a framework of documented policies and procedures for carrying out investigations, to be made available to States in an appropriate ICAO document.”* This manual is in response to that recommendation.

The guidance provided in this manual is intended for use by those States that do not have in place policies and procedures to meet the requirements of Article 26 of the Chicago Convention and the Standards and Recommended Practices (SARPs) of Annex 13. The content of this manual is consistent with, and is organized in accordance with, guidance materials contained in the:

*Manual of Aircraft Accident and Incident Investigation* (Doc 9756)

Part I — *Organization and Planning*

Part II — *Procedures and Checklists* (in preparation)

Part III — *Investigation* (in preparation)

Part IV — *Reporting*

The material contained herein is presented for the benefit of States to use as an implementation tool for the development of a State’s policies and procedures manual for accident and incident investigation; it is consistent with best international practices, including policies and procedures examined during ICAO USOAP audits. The contents of the manual provide a template for States to modify, as necessary, their accident investigation documentation to be in line with Annex 13 provisions and to standardize and harmonize accident investigation processes among ICAO Member States.

The vision of ICAO in developing this manual was to provide a document that States could use as a template to insert their State-specific material into a core document that contains the essence of the most accepted and appropriate policies and procedures available to ensure compliance with Annex 13 during investigations carried out by all States.

*Note 1.— Because this manual deals with accident, serious incident and incident investigations, for reasons of brevity, the terms “accidents” and “accident investigation”, as used herein, apply equally to “incidents” and “incident investigation”.*

*Note 2.— This manual is constructed in such a manner that, for a State that wishes to develop its own policies and procedures manual, it may “fill in the blanks” by inserting State-specific materials, such as legislation, regulations, names of organizations, etc. In certain portions of the manual, where State-specific text would be required, such as the title of the accident investigation authority, etc., the text is noted in italics enclosed in single brackets, such as [Name of State] or the [Investigation Authority].*

*Note 3.— In certain portions of this manual, comments/explanations are added in italics as “Notes” enclosed in double brackets ([[...]]) in order to provide better understanding of the suggested content. Those notes are for information and clarification only and would not necessarily become part of the final manual; rather, they are intended to provide explanations or reasons that certain information should be included in a particular section of the manual.*

In order to keep this guidance material relevant and accurate, suggestions for improving it in terms of format, content or presentation are welcome. Any such recommendation or suggestion will be examined and, if found suitable, will be included in the next edition of the guidance upon approval by the Secretary General.

Regular revision will ensure that the guidance remains both pertinent and accurate.

Comments concerning this manual should be addressed to:

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International Civil Aviation Organization  
999 University Street  
Montréal, Quebec H3C 5H7  
Canada

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# GLOSSARY

When the following terms are used in this manual, they have the following meanings:

**Accident.** An occurrence 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, in which:

a) a person is fatally or seriously injured as a result of:

- being in the aircraft, or
- direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
- direct exposure to jet blast,

*except* when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

b) the aircraft sustains damage or structural failure which:

- adversely affects the structural strength, performance or flight characteristics of the aircraft, and
- would normally require major repair or replacement of the affected component,

*except* for engine failure or damage, when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or

c) the aircraft is missing or is completely inaccessible.

*Note 1.— For statistical uniformity only, an injury resulting in death within thirty days of the date of the accident is classified, by ICAO, as a fatal injury.*

*Note 2.— An aircraft is considered to be missing when the official search has been terminated and the wreckage has not been located.*

*Note 3.— The type of unmanned aircraft system to be investigated is addressed in ICAO Annex 13, paragraph 5.1.*

*Note 4.— Guidance for the determination of aircraft damage can be found in ICAO Annex 13, Attachment G.*

**Accredited representative.** A person designated by a State, on the basis of his or her qualifications, for the purpose of participating in an investigation conducted by another State. Where the State has established an accident investigation authority, the designated accredited representative would normally be from that authority.

**Adviser.** A person appointed by a State, on the basis of his or her qualifications, for the purpose of assisting its accredited representative in an investigation.

**Aircraft.** Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

**Audit.** A systematic and objective review of a State's aviation framework to verify compliance with the provisions of the Chicago Convention or national regulation, conformance with or adherence to Standards and Recommended Practices (SARPs), procedures and good aviation safety practices.

**Causes.** Actions, omissions, events, conditions, or a combination thereof, which led to the accident or incident. The identification of causes does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

**Civil aviation authority.** The governmental entity or entities, however titled, that are directly responsible for the regulation of all aspects of civil air transport, technical (i.e. air navigation and aviation safety) and economic (i.e. the commercial aspects of air transport).

**Flight recorder.** Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

*Note.— See Annex 6, Parts I, II and III, for specifications relating to flight recorders.*

**General aviation operation.** An aircraft operation other than a commercial air transport operation or an aerial work operation.

**Incident.** An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

*Note.— The types of incidents which are of main interest to the International Civil Aviation Organization for accident prevention studies are listed in ICAO Annex 13, Attachment C.*

**Investigation.** A process conducted for the purpose of accident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of causes and/or contributing factors and, when appropriate, the making of safety recommendations.

**Investigator-in-charge.** A person charged, on the basis of his or her qualifications, with the responsibility for the organization, conduct and control of an investigation.

*Note.— Nothing in the above definition is intended to preclude the functions of an investigator-in-charge being assigned to a commission or other body.*

**Maximum mass.** Maximum certificated take-off mass.

**Operator.** A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

**Preliminary Report.** The communication used for the prompt dissemination of data obtained during the early stages of the investigation.

**Safety recommendation.** A proposal of an accident investigation authority based on information derived from an investigation, made with the intention of preventing accidents or incidents and which in no case has the purpose of creating a presumption of blame or liability for an accident or incident. In addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources, including safety studies.

**Serious incident.** 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.

*Note 1.— The difference between an accident and a serious incident lies only in the result.*

*Note 2.— Examples of serious incidents can be found in ICAO Annex 13, Attachment C.*

**State of Design.** The State having jurisdiction over the organization responsible for the type design.

**State of Manufacture.** The State having jurisdiction over the organization responsible for the final assembly of the aircraft.

**State of Occurrence.** The State in the territory of which an accident or incident occurs.

**State of the Operator.** The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

**State of Registry.** The State on whose register the aircraft is entered.

*Note.— In the case of the registration of aircraft of an international operating agency on other than a national basis, the States constituting the agency are jointly and severally bound to assume the obligations which, under the Chicago Convention, attach to a State of Registry. See, in this regard, the Council Resolution of 14 December 1967 on Nationality and Registration of Aircraft Operated by International Operating Agencies which can be found in Policy and Guidance Material on the Economic Regulation of International Air Transport (Doc 9587).*

**State safety programme.** An integrated set of regulations and activities aimed at improving safety.

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## LIST OF ACRONYMS

<b>ADREP</b>	Accident/incident data reporting system
<b>AIG/08</b>	Accident Investigation and Prevention (AIG) Divisional Meeting (2008)
<b>ATC</b>	Air traffic control
<b>ATS</b>	Air traffic services
<b>CAA</b>	Civil aviation authority
<b>ECCAIRS</b>	European Co-ordination Centre for Aviation Incident Reporting Systems
<b>ICAO</b>	International Civil Aviation Organization
<b>IDP</b>	Individual development plan
<b>IIC</b>	Investigator-in-charge
<b>ISASI</b>	International Society of Air Safety Investigators
<b>MoU</b>	Memorandum of Understanding
<b>OJT</b>	On-the-job training
<b>RAIO</b>	Regional accident and incident investigation organization
<b>SARPs</b>	Standards and Recommended Practices
<b>SDCPS</b>	Safety data collection and processing systems
<b>SSP</b>	State safety programme
<b>TCB</b>	Technical Co-operation Bureau
<b>USOAP</b>	Universal Safety Oversight Audit Programme



## **ORGANIZATION**



# Chapter 1

## INTRODUCTION

### 1.1 GENERAL

1.1.1 This manual contains the *[Investigation Authority]* policies and procedures for the investigation of civil aircraft accidents and incidents that occur in the *[Name of State]* territory. This manual also contains policies and procedures for the *[Investigation Authority]* and other *[Name of State]* organizations' participation in investigations of accidents and incidents that occur outside of *[Name of State]* territory, but involving *[Name of State]* interests, including *[Name of State]*-operated, -registered, -designed, -manufactured aircraft. An organizational chart of the *[Investigation Authority]* is contained in Chapter 3 of this manual.

1.1.2 The policies and procedures contained herein are in conformity with international Standards and best practices.

*[[Note.— The contents of this model manual are written based on the assumption that [Name of State] has in place legislation, regulations, policies, and procedures that are in full compliance with ICAO Standards and Recommended Practices (SARPs). If [Name of State] has “differences” between ICAO requirements, in accordance with Article 38 of the Convention, it must notify ICAO of such differences. Moreover, the policies and procedures manual developed by use of this model manual should clearly illustrate those provisions in the manual which differ from ICAO requirements, as well as any plans to bring [Name of State] provisions in line with ICAO requirements.]]*

1.1.3 This manual was developed using the SARPs and guidance material promulgated by ICAO, as well as materials and best practices of some States.

1.1.4 The provisions of this manual are binding on the actions of the *[Investigation Authority]*, including its investigators and management personnel. The provisions of this manual are also binding on any other *[Name of State]* government and aviation industry organizations and personnel, and other personnel and organizations from outside of *[Name of State]* that participate in the *[Investigation Authority]*-led investigations.

*Note 1.— Since investigations vary in complexity, a document of this kind cannot cover all eventualities. The more common techniques and processes, however, have been included. Although this manual may be of use for experienced and inexperienced investigators alike, it is not a substitute for investigation training and experience, as well as common sense.*

*Note 2.— Because this manual deals with investigations of accidents, serious incidents and incidents, for reasons of brevity, the terms “accidents,” “investigations” and “accident investigations”, as used herein, should apply equally to the investigation of accidents, serious incidents, and incidents.*

### 1.2 STATE SAFETY PROGRAMME

1.2.1 In compliance with provisions of ICAO Annex 13, Attachment F, ICAO Member States are required to implement and maintain a State Safety Programme (SSP). An SSP is a management system for the management of

safety by the State. The implementation of an SSP is commensurate with the size and complexity of the State's aviation system, and may require coordination among multiple authorities responsible for individual element functions in the State.

1.2.2 The SSP framework contemplates four components and eleven elements. The first component is "State safety policy and objectives" and its third element is "accident and incident investigation".

1.2.3 A State, or a regional grouping of States, must establish an independent accident and incident investigation process, the sole objective of which is the prevention of accidents and incidents, and not the apportioning of blame or liability. Such investigations are in support of the management of safety in the State. In the operation of the SSP, the State maintains the independence of the accident and incident investigation authority from other State aviation organizations.

1.2.4 The [Investigation Authority] has developed this manual as part of its efforts in support of [Name of State] to implement and maintain its SSP.

### 1.3 BACKGROUND DOCUMENTS

The following ICAO documents provide additional information and guidance on related subjects:

- Annex 13 — *Aircraft Accident and Incident Investigation*, Tenth Edition, July 2010, incorporating Amendment 13
- *Manual of Aircraft Accident and Incident Investigation* (Doc 9756):
  - Part I — *Organization and Planning*
  - Part II — *Procedures and Checklists* (in preparation)
  - Part III — *Investigation* (in preparation)
  - Part IV — *Reporting*
- *Human Factors Training Manual* (Doc 9683)
- *Manual of Civil Aviation Medicine* (Doc 8984)
- *Safety Management Manual (SMM)* (Doc 9859)
- *Airport Services Manual* (Doc 9137), Part 5 — *Removal of Disabled Aircraft*
- *Guidance on Assistance to Aircraft Accident Victims and their Families* (Circ 285)
- *Training Guidelines for Aircraft Accident Investigators* (Circ 298)
- *Hazards at Aircraft Accident Sites* (Circ 315)

### 1.4 DEFINITIONS AND ABBREVIATIONS

The definitions and abbreviations used in this manual are contained in the glossary and list of acronyms.

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## Chapter 2

### LEGISLATIVE REQUIREMENTS

#### 2.1 ICAO REQUIREMENTS

Article 26 of the *Convention on International Civil Aviation* specifies that it is incumbent on a State in which an aircraft accident occurs to institute an inquiry into the circumstances of the accident. This obligation can only be met when appropriate legislation is in place. Such legislation must establish an accident investigation authority (or commission, board or other body) for the investigation of aircraft accidents. ICAO Annex 13 — *Aircraft Accident and Incident Investigation*, contains SARPs for the investigation of accidents and incidents in ICAO Member States. Legislation and regulations are in place in *[Name of State]* to address these international requirements.

#### 2.2 THE REQUIREMENTS IN *[NAME OF STATE]*

##### 2.2.1 General

*[Name of State]* has adopted legislation, regulations, policies and procedures that meet the requirements of ICAO for accident and incident investigation. *[Name of State]* has no need to forward “differences” to ICAO, in accordance with Article 38 of the Convention.

##### 2.2.2 Legislation in *[Name of State]*

*[[Note.— This portion of the manual should include a summary of relevant State legislation, which provides the legislative basis for the policies and procedures contained in the manual, and which illustrates the State’s commitment to comply with the Chicago Convention, particularly Article 26 of the Convention, and the SARPs contained in ICAO Annex 13. It also should include, but is not limited to, a summary of the legislation, which:*

- a) created the accident and incident investigation authority;*
- b) provided it with the responsibilities and authorities (including funding) regarding civil aviation accident and incident investigation on behalf of the State; and*
- c) authorizes the publication of government regulations regarding investigations of accidents and incidents.*

*The full legislation should be contained in an Appendix to the manual. An example of possible text is presented below.]]*

The legislative basis for the policies and procedures contained in this manual are codified in *[Aviation Act, or other name of the relevant legislation, including the date the legislation was enacted]*. A copy of the *[Act or other name]* is contained in Appendix A. The *[Act or other name]* establishes the *[Investigation Authority]* and provides its responsibilities and authorities for the investigation of aircraft accidents and incidents to be conducted in accordance with Article 26 of the

Chicago Convention and ICAO Annex 13. The [Act or other name] specifies that provisions regarding investigations will be further regulated by government regulations.

### 2.2.3 Regulations in [Name of State]

*[[Note.— This portion of the manual should include a summary of relevant regulations, sometimes referred to as “operating regulations” published by the government regarding accident and incident investigations. The regulations should address, at a minimum, the national requirements emanating from the legislation pertaining to accident and incident investigation and should provide for standardized investigation processes in conformance with the SARPs contained in ICAO Annex 13, as well as guidance contained in the ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756), Parts I, II, III and IV. Some States promulgate regulations regarding accident and incident investigation virtually verbatim to the SARPs contained in ICAO Annex 13 and Doc 9756. Promulgation of regulations may take on different forms, depending on the preferences of various States. In some cases, regulations are promulgated and published by Presidential Decree, or similar government action. In other cases, the regulations may be promulgated by the independent investigation authority, after appropriate approval within the government. Regardless of the means of promulgation, the regulations need to ensure satisfactory compliance with ICAO Annex 13 and other ICAO guidance materials. The full regulations should be contained in an Appendix to the manual. An example of possible text is presented below.]]*

The regulatory basis for the policies and procedures contained in this manual are codified in [Name or title of regulations pertaining to accident and incident investigation, as well as the date of enactment]. The regulations are consistent with the provisions of ICAO Annex 13 and other ICAO documents regarding accident and incident investigation, including the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Parts I, II, III and IV. A copy of the regulations is contained in Appendix B.

## 2.3 POLICY MATTERS AND MANUAL AMENDMENTS

2.3.1 It is the policy of the [Investigation Authority] to conduct its business in accordance with ICAO SARPs, particularly those contained in ICAO Annex 13 and the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Parts I, II, III and IV. It is also the policy of the [Investigation Authority] to conduct its business in accordance with the relevant laws and regulations of [Name of State].

2.3.2 The laws and regulations are supplemented by this manual, which contains the policies and procedures of the [Investigation Authority] for the conduct of an investigation in [name of State] or outside of [Name of State], when [Name of State] interests or responsibilities apply.

2.3.3 The [Head/Chief] of the [Investigation Authority] should appoint a staff member to monitor any amendments to ICAO SARPs or other ICAO documents to ensure that relevant [Name of State] laws, regulations, policies and procedures are amended as necessary. If for some reason, [Name of State] laws, regulations, policies and procedures do not meet the intent of ICAO SARPs, the [Head/Chief] of the [Investigation Authority] should ensure that ICAO is notified in a timely manner of such differences, in accordance with Article 38 of the Chicago Convention.

2.3.4 The [Head/Chief] of the [Investigation Authority] should also appoint an appropriate staff member to review this manual on a periodic basis and to prepare amendments, as necessary, to ensure its currency and consistency with the standards and best practices of the international aviation community. That staff member should also ensure that any differences between [Name of State] and ICAO SARPs are notified to ICAO, pending possible amendment of [Name of State] laws, regulations, policies and procedures, to resolve such differences.

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## Chapter 3

# INVESTIGATION OBJECTIVE AND INDEPENDENCE

### 3.1 ICAO REQUIREMENTS

According to ICAO Annex 13, an accident investigation authority must be strictly objective and totally impartial and must also be perceived to be so. It must also be able to conduct investigations in an independent manner that precludes interference from outside pressures. The following references are relevant:

- ICAO Annex 13, Chapter 3, paragraph 3.1:

“The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability.”

- ICAO Annex 13, Chapter 5, paragraph 5.4:

“The accident investigation authority shall have independence in the conduct of the investigation and have unrestricted authority over its conduct...”

- ICAO Annex 13, Chapter 5, paragraph 5.4.1:

“Any investigation conducted in accordance with the provisions of this Annex shall be separate from any judicial or administrative proceedings to apportion blame or liability.

*Note.— Separation can be achieved by the investigation being conducted by State accident investigation authority experts, and any judicial or administrative proceedings being conducted by other appropriate experts. Coordination, as per 5.10, between the two processes would likely be required at the accident site and in the gathering of factual information, with due consideration to the provisions in 5.12.”*

- In accordance with ICAO Annex 13, Chapter 5, paragraph 5.4.3:

“A State should ensure that any investigations conducted under the provisions of this Annex have unrestricted access to all evidential material without delay and are not impeded by administrative or judicial investigations or proceedings.

*Note.— The intent of this recommended practice may be achieved through legislation, protocols, or agreements between the accident investigation authorities and the judicial authorities.”*

- ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part I — *Organization and Planning*, paragraphs 2.1.2 and 2.1.3, which state, in part, the following:

The accident investigation authority must be strictly objective and totally impartial and must also be perceived to be so. It should be established in such a way that it can withstand political or other interference or pressure. Many States have achieved this objective by setting up their accident

investigation authority as an independent statutory body or by establishing an accident investigation organization that is separate from the civil aviation administration. In these States, the accident investigation authority reports direct to Congress, Parliament or a ministerial level of government.

In many States, it may not be practical to establish a permanent accident investigation authority. These States generally appoint a separate accident investigation commission for each major accident to be investigated. It is essential that such a commission report direct to a ministerial level of government so that the findings and safety recommendations of the investigation are not diluted during passage through regular administrative channels.

### 3.2 INDEPENDENCE

3.2.1 Maintaining independence in the conduct of investigations will result in enhancing the credibility of the *[Investigation Authority]* and its ability to avoid situations that have the potential to create conflicts of interest. Maintaining independence of the investigation function is equally important for accident and incident investigations.

3.2.2 The intent of “independence” is that the *[Investigation Authority]* shall be functionally independent, in particular of the national civil aviation authorities responsible for airworthiness, certification, flight operation, maintenance, licensing, air traffic control or airport operation and, in general, of any other party whose interests could conflict with the task entrusted to the investigation authority.

3.2.3 “Independence” does not mean that the *[Investigation Authority]* would not be administratively supervised and accountable to a governmental minister or ministry (or parliament) for its finances, administration, policies and working methods (which should be transparent).

### 3.3 THE REQUIREMENTS IN *[NAME OF STATE]*

*[[Note.— This section of the manual should be tailored to the specifics of the language contained in the State legislation and regulations. Suggested text is offered below.]]*

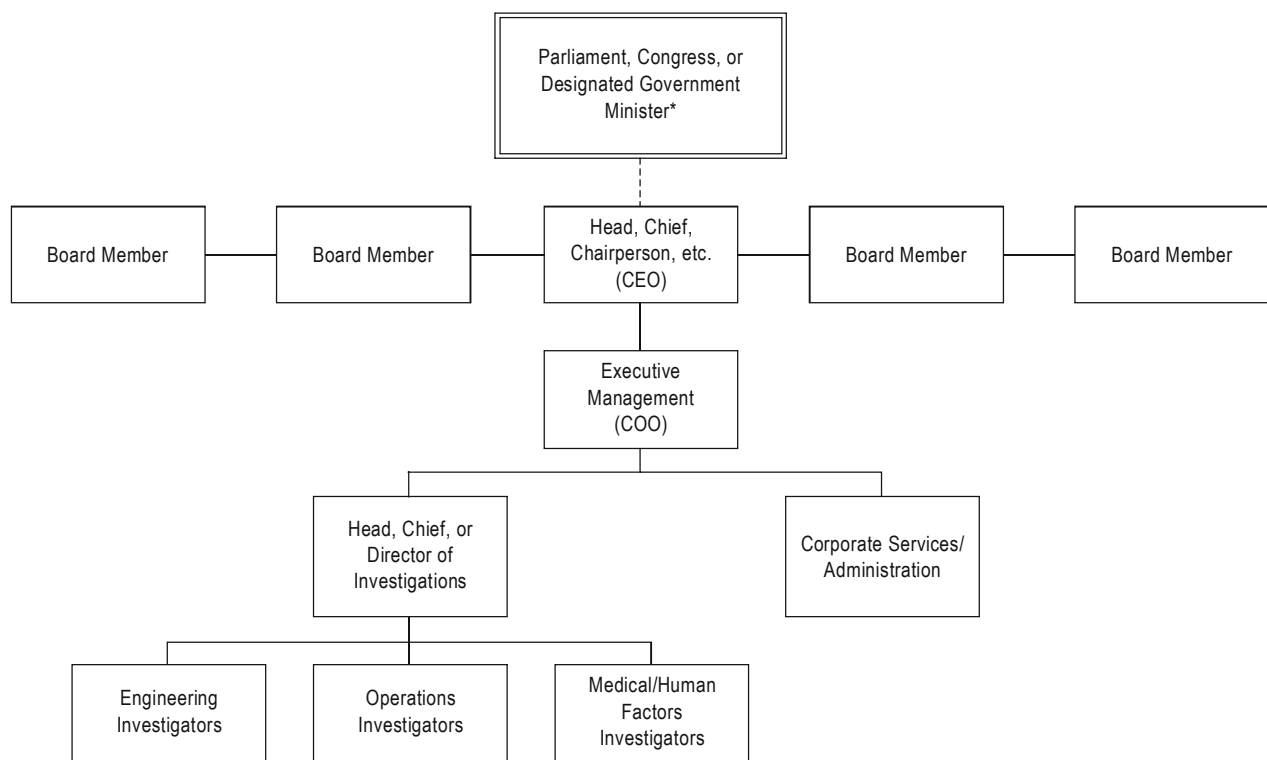
3.3.1 The *[Name of State]* legislation, regulations, policies, and procedures are consistent with and reinforce the provisions of ICAO Annex 13 regarding the objective and independence of the investigation.

3.3.2 The requirements of the *[Investigation Authority]* are contained in [Legislation, regulations] for the independence and objectivity of investigations, as follows:

- a) ensure the establishment of an adequately funded, professionally trained, independent and impartial aircraft accident investigative body in *[Name of State]*;
- b) ensure the independence of all investigations into aircraft accidents and incidents that are carried out in *[Name of State]*, from political or other interference or pressure; and
- c) promote the use of a common set of regulations compliant with the provisions of ICAO Annex 13 — *Aircraft Accident and Incident Investigation*, including regulations for the protection of safety data with the purpose of accident prevention and not the assignment of blame.

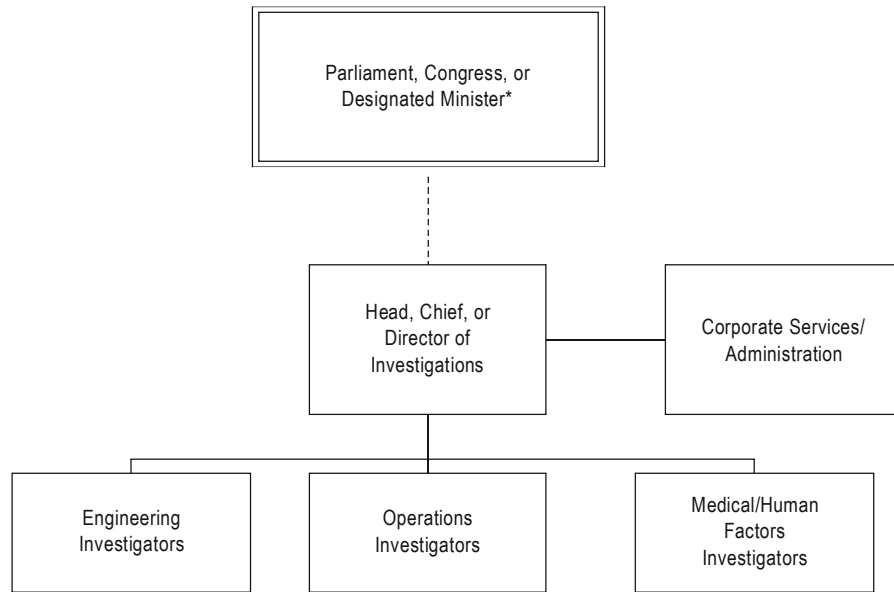
**3.4 ORGANIZATIONAL CHART OF THE [INVESTIGATION AUTHORITY]**

[[Note.— In this part of the manual, it is appropriate to insert the organizational chart for the investigation authority, along with any narrative necessary to explain the organizational structure. The chart should reflect the independence of the authority and the details of the management and reporting functions. Figures 3-1 and 3-2 below illustrate how many States organize their accident investigation authorities to meet the “independence” requirements of ICAO Annex 13. Figure 3-1 is a complex organization with a politically appointed Chairman and Board Members, who normally are not investigators. Figure 3-2 is a more streamlined organization that does not have a Board. Such an organization is most often led by an experienced investigator as the senior official. It should be noted that the reporting requirements in both cases are administrative only to the Parliament, Congress, or designated Minister and the organizations are fully separate from any regulatory/safety oversight authorities and from judicial authorities.]]



\* The investigation authority should not report to the same Minister responsible for the regulation and safety oversight of civil aviation in the State.

**Figure 3-1**



\* The investigation authority should not report to the same Minister responsible for the regulation and safety oversight of civil aviation in the State.

**Figure 3-2**

### 3.5 SUMMARY

It is the policy of the *[Investigation Authority]* and its investigation teams to meet the requirements specific to this chapter to ensure that the sole purpose of investigations is to prevent future accidents. Any judicial or administrative proceedings to apportion blame or liability shall be separate from the *[Investigation Authority]* investigations. The *[Investigation Authority]* and its investigation teams shall have functional independence in the conduct of an investigation and unrestricted authority over its conduct, with the intent that any appointed investigation team can withstand interference or pressure from any source.

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## **PLANNING**



## Chapter 4

# PLANNING AND PREPARATION FOR INVESTIGATION

### 4.1 GENERAL

4.1.1 In order to conduct proper investigations, the managers and investigators of the *[Investigation Authority]* must be fully prepared and must have a plan of action before an accident or incident occurs. Pre-investigation planning and preparedness involves several elements, including a plan for staffing key positions on an investigation team. Other considerations include Memoranda of Understanding (MoU) with other *[Name of State]* government and aviation industry organizations, as well as aircraft accident investigation authorities in other States, as a means to obtain assistance in the form of qualified investigators and facilities when required. It is important to have temporary arrangements in place for the secondment of additional staff from other *[Name of State]* government and industry organizations under some circumstances. It is also important to provide adequate training of personnel and to provide the appointed investigators with the necessary tools, investigation equipment and personal protective equipment in order to meet health and safety requirements.

4.1.2 Proper planning and preparedness are essential in facilitating the prompt arrival of investigators at an accident site and have considerable bearing on the efficiency of the investigation.

### 4.2 THE SELECTION AND APPOINTMENT OF INVESTIGATORS

4.2.1 Attention is drawn to ICAO Circular 298, *Training Guidelines for Aircraft Accident Investigators*, Chapter 2, *Background Experience for Investigators*, paragraphs 2.1 and 2.2, which state, in part:

*Aircraft accident investigation is a specialized task which should only be undertaken by qualified investigators.... Potential accident investigators must have considerable practical experience in aviation as a foundation on which to build their investigative skills....*

It is the policy of the *[Investigation Authority]* to follow the guidance contained in ICAO Circular 298 regarding selection and appointment of investigators.

4.2.2 The investigation personnel of the *[Investigation Authority]* are issued government credentials, which specify the legislative and regulatory basis for their authorities and responsibilities. The credentials contain the investigators' photographs and provide the legal basis for their work during investigations of accidents and incidents.

4.2.3 *The [Investigation Authority]* has agreements with the aircraft accident and incident investigation authorities in other States to call upon other experts for assistance on very short notice and without having to establish formal agreements and arrangements at the time of the need of such assistance. Appendix C contains copies of current MoUs.

4.2.4 As part of its management plan, the *[Investigation Authority]* maintains a list of qualified investigators who are appointed to key positions. Also, the *[Investigation Authority]* should ensure that suitable arrangements can be made on short notice to enlist the necessary support staff from other organizations within *[Name of State]*.

4.2.5 The use of outside expertise is accomplished by written contracts and/or MoUs which include provisions to ensure that the seconded individuals are relieved of their regular duties during the course of the investigation. Their independence and objectivity in the investigation work is essential, and it is important to ensure there are no real or perceived conflicts of interest on the parts of seconded individuals. Seconded investigators should be given proper credentials and should sign written agreements to comply with *[Name of State]* laws, regulations, policies and procedures, and to demonstrate their independence and objectivity, and that there are no conflicts of interest during the period of the secondment.

4.2.6 Each investigator, as well as outside personnel used on a temporary basis, must be fully aware of their duties and responsibilities.

### 4.3 INVESTIGATOR TRAINING

4.3.1 It is the policy of the *[Investigation Authority]* to provide appropriate training to investigators consistent with international standards and best practices. In particular, the *[Investigation Authority]* should follow guidance provided in ICAO Circular 298, Chapters 3 and 4, which contains detailed information regarding the training of investigators in four phases:

- 1) Initial training.
- 2) On-the-job training.
- 3) Basic accident investigation courses.
- 4) Advanced accident investigation courses and additional training.

4.3.2 One means to determine and manage training needs, as well as monitor and evaluate the training needs and outcomes of training of the *[Investigation Authority]* staff, is through the use of an Individual Development Plan (IDP). A template for an IDP is contained in Appendix E, which contains the required elements of an investigator's or manager's training programme. Based on an individual's job description and his/her background, experience, and training gained in the past, the need for additional training can be determined and monitored with the IDP, which would be completed for each staff member.

*Note.— The items listed in the template IDP are for reference only. Individual items may be added, deleted, or amended to make the IDP directly applicable to any particular staff member.*

4.3.3 Each newly hired person possesses some knowledge, skills, and abilities applicable to the assigned tasks; however, the level from one person to another varies. For example, two highly qualified operations investigators could possess extensive flight operations background, but one may only have limited incident investigation experience, while the other may have considerable major accident investigation experience. Further, investigators require different levels of knowledge, skills, and abilities, depending on the investigation roles to which they may be assigned. The IDP is an excellent tool for identifying and managing these variables.

4.3.4 The IDP contains the basic requirements of knowledge, skills, and abilities that each person either must possess when hired, or must gain through a structured training programme. The IDP also provides a tool to manage and plan each person's training, including a means to project an annual training budget. Further, the IDP can be used to document the necessary steps to be taken for a person to be promoted to higher levels of responsibility, such as from Operations Investigator to Investigator-in-charge. The completed IDP for each person becomes the training record, which is filed along with supporting materials, such as certificates and other records of training and experience.



#### 4.4 INVESTIGATOR EQUIPMENT

4.4.1 As part of its management plan, it is the policy of the *[Investigation Authority]* to properly equip its managers and investigators in accordance with ICAO guidance material and international best practices.

4.4.2 Attention is drawn to the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part I, Chapter 2, paragraph 2.5.1, which states, in part, the following:

*Accident investigators should have their investigation field kits and essential personal items packed and ready so they can proceed without delay to the accident site....”*

An Appendix to Chapter 2 of Doc 9756 contains guidance for an investigation field kit.

4.4.3 Attention is also drawn to ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part I, Chapter 5, paragraphs 5.4 and 5.5, and the Appendix to Chapter 5 — *Personal Protective Equipment against Biological Hazards*, regarding safety at the accident site and environmental and natural hazards.

4.4.4 The *[Investigation Authority]* should ensure that there is a periodic review of the technical investigation equipment to be used by the investigators at an accident site. The equipment could include cameras, notebook computers, mobile telephones, tools, etc. Specialized equipment may need to be stored at the office or may have to be purchased as needed.

4.4.5 Advance consideration should be given to such details as inoculations, passport requirements and travel facilities of accident investigators.

#### 4.5 HEALTH AND SAFETY AT AN ACCIDENT SITE

4.5.1 ICAO Circular 315, *Hazards at Aircraft Accident Sites*, contains detailed guidance on managing occupational health risks in aircraft accident investigation, including the various categories of hazards associated with accident and incident investigation. The *[Investigation Authority]* should use the generic operational safety planning guide contained in Chapter 4 of Circular 315, as well as the operational safety plan/site assessment tool contained in Appendix A to Chapter 4 of Circular 315, and the personal protective equipment guide contained in Appendix B to Chapter 4 of Circular 315.

4.5.2 Investigators should be aware of the potential hazards at an accident site and what precautions to take. For this reason, the *[Investigation Authority]* should designate a staff member (or an appropriate person or persons from another organization) as the “accident site safety and security coordinator” responsible for accident site safety and security matters, and to oversee the personal protective equipment and its use. The investigator-in-charge (IIC) or the designated accident site safety and security coordinator should brief the investigation team on all known and potential hazards and should establish appropriate safety practices. The accident site safety and security coordinator should also ensure compliance with the provisions of this manual and other ICAO guidance material regarding health and safety of investigators during the course of investigations.

*Note.— If a specific accident site safety coordinator is not designated, another investigator, such as the IIC, chairperson of the structures group or another responsible person, should assume the duties of ensuring proper site safety and security.*

4.5.3 The support of fire department and dangerous goods specialists should be enlisted, as necessary, to evaluate known and/or potential hazards, and to brief the investigation team, as appropriate.

4.5.4 Investigators who work among wreckage should be given a valid anti-tetanus serum inoculation and hepatitis immunization, as well as the necessary personal protective equipment against biological hazards, such as blood-borne pathogens. Records of inoculations should be maintained for each investigator.

4.5.5 It is the policy of the *[Investigation Authority]* to provide all investigators with initial and recurrent training on biological hazard protective equipment and procedures. Records of such training should be maintained for each investigator.

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## **INVESTIGATION**



## Chapter 5

# INITIAL NOTIFICATION AND RESPONSE

### 5.1 GENERAL

This chapter contains policies and procedures pertaining to:

- a) reporting requirements;
- b) initial notification and reporting of aircraft accidents and incidents to civil aircraft that occur in one [Name of State];
- c) responses to initial notifications from other States regarding accidents and incidents that occur outside the [Name of State] but involving interests of [Name of State]; and
- d) delegation in whole or in part of investigations.

*Note.— It is the policy of [Name of State] and the [Investigation Authority] to comply with the provisions of ICAO Annex 13, Chapter 4 — Notification, regarding accidents and incidents occurring in [Name of State]. Therefore, not all of the details contained in ICAO Annex 13, Chapter 4, are repeated herein.*

### 5.2 REPORTING REQUIREMENTS

5.2.1 The following checklist is from ICAO Annex 13, Attachment B. It specifies the various reporting requirements for different types of accidents and serious incidents. It is the responsibility of the [Investigation Authority] on behalf of [Name of State] to comply with the notification and reporting requirements of ICAO Annex 13 (Chapters 4, 6 and 7). All notifications and reports should be forwarded in one of the official ICAO working languages. If possible, notifications and reports should also be in English, when another working language was used.

5.2.2 A list of addresses of aircraft accident investigation authorities can be found in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part I — *Organization and Planning* and on the ICAO FSIX website. (Chapters 10 and 11 of this manual contain additional reporting requirements.)

5.2.3 A list of “serious incidents” requiring notification is contained in Appendix D of this manual (reference ICAO Annex 13, Attachment C).

<b>REPORTING CHECKLIST</b>			
<b>Notification — accidents and serious incidents</b>			
<i>From</i>	<i>For</i>	<i>Send to</i>	<i>ICAO Annex 13 reference</i>
State of Occurrence	International occurrences: all aircraft	State of Registry State of the Operator State of Design State of Manufacture ICAO (when aircraft over 2 250 kg or is a turbojet-powered aeroplane)	4.1
State of Registry	Domestic and other occurrences	State of the Operator State of Design State of Manufacture ICAO (when aircraft over 2 250 kg or is a turbojet-powered aeroplane)	4.8

### 5.3 NOTIFICATION PROCEDURES

5.3.1 The *[Investigation Authority]* should maintain a 24-hour-a-day Duty Officer to receive notifications of accidents and incidents. The Duty Officer should use modern communications equipment for notifications from within *[Name of State]* and to/from other States. There should be a backup system in case the Duty Officer cannot be contacted for notifications.

5.3.2 The *[Investigation Authority]* will ensure that up-to-date contact and address information for reporting of accidents and incidents to the *[Investigation Authority]* is available to the relevant aviation organizations and personnel within *[Name of State]* and to other States through ICAO by use of the ICAO website (*list of addresses for aircraft accident investigation authorities*), as well as listed in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), *Part I, Chapter 4, Appendix 2*. The 24-hour contact information for the *[Investigation Authority]* should also be published on the *[Investigation Authority]* internet website for the benefit of the international aviation community.

5.3.3 Upon receiving a notification of an accident or incident in *[Name of State]*, the Duty Officer should alert the *[Investigation Authority]* management and appropriate investigation team members. The team members must prepare for immediate departure to the accident site. The Duty Officer should coordinate the notification of other *[Name of State]* government agencies and relevant organizations, such as search and rescue, police, etc. and other involved States, such as the State of Registry, Operator, Design, and/or Manufacturer, in accordance with ICAO Annex 13, Chapter 4 — *Notification*. Notification and reporting to ICAO are also addressed in Chapter 11 of this manual.

5.3.4 The initial (and the amended initial) notification to other States and ICAO shall contain the following general information, if available, as per ICAO Annex 13, paragraph 4.2:

- a) for accidents the identifying abbreviation ACCID, for serious incidents INCID;

- b) manufacturer, model, nationality and registration marks, and serial number of the aircraft;
- c) name of owner, operator and hirer, if any, of the aircraft;
- d) qualification of the pilot-in-command, and nationality of crew and passengers;
- e) date and time (local time or UTC) of the accident or serious incident;
- f) last point of departure and point of intended landing of the aircraft;
- g) position of the aircraft with reference to some easily defined geographical point, and latitude and longitude;
- h) number of crew and passengers; aboard, killed and seriously injured; others, killed and seriously injured;
- i) description of the accident or serious incident and the extent of damage to the aircraft, so far as is known;
- j) an indication to what extent the investigation will be conducted or is proposed to be delegated by the State of Occurrence;
- k) physical characteristics of the accident or serious incident area, as well as an indication of access difficulties or special requirements to reach the site;
- l) identification of the originating authority and means to contact the investigator-in-charge and the accident investigation authority of the State of Occurrence at any time; and
- m) presence and description of dangerous goods carried on board the aircraft.

5.3.5 The following is an example of an accident notification:

#### EXAMPLE OF A NOTIFICATION

<i>Information required (see ICAO Annex 13, paragraph 4.2)</i>	<i>Example</i>
a) for accidents the identifying abbreviation ACCID, for serious incidents INCID;	a) ACCID;
b) manufacturer, model, nationality and registration marks, and serial number of the aircraft;	b) Boeing 737-200, United Kingdom, GAMSW, serial no. 20280;
c) name of owner, operator and hirer, if any, of the aircraft;	c) Derby Aviation;
d) qualification of the pilot-in-command, and nationality of crew and passengers;	d) Captain; crew: Anytown City; passengers: unknown

<i>Information required (see ICAO Annex 13, paragraph 4.2)</i>	<i>Example</i>
e) date and time (local time or UTC) of the accident or serious incident;	e) 7 October 1983 at 1314 hours local time;
f) last point of departure and point of intended landing of the aircraft;	f) London/Heathrow-Perpignan/Riversaltes;
g) position of the aircraft with reference to some easily defined geographical point, and latitude and longitude; <sup>1</sup>	g) 12 km south of Prades, 42-33 N, 02-26 W, elevation 2 200 m;
h) number of crew and passengers; aboard, killed and seriously injured; others; killed and seriously injured; <sup>2</sup>	h) 6 crew and 57 passengers aboard: all fatally injured; others: none;
i) description of the accident or serious incident and the extent of damage to the aircraft, so far as is known;	i) aircraft collided with mountain side in the Canigou Massif. Aircraft destroyed by fire;
j) an indication to what extent the investigation will be conducted or is proposed to be delegated by the State of Occurrence;	j) full investigation by the French accident investigation authority;
k) physical characteristics of the accident or serious incident area, as well as an indication of access difficulties or special requirements to reach the site;	k) mountainous area, difficult access, perpetual snow;
l) identification of the originating authority and means to contact the investigator-in-charge and the accident investigation authority of the State of Occurrence at any time; and	l) Bureau Enquêtes-Accidents, Paris, France. For additional information, contact Mr. X at (telephone and facsimile numbers, and e-mail address).
m) presence and description of dangerous goods carried on board the aircraft.	m) none.

1. It may be helpful to provide the elevation of the accident site, if it is known.

2. It is useful to first provide the number of persons aboard (crew, passengers) and then the injuries they sustained.

## 5.4 RESPONSE TO NOTIFICATIONS

5.4.1 Upon receipt of an initial notification from another State about an accident or incident that occurred outside of *[Name of State]* involving *[Name of State]* interests (*[Name of State]*-Registered, -Operated, -Designed, or -Manufactured), the *[Investigation Authority]* should respond indicating its intentions to participate in the investigation and the expected travel arrangements of its accredited representative and advisers. If travel to the accident site in the other State is not expected, the other State should be so advised.



5.4.2 Regardless of whether the *[Investigation Authority]* intends to travel to an investigation in another State, the *[Investigation Authority]* should appoint an accredited representative, who will gather relevant materials and records related to the flight, crew, or aircraft, or any other material that may be of use to the accident investigation authority in the other State. Such materials should be forwarded to the IIC of the other State in a secure and expeditious manner.

*Note.— The accredited representative for [Name of State] appointed to assist other States with their investigations should preferably be a qualified senior investigator from the investigation authority, who understands the international investigation practices, particularly ICAO Annex 13, and who should represent the interests of [Name of State] during investigations led by other States. All advisors from [Name of State] from the [Investigation Authority], [CAA], airlines, universities, military, etc., should be responsive to the leadership of the accredited representative.*

5.4.3 The following specific requirements of ICAO Annex 13, Chapter 4, are policy provisions of the *[Investigation Authority]*:

- As soon as possible after an accident or incident in *[Name of State]*, the *[Investigation Authority]* should forward an accident/incident notification to the other States involved and, when applicable, to ICAO. The *[Investigation Authority]* should also subsequently dispatch details omitted from the initial notification as well as other known relevant information.
- The *[Investigation Authority]* should forward notifications in a timely manner with all available information in clear concise language prepared in one of the official ICAO working languages — most often in English.
- The *[Investigation Authority]* should acknowledge receipt of notifications of accidents and incidents from other States.
- The *[Investigation Authority]* should provide the State conducting the investigation with, as applicable, any relevant information regarding the flight, crew and aircraft involved in an accident or incident as soon as possible.
- The *[Investigation Authority]* should notify the State conducting the investigation whether it intends to appoint an accredited representative and, if so, provide the details about travel and other arrangements.
- If the *[Investigation Authority]* is aware of dangerous goods on board an aircraft that has an accident or incident, the *[Investigation Authority]* should ensure that it notifies the State conducting the investigation with the details of dangerous goods on board the aircraft by the most suitable and quickest means available.

5.4.4 The *[Investigation Authority]* should maintain a record of all transmissions of notifications sent, responses received, and any follow-up correspondence in a tracking file system linked to each accident/incident file for future reference and follow-up actions.

*Note.— The [Name of State] should take into account the provisions of ICAO Circular 285 — Guidance on Assistance to Aircraft Accident Victims and their Families, regarding notifications and other matters pertaining to assisting family members of accident victims.*

## 5.5 DELEGATION OF THE INVESTIGATION (IN WHOLE OR IN PART)

5.5.1 ICAO Annex 13, paragraphs 5.1 and 5.1.1, provide guidance that the whole or any part of an investigation of an accident or incident may be delegated by the State of Occurrence to another State or to a regional accident and incident investigation organization (RAIO), based on mutual arrangement and consent.

5.5.2 For occurrences in which *[Name of State]* is the State of Occurrence, and involving aircraft operated, registered, designed and/or manufactured by other State(s), the *[Investigation Authority]* may consider delegating the whole or parts of the investigation to an aircraft accident investigation authority in another State or to an RAIO, in order to facilitate a timely investigation. For example, for aircraft component examinations that must be conducted at facilities outside of *[Name of State]*, the *[Investigation Authority]* may delegate the oversight of the examinations to the accident investigation authority in another State. Whenever possible, the facility should not be the manufacturer, in order to avoid a real or perceived conflict of interest. However, there may be times when the only appropriate expertise or tooling will be at the manufacturer's facility, so it will be necessary to ensure investigator supervision of the work. Until the *[Investigation Authority]* establishes its own flight recorder laboratory, replay and analysis for recorders should be conducted in the facilities of other States with recorder read-out capabilities, in accordance with guidance provided in ICAO Annex 13, Attachment D, *Guidelines for Flight Recorder Read-out and Analysis*.

*Note.— ICAO Annex 13, paragraph 5.1, Note 2, urges that, “When the whole investigation is delegated to another State or regional accident investigation organization, such a State is expected to be responsible for the conduct of the investigation, including the issuance of the Final Report and the ADREP reporting. When a part of the investigation is delegated, the State of Occurrence usually retains the responsibility for the conduct of the investigation.”*

5.5.3 For occurrences over international waters involving in-flight damage or in-flight injuries to occupants of *[Name of State]*-registered aircraft that lands in another State, the *[Investigation Authority]* may delegate the whole or part of the investigation to the other State, or to a regional investigation organization, upon mutual arrangement and consent.

5.5.4 The general spirit of ICAO Annex 13 is cooperation between States during investigations. Hence, timely communications, sharing of information, and sharing of investigative tasks between States using the authority to delegate the whole or part of any investigation foster such cooperation. It is the policy of the *[Investigation Authority]* to comply with this spirit of cooperation.

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## Chapter 6

# INVESTIGATION POLICIES AND PROCEDURES

### 6.1 GENERAL

6.1.1 This chapter of the manual contains general policies and procedures of the *[Investigation Authority]* that are consistent with the requirements and guidance provided by ICAO, as well as the best practices of the accident investigation agencies in some other States. *[Name of State]* laws and regulations pertinent to the *[Investigation Authority]* and aircraft accident investigation in *[Name of State]* provide the legislative and regulatory basis for the policies and procedures contained herein. Many of the following policy and procedural matters are taken directly from ICAO documents and have been accepted by the *[Investigation Authority]* as its own.

6.1.2 It is the policy of the *[Investigation Authority]* to institute an investigation into the circumstances of all aircraft accidents and incidents falling under the authority and responsibilities entrusted to the *[Investigation Authority]* by the government. Such investigations should be conducted in accordance with the provisions of ICAO Annex 13 and *[Name of State]* laws and regulations.

6.1.3 It is the policy of the *[Investigation Authority]* to determine the extent of the investigation and the procedures to be followed in carrying out such an investigation, depending on the lessons it expects to draw from the investigation for the improvement of safety. The scope and complexity of the investigation and the size and composition of the investigation team should be influenced by the following factors, among others:

- a) injuries, deaths and damage to equipment, third parties and the environment;
- b) identified and potential safety issues underlying the occurrence;
- c) the likelihood of recurrence, the probability of adverse consequences, and the severity of adverse consequences;
- d) accident and incident history related to the type of operation, size and type of aircraft, the operator, manufacturer, regulator, etc.; and
- e) actual and potential deviations from industry safety and operational regulations, standards, procedures, and practices.

6.1.4 It is the policy of the *[Investigation Authority]* to conduct investigations and complete reports for all accidents and incidents, including the type of serious incidents listed in ICAO Annex 13, Attachment C. It should also conduct selected investigations of other incidents not listed in ICAO Annex 13.

*Note.— The [Investigation Authority] has an arrangement (MoU) with [the CAA] to be notified of all occurrences (accidents and incidents), including air traffic and mechanical failure incidents, so that the [Investigation Authority] can determine if it should conduct an independent investigation. Most of the incident notifications should be generated by the [CAA] mandatory incident reporting system. See Appendix C.*

6.1.5 Upon notification of an occurrence that falls under the jurisdiction of the *[Investigation Authority]*, the *[Investigation Authority]* should immediately institute an investigation appointing an IIC and additional experts, as required. The *[Investigation Authority]* should assure that the appointed experts are comprised of aircraft accident investigation specialists, who have adequate expertise, training, and experience to ensure a thorough investigation.

6.1.6 The *[Investigation Authority]* should consider calling upon an aircraft accident investigation agency of another State for assistance on the basis of mutual agreements. The *[Investigation Authority]* may further consider proposing the delegation of the whole investigation or parts thereof to an aircraft accident investigation agency in another State, or a RAIO, should the circumstances of an occurrence so warrant.

6.1.7 If, during the course of an investigation, the *[Investigation Authority]* becomes aware of, or suspects, unlawful interference (sabotage or other crime), it should immediately notify the appropriate aviation security and police authorities. The *[Investigation Authority]* should continue the safety investigation, parallel with any judicial investigation, and should complete a Final Report of the occurrence, in accordance with ICAO Annex 13, keeping in mind continued cooperation with the judicial authorities.

6.1.8 If an accident/incident occurrence being investigated by *[Name of State]* has a flight data recorder (FDR) or cockpit voice recorder (CVR), or both, the *[Investigation Authority]* should make immediate arrangements to recover and protect the flight recorders. The *[Investigation Authority]* should arrange read-out of the recorders as soon as practical at an appropriate flight recorder read-out facility. As per Attachment D to ICAO Annex 13, it is essential that flight recorders be read out as early as possible after an accident. Early identification of problem areas can affect the investigation at the accident site where evidence is sometimes transient. Early identification of problem areas may also result in urgent safety recommendations which may be necessary to prevent a similar occurrence.

6.1.9 Should the recorders sustain damage in such a way that they cannot readily be read out at the chosen facility, or are of a type that requires additional expertise or equipment (such as Russian-built flight recorders), the *[Investigation Authority]* should seek expert assistance consistent with the provisions of ICAO Annex 13. In some cases, the recorder may need to be taken to its manufacturer for read-out. In such cases, the work should normally be supervised by a *[Investigation Authority]* investigator, or an investigator from another State to ensure that there is no real or perceived conflict of interest.

6.1.10 The *[Investigation Authority]* should also consider electronic equipment other than flight recorders, which may contain valuable information related to the accident. Such equipment includes satellite navigation units (e.g. global positioning system (GPS), Global Navigation Satellite System (GLONASS), ground proximity warning system (GPWS), terrain awareness and warning system (TAWS), flight management system (FMS)). Analyses of these units can significantly help the investigation, especially in the absence of information from the flight recorders. In addition, the *[Investigation Authority]* should consider seeking expert assistance from the relevant States of Manufacture.

6.1.11 The *[Investigation Authority]* should complete, publish and publicly release a Final Report of the investigation in accordance with ICAO Annex 13 requirements, consistent with the complexity and safety issues involved in the occurrence. When safety deficiencies are identified during the course of an investigation, the *[Investigation Authority]* should encourage relevant organizations (airlines, airports, manufacturers, regulators, ICAO, when ICAO documents are involved, etc.) to take immediate safety action to prevent recurrence. If necessary, the *[Investigation Authority]* should issue safety recommendations to the organization(s) in a position to take safety action. Chapter 10 of this manual contains further details about the report writing and safety recommendations.

## 6.2 RIGHTS, AUTHORITY AND OBLIGATIONS OF INVESTIGATORS

The *[Investigation Authority]* investigators have the following rights and authority, which are consistent with *[Name of State]* obligations under ICAO Annex 13:

- a) Unhampered access and control over an aircraft accident site and any wreckage thereon.
- b) Unhampered access and control over all relevant accident/incident investigation materials, evidence, documents, etc., including air traffic service (ATS) recordings and recorders.
- c) The right to conduct detailed examination and testing of relevant material/evidence without delay or interference.
- d) The right and obligation not to disclose certain records for purposes other than accident and incident investigation, unless the appropriate authority for the administration of justice determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigation. Such records include:
  - all statements taken from persons by the investigators during the course of the investigation;
  - all communications between persons having been involved in the operation of the aircraft;
  - medical or private information of persons involved in the accident or incident;
  - cockpit voice recordings and transcripts from such recordings;
  - recordings and transcriptions of recordings of air traffic control units;
  - cockpit airborne image recordings and any part or transcripts from such recordings;
  - opinions expressed in the analysis of information, including flight recorder information; and
  - any record not relevant for analysis of the accident or incident.

## 6.3 INVESTIGATION OPERATIONS

The *[Investigation Authority]* personnel and the investigators have the following rights, authority, and obligations:

- a) Call on the services of local police or other authorized persons to ensure protection of the aircraft accident site, including the aircraft and its contents, until such time as the *[Investigation Authority]* and the appointed investigators are able to directly take over custody and security of the aircraft and its contents.
- b) Ensure that the aircraft, its contents, and other relevant evidence remain undisturbed, to the extent possible, until arrival and inspection by an accredited representative, if requested to do so.

*Note.— Nothing in this provision precludes the [Investigation Authority] from instituting an investigation, and if for unforeseen reasons, the aircraft, etc. must be moved or otherwise disturbed pending the arrival of an accredited representative, the activities involved should be documented by photographs and other appropriate means.*

- c) Ensure, in the event of an occurrence to be investigated, that all ATS communications recordings, radar data, and documents associated with the flight are secured for safekeeping.

- d) Permit accredited representatives of the following States to participate in any investigation:
- the State of Registry;
  - the State of the Operator;
  - the State of Design;
  - the State of Manufacture; and
  - any other State that on request provides information, facilities or experts.
- e) Permit advisers assisting accredited representatives to participate in an investigation to the extent necessary in order to make the participation by the accredited representatives effective.
- f) Permit participation of experts (within the provisions of ICAO Annex 13, paragraph 5.27) from States having suffered fatalities or serious injuries to their citizens. Such experts should be permitted to:
- 1) visit the scene of the accident;
  - 2) have access to the relevant factual information, which is approved for public release by the State conducting the investigation, and information on the progress of the investigation; and
  - 3) receive a copy of the Final Report.
- Note.— Experts appointed under the provisions of ICAO Annex 13, paragraph 5.27, are not necessarily permitted to participate in the actual investigation; rather, they are provided limited access (cited above) related to the circumstances pertaining to the death or injury of citizens from their State(s). Likewise, experts should be permitted to assist in the identification of victims and in meetings with survivors from their respective States.*
- g) Entitle accredited representatives under the control of the IIC to participate in all aspects of the investigation, in particular:
- to visit the scene of the accident;
  - to examine the wreckage;
  - to obtain witness information and suggest areas of questioning;
  - to have full access to all relevant evidence as soon as possible;
  - to receive copies of all pertinent documents;
  - to participate in read-outs of recorded media;
  - to participate in off-scene investigative activities, such as component examinations, technical briefings, tests and simulations;
  - to participate in investigation progress meetings including deliberations related to analysis, findings, causes and safety recommendations; and
  - to make submissions in respect of the various elements of the investigation.
- h) Invite participation of the operator in the investigation, when neither the State of Registry nor State of the Operator appoints an accredited representative.
- i) Invite participation of the manufacturer(s) (type design and/or final assembly of the aircraft) in the investigation, when neither the State of Design nor the State of Manufacturer appoints an accredited Representative.
- j) Call on the best technical expertise available from any source to supplement its investigative staff, should the need arise.

- k) Protect evidence and maintain custody of the aircraft and its contents for a period of time necessary to conduct the investigation, including protection from further damage, access by unauthorized persons, pilfering or deterioration. See Appendix F for detailed procedures.
- l) Photograph and document evidence of a transitory nature by appropriate means to preclude loss of evidence.
- m) Test and examine aircraft components, which could possibly cause damage to the components during these tests and examinations.
- n) Coordinate between the [Investigation Authority] and judicial authorities to ensure that the sole purpose of the investigation is for accident prevention purposes, and to ensure that any judicial or administrative proceedings to apportion blame or liability are separate from the ICAO Annex 13 investigation.
- o) Ensure that autopsy examinations, as well as toxicological tests, are carried out for crew members and passengers for medical investigation purposes. Medical examinations also should be carried out on surviving flight crew, passengers and aviation personnel involved in the occurrence, such as air traffic controllers, if deemed necessary by the IIC.
- p) For investigations being conducted by other States, provide the State conducting the investigation with:
  - (in all cases) all relevant information requested by that State; and
  - (in all cases) information about an aircraft that prior to the occurrence of an accident or incident has used or normally would use the facilities or services of [Name of State]. For example, flight crew and aircraft maintenance records, ATS recordings, meteorological information, etc., related to the occurrence should be provided to the State conducting the investigation.
- q) Appoint an accredited representative from the [Investigation Authority] in the case of an accident involving an aircraft of a maximum mass of over 2 250 kg, when specifically requested to do so by the State conducting the investigation.

*Note.— Such an appointment does not necessarily require that the [Investigation Authority] accredited representative travel to the accident site; however, the accredited representative is required to fulfil the obligations contained in ICAO Annex 13 by providing whatever assistance is required.*

- r) Prevent disclosure of information by the accredited representative appointed by the [Investigation Authority] and by [Name of State] advisers on the progress and findings of an investigation, without the express consent of the State conducting the investigation.

*Note 1.— Because the responsibility for release of information on the progress and findings of the investigation rests with the State conducting the investigation, the [Investigation Authority] should ensure that its staff and any advisers from [Name of State] abide by this requirement.*

*Note 2.— Nothing in this requirement precludes, or should delay, the release of information for the purpose of accident prevention (issuance of safety recommendations); however, such release should be coordinated with the State conducting the investigation.*

- s) For accidents involving death or serious injury to [Name of State] citizens that occur in other States, the [Name of State] should appoint an expert, possibly from the [Investigation Authority], in accordance with the provisions of ICAO Annex 13, paragraph 5.27, to:

- 1) visit the scene of the accident;
  - 2) have access to the relevant factual information, which is approved for public release by the State conducting the investigation, and information on the progress of the investigation; and
  - 3) receive a copy of the Final Report.
- t) Reopen an investigation if new and significant evidence becomes available, or if significant errors were made in the original analyses that would compromise the findings.
  - u) Make public the facts, conditions, and circumstances during the course of an investigation with the view toward informing the travelling public and preventing future occurrences.
  - v) Identify safety deficiencies during the course of investigations and in the Final Report of the investigation with the view toward promoting safety actions by addressing the recommendations to appropriate authorities, agencies, and organizations charged with aviation safety.
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## Chapter 7

### ACTIONS AT THE ACCIDENT SITE

#### 7.1 GENERAL

##### 7.1.1 Liaison with other authorities

7.1.1.1 The *[Investigation Authority]* has agreements (MoUs) with other agencies and authorities in *[Name of State]* to prepare for the eventuality of an aircraft accident (see Appendix C). Detailed information concerning the role and responsibility of each agency, for each type of emergency, is contained in the ICAO *Airport Services Manual (Doc 9137)*, Part 7 — *Airport Emergency Planning*. Although that manual deals primarily with accidents at or near an airport, the role and responsibility of each agency outlined therein may also apply to accidents elsewhere.

7.1.1.2 Victim identification is the responsibility of the coroner and medical officials, the police department and the victim identification team. Medical personnel, such as pathologists and forensic dentists, should be aware of what is expected of them in the event of an aircraft accident, including autopsies and toxicology examinations. The *[Investigation Authority]* has coordinated its needs in advance with the medical specialists in order to facilitate these arrangements.

7.1.1.3 Notification of next of kin is a sensitive task that must be planned and undertaken with great care in order to avoid anomalies, such as multiple or erroneous notifications. In *[Name of State]*, the notification of next of kin is a *[police or medical examiner]* task. ICAO Circular 285 — *Guidance on Assistance to Aircraft Accident Victims and their Families*, provides further guidance in this regard.

7.1.1.4 Although it is recognized that the circumstances surrounding each accident are different, the importance of proper planning and establishing good liaison with other authorities, particularly the police, the fire department and the search and rescue services, cannot be overemphasized.

7.1.1.5 The *[Investigation Authority]* should likely have to rely on assistance from other civil and military organizations to provide facilities, equipment and additional personnel, i.e. helicopters, heavy lifting and moving gear, metal detectors, communication equipment, and divers. It is important that heavy salvage equipment, such as cranes, bulldozers, or lifting helicopters, are readily available. In some cases, a full-scale expedition may have to be organized, requiring additional transportation, food, lodging, etc.

##### 7.1.2 Initial actions at the accident site

7.1.2.1 The local fire department and the police will probably be the first authorities to arrive at an aircraft accident site. It is therefore important to enlist the cooperation of these authorities in order to ensure security and control of accident sites and cooperation during investigations. It is essential that vital evidence is not lost through interference with the aircraft wreckage in the early phases of an investigation. The fire department and the police should be aware of what is expected of them in the event of an aircraft accident. The *[Investigation Authority]* is responsible for coordinating its needs in advance with relevant search and rescue organizations. Plans and arrangements for the following essential tasks should be in place so that they can be accomplished without delay:

- a) notification to the rescue coordination center (ICAO Annex 12 — *Search and Rescue* refers);
- b) notification to the *[Investigation Authority]* and other authorities, as necessary;
- c) securing the aircraft wreckage from fire hazards and further damage;
- d) checking for the presence of dangerous goods, such as radioactive consignments or poisons being carried as freight, and taking appropriate protective action;
- e) placing guards to ensure that the aircraft wreckage is not tampered with or disturbed;
- f) taking steps to preserve, through photography or other appropriate means, any evidence of a transitory nature, such as ice, snow or soot deposits; and
- g) obtaining the names and addresses of all witnesses whose testimony may assist in the investigation of the accident.

7.1.2.2 Apart from these arrangements, the wreckage should be left undisturbed, to the extent possible, until the arrival of the investigation team. It has been emphasized to the police and the rescue services that the bodies of persons killed in an accident involving a large aircraft should, where practicable, be left *in situ* for examination and recording by the police victim identification team. There may also be times when, for crashworthiness/survival investigation purposes, it may be appropriate for the deceased to be left *in situ* until viewed and documented by the *[Investigation Authority]* investigation team. Similarly, personal belongings should remain untouched as their location may assist in the identification of the victims. In general, disturbance of the wreckage should be limited to that necessary to rescue survivors, extinguish fires and protect the public.

## 7.2 RESCUE OPERATIONS

7.2.1 The primary concern of the first persons to arrive at the site of an aircraft accident is to rescue and aid survivors and protect property within the means available. Persons who are involved with the extrication of victims from aircraft wreckage should, at the earliest opportunity, record their observations regarding the location in the aircraft where the survivors were found and what portions of the wreckage had to be moved during the rescue.

7.2.2 If circumstances permit, the bodies of persons killed in the accident should be left as found until their location and condition are recorded, photographs are taken and a chart is made indicating their location in the wreckage. If bodies are located outside the wreckage, their location should be marked by a stake with an identifying number. A corresponding label should be attached to each body stating where it was found. The careful recording of these data is essential to the identification of bodies and also provides information which may assist in the accident investigation.

7.2.3 In the event that bodies have been removed from the aircraft wreckage before the arrival of the aircraft accident investigators, it is important to establish whether or not a record, as set out above, has been maintained. If not, the rescue personnel should be interviewed in order to establish such a record.

7.2.4 The *[Investigation Authority]* investigators should determine if there has been any disturbance of the wreckage during the rescue operations and should record any such disturbance.

7.2.5 Upon completion of the initial rescue operation, rescue personnel should exercise as much care as possible to ensure that their movements do not destroy evidence which may be of value to the investigation. For example, once the survivors have been rescued and the fire risk has been eliminated as far as practicable, movement of ambulances and fire vehicles should not be permitted along the wreckage trail.

### 7.3 SECURITY AT THE ACCIDENT SITE

7.3.1 When notified of an accident, the IIC or the designated accident site safety and security coordinator should immediately verify that arrangements have been made to ensure the security of the wreckage. This is usually arranged through the police, but in some cases, military personnel or specially recruited civilians may be employed.

7.3.2 Before investigation work commences at the accident site, the cargo manifest must be checked to ensure there are no hazardous materials in the consigned cargo.

7.3.3 When it is suspected that the aircraft may have carried dangerous cargo such as radioactive consignments, explosives, ammunition, corrosive liquids, liquid or solid poisons or bacterial cultures, special precautions should be taken to station the guards at a safe distance from the wreckage. This is particularly important if a fire has occurred because it tends to disperse the contaminants. Signs indicating a potentially dangerous area should be posted until experts, in consultation with the designated [*Investigation Authority*] site safety and security coordinator have thoroughly evaluated the danger involved.

7.3.4 Upon arrival at the accident site, one of the first tasks of the investigators is to review the security arrangements. The guards should be thoroughly conversant with their duties, which are to:

- a) protect the public from the hazards in the wreckage;
- b) prevent disturbance of the wreckage (including bodies and contents of the aircraft);
- c) protect property; and
- d) admit to the accident site only persons authorized by the [*Investigation Authority*]; and
- e) protect and preserve, where possible, any ground marks made by the aircraft.

7.3.5 Clear and specific instructions should be given by the [*Investigation Authority*] IIC or accident site safety and security coordinator to those guarding the wreckage site of the need for authorized persons to have proper identification. In the case of major investigations, this should be accomplished through the issuance of photographic identification badges or some form of security pass to all authorized persons. The use of armbands or jackets that show affiliation and duty has also proven to be effective.

7.3.6 If the wreckage has not been scattered, effective security can be achieved by roping off the area. However, if there is a long wreckage trail, the task of securing the site may be formidable and many guards should be required in a wide perimeter.

7.3.7 The police can be of considerable assistance in liaising with the local population, particularly with regard to locating outlying pieces of wreckage. While persons living in the neighbourhood should be encouraged to report the discovery of pieces of aircraft wreckage, the importance of leaving these pieces undisturbed should also be impressed

upon them. Collecting outlying pieces of aircraft wreckage and arranging them into neat piles alongside the main wreckage are sometimes done with good, but misguided, intentions. With no record of where such pieces were found, their value to the investigation is diminished. Similarly, the removal of pieces of aircraft wreckage by souvenir hunters must be prevented.

7.3.8 The aircraft wreckage should be guarded until the IIC is satisfied that all evidence at the site has been gathered. The IIC should review the situation periodically and arrange for the progressive release of guards as appropriate.

*Note.— With regard to paragraphs 4.4 and 4.5 of this manual, consideration should be made at all times by the IIC for the protection of investigators at the accident site (reference to ICAO Circular 315 — Hazards at Aircraft Accident Sites).*

## 7.4 WRECKAGE IN THE WATER

### 7.4.1 Initial actions

7.4.1.1 As soon as it has been determined that the wreckage is in water, efforts must be made to obtain the best technical expertise available. The *[Investigation Authority]* should call upon the services of the military and other agencies and resources with specialized expertise from outside of *[Name of State]* to ensure that the aircraft wreckage under water is found and recovered as necessary in a timely manner. As part of its contingency planning for an accident in the water, the *[Investigation Authority]* has pre-arranged agreements (MoUs) with relevant organizations and States to obtain the necessary specialized assistance. (See Appendix C.)

*Note.— Experience has shown that the search for and the recovery of the aircraft wreckage under water is a specialized task requiring experienced personnel and specialized equipment. Specialized agencies should be consulted early to avoid unnecessary delays in locating and recovering the flight recorders and the aircraft wreckage from under water.*

7.4.1.2 If the water is shallow (less than 60 m (196 ft)), divers can be effective for search and recovery of the wreckage; however, mapping of the wreckage using side-scanning sonar may need to be used to ensure the safety of the divers. If the wreckage is located in deep water, or conditions make it difficult to use divers, use of the following equipment may be considered:

- underwater equipment used to locate the underwater locating beacons (ULB) on the flight recorders;
- underwater videos and cameras;
- side-scan sonar equipment; and
- manned or unmanned submersibles (remotely operated vehicles (ROVs)).

### 7.4.2 Decision to recover the aircraft wreckage

7.4.2.1 The circumstances and location of an accident should determine whether salvage of the aircraft wreckage is practicable and necessary. In most cases, the aircraft wreckage should be recovered, if it is considered that the evidence it might provide would justify the expense and effort of a salvage operation. If the aircraft wreckage is likely to contain evidence significant to air safety, the *[Investigation Authority]* should provide the impetus needed to ensure that action is promptly taken to recover the aircraft wreckage. Such action includes obtaining the necessary funding and specialized equipment and personnel for the tasks.

*Note.— The [Investigation Authority] has established contingency plans with the government to obtain immediate supplemental funding to begin a search and recovery operation for wreckage under water.*

7.4.2.2 There have been several instances where aircraft wreckage has been successfully recovered from deep water. Such recoveries necessitated expensive salvage operations lasting several months, but the results exceeded expectations, and the evidence obtained from the aircraft wreckage established the causes and contributing factors of the accidents and led to accident prevention measures.

### 7.4.3 Aircraft wreckage distribution

Once the aircraft wreckage has been located, a chart plotting the wreckage distribution should be prepared. In shallow waters, divers can achieve this. In deep waters, side-scan sonar and underwater video cameras from remotely operated submersibles may be used. The state of the various pieces of aircraft wreckage, their connection by cables or tubes, the cutting of these connections for the salvage operations, etc., should be recorded before lifting the various pieces of aircraft wreckage from the bottom. Usually, the divers are not experienced in aircraft accident investigation and, therefore, detailed briefings will be necessary.

### 7.4.4 Preservation of the aircraft wreckage

7.4.4.1 The rates at which various metals react with salt water vary considerably. Magnesium components react quite violently and, unless recovered within the first few days, may be completely dissolved. Aluminium and most other metals are less affected by immersion in salt water. However, corrosion will rapidly accelerate once the component is removed from the water, unless steps are taken to prevent this from occurring.

7.4.4.2 Once the aircraft wreckage has been recovered, the components should be thoroughly rinsed with fresh water. It may be convenient to hose the aircraft wreckage as it is raised out of the sea prior to it being lowered onto the salvage vessel. Freshwater rinsing does not stop all corrosive action. When large aircraft are involved, it may not be practicable to take further anti-corrosion action on large structural parts. However, all components that require metallurgical examination will require further preservation. The application of a water-displacing fluid should provide additional corrosion protection; fracture surfaces should then be given a coat of corrosion preventive substances such as oil or inhibited lanolin.

7.4.4.3 When organic deposits, such as soot deposits or stains, require analysis, organic protective substances should not be used. Freshwater rinsing should be employed followed by air drying. When the component is completely dry, it should be sealed in a plastic bag with an inert desiccant such as silica gel.

7.4.4.4 Flight recorders should not be dried, but should be kept immersed in fresh water until the assigned flight recorder specialist assumes responsibility for them. The *[Investigation Authority]* should never permit flight recorders that have been submerged in water to dry out before reaching the recorder laboratory in order to prevent damage to the recording media.

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## Chapter 8

# ORGANIZATION AND MANAGEMENT OF THE INVESTIGATION

### 8.1 GENERAL

8.1.1 To achieve its purpose, an investigation must be properly planned and managed. The main parts of an investigation must be planned so that the members of an investigation team are aware of their various tasks and have the appropriate qualifications to perform them. The plan must also recognize that these tasks should be coordinated by the IIC, who is the leader of the team.

8.1.2 When a large aircraft is involved, a sizeable team of investigators, set up in specialized groups, is necessary to properly cover all aspects of the investigation. In some investigations, the areas on which the investigation should focus will become evident at an early stage, and the main investigation effort can then be effectively channeled into these relatively specialized areas. Nevertheless, it is still essential that investigators progress systematically through all aspects of the accident. Whether or not the causes of an accident are apparent, the investigation will determine any underlying systemic factors that may have contributed to the accident or its aftermath as well as any non-causal deficiencies that could contribute to future accidents or their aftermath.

8.1.3 In the case of accidents involving small aircraft, the investigation effort is proportionately smaller. The functions are still the same, but the work is undertaken by one or two investigators or, alternatively, by an investigator and a specialist qualified in a particular aspect that requires expert examination. Again, it is stressed that even when small aircraft are involved, pre-investigation planning and use of investigation checklists are essential.

### 8.2 THE INVESTIGATION MANAGEMENT SYSTEM

8.2.1 An accident investigation involving a large or complex aircraft should require a large team of investigators in order to conduct the investigation in the most effective and expeditious way. The effective utilization of the available investigators in a major investigation can be achieved by using an "investigation management system" (reference to ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part II, Chapter 5). The investigation management system divides the investigation activities into functional areas, each of which can be assigned to a group within the investigation team. Each investigation group should have as many members as are necessary to examine the particular circumstances of the accident.

8.2.2 After the initial visit and walk-through of the accident site, the first management action to be taken by the IIC is to convene an "organizational meeting". At the organizational meeting, the IIC should identify all participants who should be assigned to the team and he/she should excuse others, such as news media, lawyers, insurers, who should not be permitted to be part of the team.

8.2.3 The primary purpose of the organizational meeting is to describe the rules, policies and procedures of the investigation and to organize the team into the specific groups responsible for various aspects of the investigation.

*Note 1.— Attention must be paid to the need to facilitate entry of accredited representatives and advisers from other States involved in the investigation. To this end, the State of Occurrence of the accident must not require any other travel document than a passport of qualified personnel designated or appointed by other States to participate in the investigation. In this connection, reference is to be made to ICAO Annex 9 — Facilitation, Chapter 8, Section B.*

*Note 2.— Organizational meetings should be convened by the [Investigation Authority] IIC for both large and small investigations as part of the investigation management system.*

*Note 3.— If properly planned and organized, the organizational meeting should take less than one hour so that the investigation groups can then begin their important work.*

8.2.4 At the organizational meeting, the IIC should discuss the rights, obligations, and responsibilities of the investigators. The IIC should also discuss the policies and procedures contained in this manual and should make available a copy of this manual for review by all participants to ensure they understand their roles, tasks and duties. Then the IIC should organize the investigators into groups led by senior investigators.

8.2.5 An attendance roster should be circulated for all participants to sign. Signing the attendance roster confirms that the person signing has read, understood, and will comply with the [Investigation Authority] legislation, regulations, policies and procedures during the course of the investigation. Administrative personnel should be assigned to ensure all participants sign the attendance roster for each team meeting.

*Note.— Use of interpreters is important during team meetings, even though all participants appear to fully understand the language being used (most often English) during the meetings. Those persons, for whom English is not their first language, may have difficulty with complex issues.*

8.2.6 Depending on the magnitude and circumstances of the accident, several groups may be formed for various technical investigation areas (see Figures 8-1, 8-2 and 8-3).

8.2.7 The investigation group chairpersons are senior investigators, each responsible for a specific group. The members of the investigation groups should include specialists from the [Investigation Authority], the airline, the [CAA], the aircraft and engine manufacturers, the airport, and employee unions, as appropriate. The groups also may include advisers assigned by the accredited representatives from other States. All members of the group should normally have access to all information uncovered in the course of the investigation and are required to participate in the investigation until the group report is completed.

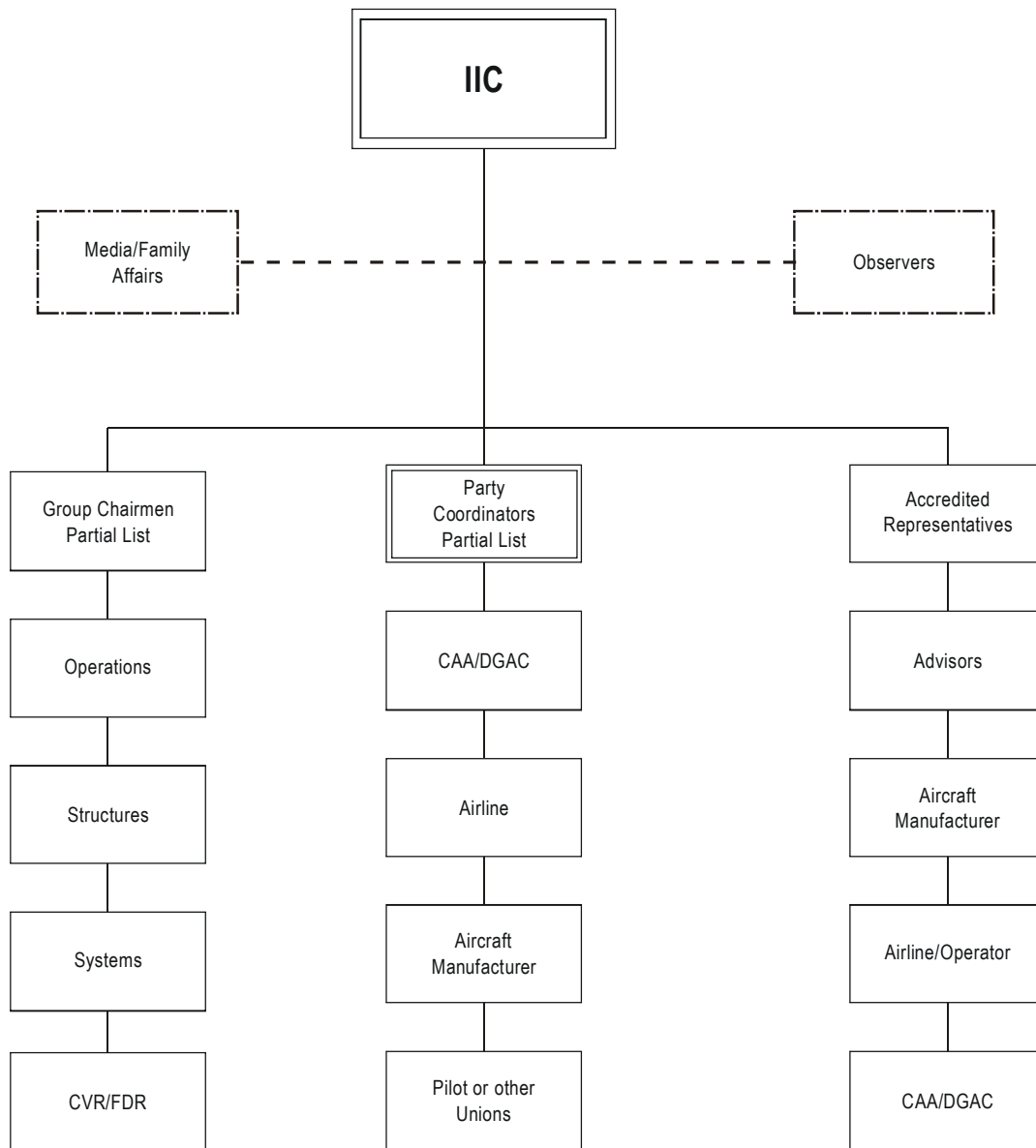
8.2.8 The investigation groups that might be formed during a major investigation might include: Witnesses, Meteorology/Weather, Air Traffic Services, Aircraft Structures, Aircraft Systems, Powerplants, Maintenance Records, Survival Factors, Human Performance, Aircraft Performance, and Flight Recorders. Other special groups may be formed as the need arises, such as Fire and Explosion, Underwater Recovery, Mock-up, etc. The circumstances and complexity of the accident should determine the number and types of groups required (see Figure 8-3).

*Note 1.— The ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756), Part II, Chapter 3 — Investigation Responsibilities, provides an overview of the typical responsibilities of investigation team members of a major investigation. In addition, Chapter 4 — Major Accident Investigations, includes information on the Major Accident Investigation Guide (MAIG), which provides the IIC, group chairpersons and other investigation team members with basic major investigation guidelines.*

*Note 2.— The ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756), Part III, contains detailed guidance on how to conduct specific areas of investigation.*

*Note 3.— Each of the [Investigation Authority] group chairpersons should provide a copy of the relevant guidance materials to his/her group members to review before beginning the investigation.*





**Figure 8-1. Example of how the investigation team may be organized, depending on the nature of the investigation**

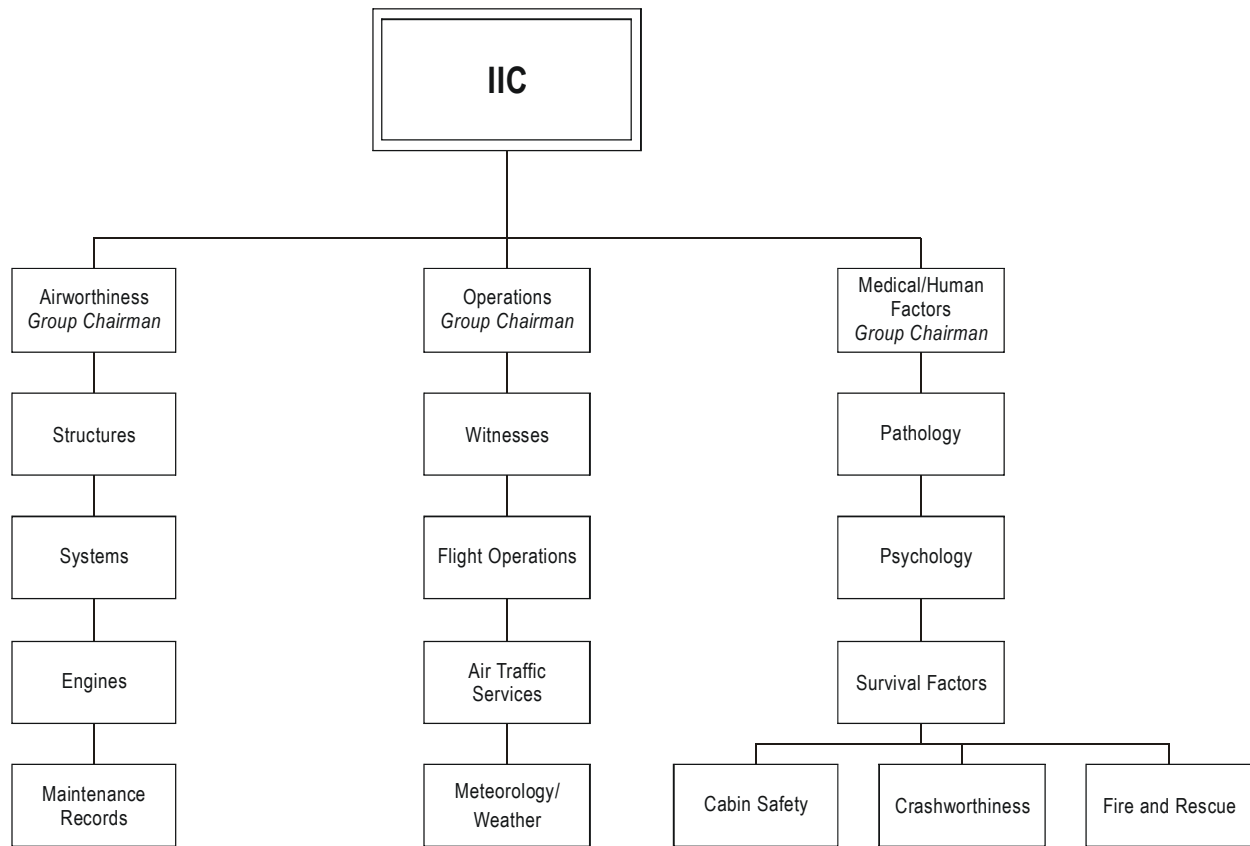
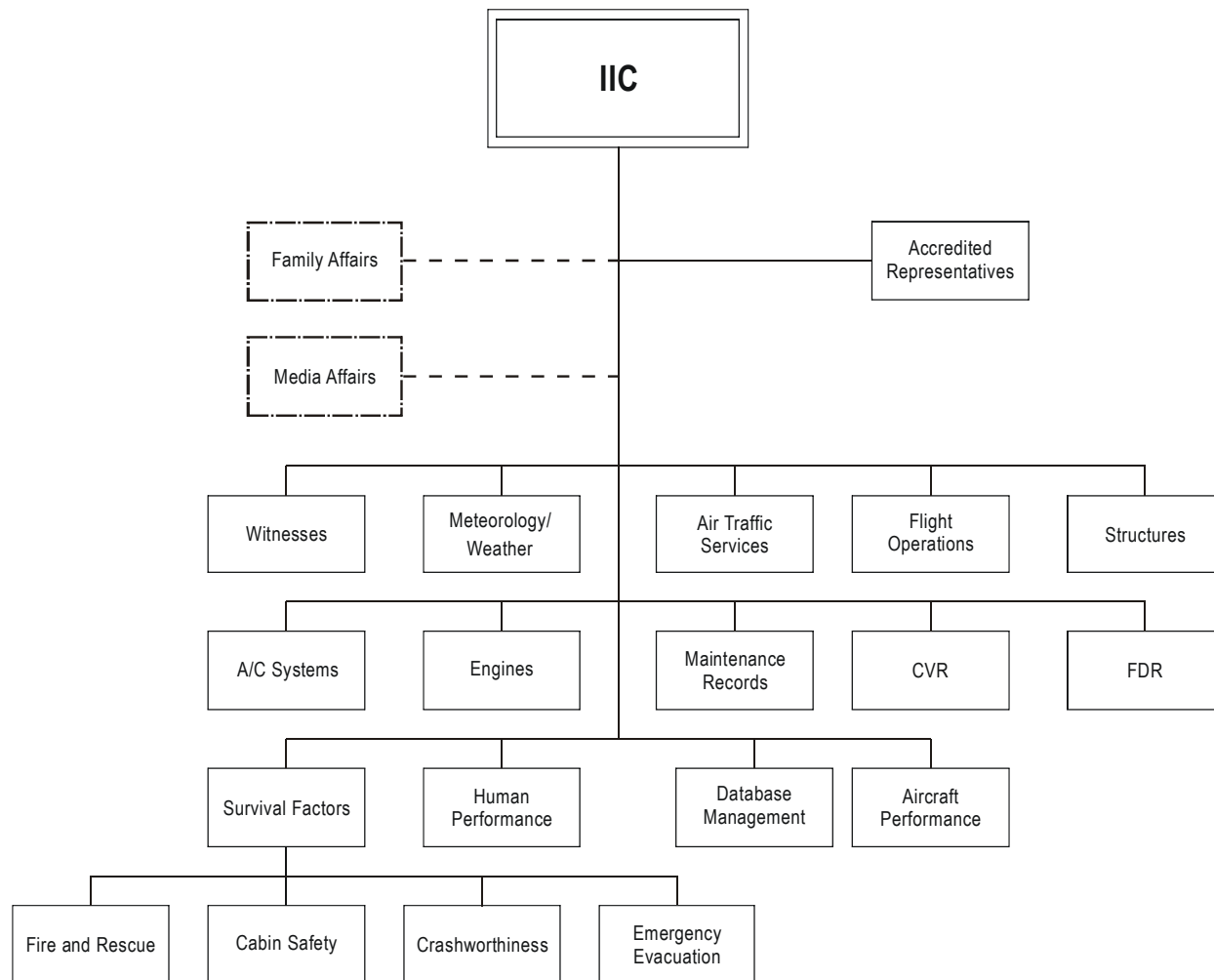


Figure 8-2. Investigation team — Example A



**Figure 8-3. Investigation team — Example B**

8.2.9 In all investigations, a coordinator (spokesperson/team leader) from each of the organizations involved (airline, regulator, manufacturer, etc.) is appointed for liaison duties with the IIC, and to oversee the work of the specialists from their organization. The IIC is the person responsible for communications with the accredited representatives (and their advisors) from other States participating in the investigation in accordance with ICAO Annex 13.

8.2.10 Accident investigation management can be greatly facilitated if the IIC uses a flow chart with a number of events. Each event has a corresponding descriptive phrase. The flow chart allows the investigators to ensure that the essential sequence of events is followed. The ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), *Part II*, contains an “Event Checklist” specifically intended to aid accident investigation management by documenting the various stages of the investigation. This checklist should be used as a tool to manage the various investigation steps to be taken to complete the investigation. It is a tool only and must be supplemented by other materials.

8.2.11 Each event checklist should be used in conjunction with the Major Accident Investigation Guide contained in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part II; and the specific investigation task materials (checklists) contained in Doc 9756, Part III, and tailored to the particular accident circumstances. Since the investigation tasks may differ due to the circumstances of the accident, the checklists should be reviewed to ensure that the tasks are appropriate to the organization and conduct of the accident investigation. Arranging the activities and tasks into checklists allows the IIC to clearly indicate what has been accomplished and what is to be accomplished by the investigators and the various groups during the investigation. It also makes it easier for the IIC to provide direction and guidance to those persons who are participating in an investigation for the first time and who may require specific advice. The checklists, aside from being part of the investigation management system, establish some order in what is often a confusing situation.

8.2.12 The group chairpersons are responsible for completing the investigation tasks using their relevant checklists in order to fulfil their various tasks. Therefore, the group chairpersons must be knowledgeable about the investigation management system and the tasks their groups are required to carry out. They should be well aware that the outlined tasks are not necessarily exhaustive and that particular circumstances may warrant revision of tasks. When using the checklists, it is desirable that the investigators take note of the completion date of each task, any further action required or anything of significance associated with a particular task. Regardless of how much planning goes into the preparation of the checklists, there will inevitably be cases in which the outlined tasks will have to be adapted to the particular circumstances of the investigation.

8.2.13 The checklists help the group chairpersons organize the work of their groups, and provide the IIC with a tool to monitor progress. At the daily progress meetings, the investigators should report which tasks on their checklists have been completed since their last report, and the IIC should record that progress on the flow chart. The advantage of this system is the ease with which the progress of the investigation can be reported to headquarters from the accident site and the fact that the flow chart at headquarters can be updated to reflect the current status of the investigation.

8.2.14 The investigation management system is one of the fundamental tools to be used in a major investigation, and an investigator who is likely to be appointed IIC or group chairperson of a major investigation should be familiar with this system prior to attempting to use it in the field. The effectiveness of the system is directly related to how well each investigator adheres to the flow chart and the checklists.

8.2.15 It is the policy of the *[Investigation Authority]* to use the investigation management system during the conduct of its investigations.

### 8.3 PROGRESS MEETINGS

8.3.1 The investigation management system incorporates the use of a daily progress meeting of the investigation team. The primary purpose of progress meetings is for all team members to participate in the daily reports of the various groups and for all team members to be aware of findings of other groups and to plan future activities. It also builds the “team concept”, which is essential for a major accident investigation to be successful. Further, the progress meetings provide the IIC the opportunity to oversee the progress and findings of the investigation and to provide leadership and guidance as necessary.

*Note.— Progress meetings should be held whether the number of investigation team members is small (3 to 5 persons) and may be held in an informal setting, such as in a vehicle at the accident site, or similar location. Large progress meetings (10 to 100 persons) should be held in a more formal setting, such as a large room at a hotel or similar location. Holding such meetings is part of the investigation management system.*

8.3.2 The typical format for a progress meeting would be for the IIC to make a general opening statement and to bring the team up to date on developments outside of the team, such as review of maintenance records, reports from flight recorder read-outs, and other investigation activities being conducted away from the accident site. If new investigators join the team, they will be given the rules, policies, and procedures and assigned to the appropriate group.

8.3.3 Then the IIC should request that each group chairperson give a brief report. The format of group chairperson reports should be:

- What we did today.
- What we found today.
- What we plan to do tomorrow.
- Any questions, comments, or suggestions.

8.3.4 Group reports should be short and concise. Relevant documents, such as weather reports or similar data, should be distributed to other participants and do not have to be read at the progress meeting. Reports and questions should be restricted to factual information. This is not the place to begin to speculate or analyse the causes of the accident. If the progress meeting is organized and managed properly, it should not take more than one hour.

*Note.— When participants have different first languages, the use of interpreters is essential for all persons to gain the full benefit of the progress meeting reports, so they can understand the information to pass on to their superiors and to develop accident prevention measures. In some cases, it would be appropriate for the group chairpersons to provide advance hard copies of their briefing notes for participants to follow during those oral briefings.*

8.3.5 Following the progress meeting, the IIC should report findings and progress to his/her superiors and should prepare for possible media and family briefings.

## 8.4 COOPERATION WITH THE MEDIA

8.4.1 All major aircraft accidents and most small accidents generate a high degree of interest from the public and the media. A good rapport with the media is usually an asset to the investigation. It may be necessary to enlist the cooperation of the local media to withhold precise details of the location of an aircraft accident until adequate crowd-control measures can be implemented. It may also be necessary to enlist the aid of the media in obtaining further information about the local area, the names of possible witnesses or when seeking the public's assistance in recovering missing pieces of the aircraft wreckage.

8.4.2 To promote dissemination of factual information and to minimize speculation and rumours about the accident, the *[Investigation Authority]* should provide the media, on a regular basis, with details of the progress of the investigation and facts that can be released without prejudice to the investigation. For this reason, the IIC and the *[Investigation Authority]* should establish a single point of contact for media inquiries. This contact is usually the IIC or a person designated by the *[Investigation Authority]* *[Head/Chief]* or the IIC. The IIC, in consultation with the accredited representatives, should provide non-prejudicial facts and circumstances to the media. Nevertheless, it is necessary to ensure that the needs of the media do not interfere with the proper conduct of the investigation. The media should be informed that a preliminary (factual) report will be released about 30 days after the accident.

8.4.3 Other agencies and organizations involved or affected by the accident (such as airlines, airport authorities, emergency services, and aircraft manufacturers) may also need to release information to the media about their involvement, and such efforts should be coordinated, to the extent possible, among the agencies and organizations involved. Nonetheless, the *[Investigation Authority]* is the primary point of contact and the only organization permitted to release information on the progress and findings of the investigation.

8.4.4 For accident investigations outside *[Name of State]* and conducted by other States, the *[Investigation Authority]*-appointed accredited representative and his/her advisers participating in the investigation shall not give the media or the public access to any information or documents obtained during the investigation without the express consent of the State conducting the investigation. The release of such information by the *[Investigation Authority]* or other *[Name of State]* officials, without the consent of the State conducting the investigation, would undermine the mutual confidence and cooperation among the States involved and must therefore be avoided.

## 8.5 DEALING WITH FAMILIES OF ACCIDENT VICTIMS

8.5.1 ICAO Circular 285 — *Guidance on Assistance to Aircraft Accident Victims and their Families* contains internationally accepted guidance and practices for States to follow when dealing with aircraft accident victims and their families.

8.5.2 Victims and their families are not permitted to participate in the investigation; however, ICAO Annex 13, paragraph 5.27, “Participation of States having suffered fatalities or serious injuries to its citizens”, provides certain rights and entitlements to States, which have a special interest in an accident by virtue of fatalities or serious injuries to its citizens. Specifically, such States, upon making a request to do so, are permitted to appoint an “expert”, who shall be entitled to:

- a) visit the scene of an accident;
- b) have access to the relevant factual information, which is approved for public release by the State conducting the investigation, and information on the progress of the investigation; and
- c) receive a copy of the Final Report.

8.5.3 This should not preclude the State from also assisting in the identification of victims and in meeting with survivors from that State.

8.5.4 These provisions do not permit the appointed expert to actively participate in the investigation.

*Note.— For accidents that occur outside [Name of State] that involve [Name of State] citizens, it may be necessary for [Name of State] to send experts to assist the other State with the identification of victims. This task is not directly related to accident investigation and does not fall under the mandate of the [Investigation Authority]. Although the [Investigation Authority] may not be required to provide an expert(s) for this task, the [Investigation Authority] should encourage the relevant [Name of State] foreign affairs authorities and personnel to provide such assistance, normally through the [Name of State] Embassy in the other State.*

8.5.5 ICAO Annex 9 — *Facilitation*, Chapter 8, Section I — *Assistance to aircraft accident victims and their families*, contains SARPs related to States’ obligations to facilitate entry into their territory, on a temporary basis, of family members of victims of aircraft accidents. *[Name of State]* should extend all necessary assistance, such as issuing emergency travel documents, arranging transport, and clearing customs for families of aircraft accident victims.

*[[Note.— Some States have legislation specifically dealing with the handling of families and aircraft accident victims. This section of the manual should be tailored to be consistent with such requirements. If there are no formal requirements in the State, the manual should address, in general, how the families and victims should be dealt with, in order to comply with ICAO requirements in this regard. Suggested text is provided below.]]*

8.5.6 The general responsibilities for dealing with the families and aircraft accident victims lie with the airline, which should have in place a plan for dealing with families and victims of aircraft accidents. However, the State of Occurrence should provide oversight of such activities. Therefore, the *[Investigation Authority]* should establish liaison with relevant family members, or their representatives, to facilitate the provision of briefings on the investigation findings and the progress of the investigation, and to facilitate the necessary access for other States' experts, in accordance with the provisions of ICAO Annex 13, paragraph 5.27, and ICAO Circular 285.

## 8.6 SECURING THE RECORDS, SAMPLES AND RECORDINGS

The *[Investigation Authority]* procedures require that, in the event of an accident, all air traffic services communication recordings and documents deemed to be associated with the flight, and aviation meteorology data, be secured and placed in protective custody. The *[Investigation Authority]* has agreements (MoUs) with the relevant organizations to fulfil this requirement (see Appendix C). Further instructions are in place, which require that the aircraft operator's documentation associated with the aircraft, the flight crew and the flight operation is placed in safekeeping.

## 8.7 REMOVAL OF THE AIRCRAFT WRECKAGE

Detailed information concerning planning, equipment and procedures for the removal of disabled aircraft at airports is contained in the *Airport Services Manual* (Doc 9137), Part 5 — *Removal of Disabled Aircraft*.

## 8.8 RELEASE OF THE AIRCRAFT WRECKAGE

8.8.1 The aircraft wreckage should remain under the custody of the *[Investigation Authority]* until such time as it should be released back to the owner of the aircraft, or the owner's representative (insurance company). In many cases, the aircraft wreckage should be released in increments, depending on the needs of the investigators for testing of selected components.

8.8.2 For accidents in *[Name of State]* involving aircraft registered and operated by other States, the *[Investigation Authority]* should facilitate the release from custody of the aircraft, its contents, or parts thereof, as soon as they are not required for the investigation, to person(s) duly designated by the State of Registry or State of the Operator. This provision is particularly important when occurrences involve minimal damage to an aircraft that needs to be repaired and returned to service.

8.8.3 Portions of the aircraft wreckage may be released, or the entire aircraft wreckage may be released, using the aircraft wreckage and parts release form (see Appendix F) that includes the name and organizational information of the IIC and the owner of the aircraft or the owner's authorized representative. The release form should include the identifying information on the accident and the aircraft.

8.8.4 If the entire aircraft wreckage is to be released, the IIC should sign the aircraft wreckage and parts release form and he/she should obtain a signature from the owner of the aircraft, or owner's representative, who accepts the aircraft wreckage. If only portions of the aircraft wreckage are being released, the aircraft wreckage and parts release form should list the components being released and any components being retained for further examination, along with the appropriate signatures verifying the release and retention of parts. Each time a portion of the aircraft wreckage is released, an additional aircraft wreckage and parts release form should be completed to document the transfer.

*Note.— The [Investigation Authority] IIC should obtain full concurrence with all parties, including police involved in the investigation, about the decision to release aircraft wreckage before it is turned over to the owner of the aircraft or the owner's representative. The IIC should also coordinate his/her decision with the [Investigation Authority] management personnel.*

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## Chapter 9

### TESTS AND COMPONENT EXAMINATIONS

#### 9.1 LABORATORY TESTING OF AIRCRAFT SYSTEMS AND COMPONENTS

9.1.1 In many cases, specialist examinations or testing of specific components will be required. The *[Investigation Authority]* should follow the same policies and procedures for tests and component examinations as used for the accident site phase of the investigation. The ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part I, paragraph 5.7, contains guidance on planning specialists' off-site examinations of components.

9.1.2 Specialist examinations may range from a scanning electron microscope (SEM) examination of a failed part to chemical analysis, and/or aircraft systems testing or flight testing. Laboratory examination and testing generally entail the use of specialized equipment not available at the accident site and are often beyond the capability of an aircraft maintenance facility. Consideration should be given to using the component manufacturer's facilities where specialized equipment and trained personnel are readily available. However, this should require close supervision by the *[Investigation Authority]* investigators, or by investigators designated by the *[Investigation Authority]* to ensure that there is no real or perceived conflict of interest. All activities, particularly disassembly and testing phases, should be documented and photographed for evidence purposes.

9.1.3 Specialist examinations may also be needed to conduct the read-out and decoding of information from other electronic devices, such as satellite navigation equipment (e.g. GPS, GLONASS, GPWS, TAWS, FMS).

9.1.4 Laboratory testing should not be limited to standard tests. In addition to testing for compliance with appropriate specifications, it may sometimes be necessary to determine the actual properties of the specimen (such as metal, material, fuel and oil). Occasionally, it is necessary to devise special tests that fully exploit the components capabilities. A wide range of specialized testing equipment permit simulation of a variety of malfunctions.

9.1.5 When investigators send failed parts or components for laboratory testing, they should provide as much information as possible relative to the circumstances contributing to the failure of such parts or components, including their own hypotheses/suspicions. The information provided by the investigator is intended only as a guideline to the specialist who should, nevertheless, explore all relevant aspects. It is not sufficient for an investigator to send parts for specialist examination with the innocuous instructions "for testing". The investigator should provide a detailed history of the part or component, covering such items as:

- the date it was installed on the aircraft;
- the total number of service hours;
- the total number of hours since the last overhaul or inspection;
- previous difficulties reported; and
- any other pertinent data that might shed light on how and why the part or component failed.

*Note.— If not accompanied by a [Investigation Authority] investigator, arrangements should be made for supervision by an investigator from the State where the testing is to take place, or an investigator from another State, or properly designated independent person.*

9.1.6 In order to preserve evidence, it is essential that failed parts and components requiring specialist examination be extracted from the wreckage with care. Consultations with experts from the aircraft manufacturers and airlines should be held to ensure proper decisions. Aircraft systems, whether mechanical, electrical, hydraulic or pneumatic, will be removed in sections as large as practicable. Relevant sections should preferably be dismantled rather than cut off. Paint smears, which are often extremely important in collision accidents and inflight failures, require protection. This also applies to smoke or soot smears.

## 9.2 PRACTICAL ARRANGEMENTS

9.2.1 The nature of the specialist examinations and the type of components and systems to be tested should determine the facility to be chosen. The investigator must be confident that the facility chosen is capable of providing the required examination and testing. Prior arrangements should be made with the facility as far in advance as practicable so that the management of the facility can plan the tests and assign personnel and equipment.

9.2.2 When choosing a system and components for specialist examination and testing, it is desirable to include as many components of the system as practicable, e.g. wiring harnesses, relays, control valves and regulators. Tests conducted on a single component should reveal information about the operation of that particular unit only, whereas the problem may actually have been in one of the related components. The most valid test results should be obtained by using as many of the original system components as possible.

9.2.3 Each component should be tagged with its name, part number, serial number and the accident identifier. The investigator should maintain a listing, descriptive notes and photographs of all components, which are to be tested; the components themselves should be kept in protective storage until ready for shipping.

9.2.4 Components should be packed to minimize damage during transport. Particular care should be taken to ensure that fracture surfaces are protected by appropriate packing material so that surfaces coming into contact with each other or with other parts do not suffer any damage.

9.2.5 Whenever possible, power plants should be shipped in their special stands and containers. Other heavy components, such as flight control power units, stabilizer screw jack assemblies and actuators, should be packed in protective wrapping and placed in separate wooden containers. Blocks or bracing should be installed inside the containers to prevent any movement of the component during transport. Smaller and lighter components should be shipped in the same manner with more than one to a box, but in a way which should prevent them from coming into contact with one another. Very light units should be packed in heavy corrugated pasteboard cartons with packing material sufficient to prevent damage from mishandling during transport. The investigators should label all boxes and cartons appropriately and should make an inventory list for each container.

9.2.6 Occasionally, it may be necessary to send a part, or parts, of a damaged aircraft to another State for technical examination or testing. In accordance with ICAO Annex 9 — *Facilitation*, Chapter 8, Section B, each State concerned shall ensure that the movement of such part, or parts, is effected without delay. The States concerned shall likewise facilitate the return of such part, or parts, to the State conducting the investigation.

## 9.3 NOTES AND TEST RESULTS

9.3.1 Prior to conducting the examinations and tests, the investigator(s) and the facility personnel involved should be briefed on the type and extent of the tests to be carried out and should review the test procedures to ensure their adequacy. Basically, a written test plan should be prepared and agreed to by all participants before proceeding with any testing. The test plan becomes a written record of the planning and conduct of the component investigation.

*Note.— A good technique for developing a test plan is to ask the manufacturer of the component to prepare a draft test plan protocol, which should then be reviewed and agreed upon by all participants in the examination. However, the final decision on the test plan rests with the [Investigation Authority].*

9.3.2 Any discrepancies found during testing should be photographed and documented with an explanation as to their bearing on the operation of the system or component. It should be kept in mind that the tolerances called for in the test procedures may only apply to new or overhauled components and that components which have been in service for some time may have acceptable limits outside these tolerances. If the nature of the discrepancy so warrants, a component should be disassembled following completion of the tests to ascertain the cause of failure. Photographs should be taken of the parts prior to and during disassembly, and the findings should be documented in writing.

9.3.3 Consideration should be given to X-raying components before disassembly if the position of springs, contacts, etc., could be lost during the disassembly.

9.3.4 Off-scene tests and examinations should be completed under the same rules and procedures for the on-scene phase, which excludes non-technical personnel. However, in some cases, other personnel, not part of the investigation team, may be ordered to participate or observe by a judicial authority. In such cases, investigators must ensure that they do not discuss their opinions, or make comments on any findings or analyses in the presence of these non-technical third parties.

9.3.5 If insurance loss assessors or other parties, who are not part of the investigation team, have been approved to attend and observe the disassembly, the investigator and test facility personnel must take extreme care. Findings and analyses should not be discussed in the presence of non-investigation personnel, because they may use such information inappropriately.

9.3.6 Following completion of the testing, the investigator(s) and facility personnel should review and discuss the results. When there is agreement that the data gathered present a true and factual picture of the condition and capabilities of the components, the notes and test results should be reproduced into field notes to serve as a record of the examination and testing of the system or component.

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## **REPORTING**



## Chapter 10

# WRITING THE FINAL REPORT AND MAKING SAFETY RECOMMENDATIONS

### 10.1 GENERAL

10.1.1 The *[Investigation Authority]* should issue a Final Report for all investigations. The format and content of the Final Report should be in accordance with guidance contained in the Appendix to ICAO Annex 13 and in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part IV — *Reporting*. The circumstances of an occurrence and the safety issues involved should determine the size and scope of the Final Report. For all occurrences involving aircraft registered, operated, designed, or manufactured outside *[Name of State]* full adherence to the ICAO format should be maintained. In accordance with ICAO Annex 13, the report should be clear and concise.

10.1.2 It is the policy of the *[Investigation Authority]* to complete and to make the Final Report publicly available as soon as possible. The Final Report may be made public by posting it on the *[Investigation Authority]* internet website, as well as by sending a hard copy to all States involved and ICAO, as per Annex 13 provisions.

10.1.3 After the completion of the field phase of the investigation, the *[Investigation Authority]* should ensure that the IIC develops a report completion schedule that includes target dates for completion of the Final Report. Target dates should be consistent with the complexity of the safety issues involved in the occurrence.

10.1.4 The general target date for completion of “small” occurrence investigations with minimal safety issues is not more than six months from the date of the occurrence. The target date for completion of major occurrences with complex safety issues is usually twelve months, or as soon as possible.

10.1.5 If for some reason the Final Report cannot be made publicly available within twelve months, the *[Investigation Authority]* should make an interim statement publicly available on each anniversary of the occurrence, detailing the progress of the investigation and any safety issues raised. The *[Investigation Authority]* should also issue interim reports and/or safety recommendations, at any time deemed necessary to highlight any safety issues that may be of interest to other States and/or organizations.

### 10.2 GROUP REPORTS

#### 10.2.1 Field notes

Each investigation group completes “Field notes” during the field phase of the investigation and for all component examinations and test work. Field notes should be completed in the same format as factual reports (see 10.2.2 below). Upon completion of the field notes, each member of the group should sign them signifying their agreement with the content, accuracy, and completeness. If any of the group members did not take part in some portion of the fact-finding, this aspect should be noted under his/her signature. Similarly, if differences cannot be resolved between a group member and the group chairperson, the substance of the disagreement should be stated in the field notes under the signature.

## 10.2.2 Factual reports

10.2.2.1 Factual reports are derived from the field notes and enhanced with follow-up investigation work.

10.2.2.2 In consultation with the group members, the *[Investigation Authority]* group chairperson is responsible for scrutinizing the evidence gathered in relation to the tasks assigned to the group, and for drafting a group report, which presents all the facts relevant to the activities of the group. The group factual report may also include attachments to the report (e.g. maps, charts, or other documents) that support the written record of the investigation. Referred to as the “group factual report”, the draft should be shared with other specialists who participated in this phase of the investigation, as well as accredited representatives and their advisers participating in the investigation. This consultation is for the purpose of ensuring completeness and accuracy, hereafter referred to as the “technical review” (see 10.3 below). After consultation and revision of the group factual reports, copies should be provided to all organizations and specialists that participated in the investigation.

10.2.2.3 A group factual report should be presented in the following format:

<i>Flight Operations Group Factual Report (or field notes) / (date)</i>	
A.	<p><i>Accident: XXXX (identifying code number assigned by [Name of investigation authority])</i></p> <p><i>Location: XXXX [city, State, country]</i></p> <p><i>Date/Time: XXXX</i></p> <p><i>Aircraft: XXXX [make, model, registration]</i></p>
B.	<p><i>Group members</i></p> <p><i>XXXX Group chairperson</i></p> <p><i>XXXX Airline specialist</i></p> <p><i>XXXX [CAA] specialist</i></p> <p><i>XXXX Manufacturer specialist</i></p>
C.	<p><i>Summary</i></p> <p><i>This section should provide a synopsis of the occurrence, such as flight number, take-off time, accident time (if known), number of persons on board, injuries, etc. This section also should contain a brief synopsis of the scope of the group’s work. The terms of reference for the group and subgroups and brief details of the time and location of investigation activities should also be recorded in this section. For example, “the Flight Operations Group interviewed the pilots, reviewed records, and conducted simulator work” and, “the Aircraft Systems Group documented the aircraft components on-scene, removed some parts, and conducted component examinations at the facilities of the manufacturer”.</i></p>
D.	<p><i>Details of Investigation</i></p> <p><i>The facts, conditions and circumstances established by the group and investigation findings (factual) should be presented under appropriate headings describing the areas investigated. For example, in the case of the Flight Operations Group, headings would include crew histories, flight planning, dispatch and aircraft mass and balance. All the relevant facts, whether or not considered significant to the findings of the group, should be included. Relevant documentation should be attached to the group report.</i></p>



10.2.2.4 In some cases, after completion of the group factual report, new investigative activities may require addenda to document unforeseen or other follow-up investigative activities. The addenda should follow the same format as the group factual report.

### 10.3 TECHNICAL REVIEW

10.3.1 Once the investigation is complete and all group reports and other factual data are available, the *[Investigation Authority]* should convene a technical review meeting at which all of the factual materials collected during the investigation should be reviewed one last time, before the writing of the Final Report is initiated. Accredited representatives and their advisers, and other parties that participated in the investigation have one more opportunity to ensure that the factual record of the investigation is complete, objective, and accurate. The IIC should attempt to achieve full concurrence with all of the factual material before moving to the Final Report writing phase.

10.3.2 In some smaller accident cases, the technical review meetings could be held by conference call or by email and correspondence. However, for major airline accidents with complex safety issues, a full technical review meeting should be convened.

10.3.3 At the completion of the technical review, if full concurrence about the factual data collected cannot be reached, the investigation may need to be re-opened to resolve disagreements. Any unresolved differences should be noted in the factual record of the investigation.

### 10.4 FORMAT OF THE FINAL REPORT

#### 10.4.1 General

10.4.1.1 All *[Investigation Authority]* accident and incident reports should contain the following reference to the objective of the investigation in the Introduction or Foreword:

*In accordance with ICAO Annex 13, it is not the purpose of aircraft accident and incident investigation to apportion blame or liability. The sole objective of the investigation and the Final Report is the prevention of accidents and incidents. (Reference: ICAO Annex 13, Chapter 3, paragraph 3.1.)*

10.4.1.2 The Appendix of ICAO Annex 13 contains the general format for the Final Report. Furthermore, detailed guidance regarding the format and content of the Final Report is contained in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part IV — *Reporting*, Appendix 1 to Chapter 1. The ICAO format and guidance should be followed for most *[Investigation Authority]* Final Reports. For some incidents and non-major accidents, the format of the report may differ, as all of the ICAO Annex 13 headings may not be applicable. These reference materials are not repeated herein.

#### 10.4.2 Chapters 1 and 2 of the Final Report

The *[Investigation Authority]* should follow the ICAO format for Chapters 1 and 2 of the Final Report. Chapter 1 — *Factual Information*, should contain a comprehensive record of the facts, conditions, and circumstances established in the investigation. Chapter 2 — *Analysis*, should contain the significance of the relevant facts and circumstances that contributed to the accident or incident. This portion of the report should also contain the identification of safety

deficiencies uncovered during the investigation, regardless of whether those deficiencies contributed to the accident. Supporting documents that are required to support the facts, analysis, conclusions, and recommendations should be included in appendices to the Final Report.

### 10.4.3 Chapter 3 of the Final Report — Conclusions

*[[Note.— The format for Chapter 3 varies somewhat for different States, depending on their specific laws, policies, and procedures. ICAO Annex 13, paragraph 6.1 acknowledges that the format may be adapted to the circumstances of the accident or incident. For example, States may use “causes” or “contributing factors”, or both, in Chapter 3 of the Final Report. Some States specify “probable causes”, while a few other States merely list findings, linking them as causal or contributory to the accident. All of these formats are consistent with the guidance contained in ICAO Annex 13 and ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756), Part IV — Reporting. Consequently, the following suggested language may require modification by States to bring the language in the policies and procedures manual in line with their specific requirements.]]*

The *[Investigation Authority]* should include in Chapter 3 of the Final Report a list of findings *[causes and/or contributing factors]*. The *[Investigation Authority]* should include both the immediate and the deeper systemic causes in the Final Report. The *[Investigation Authority]* uses the guidance provided in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part IV — Reporting, Appendix 1 to Chapter 1, Table 1-3 — *Example of causal statements*, and Appendix 2 to Chapter 1 — *Report Writing Conventions*, in the formation of its findings, causes and contributing factors. The *[Investigation Authority]* will also include the following statement at the appropriate location in Chapter 3: *The identification of causes does not imply assignment of fault or the determination of administrative, civil or criminal liability.*

### 10.4.4 Chapter 4 of the Final Report — Safety Recommendations

*[[Note.— The format for Chapter 4 varies somewhat for different States, depending on their internal policies and procedures. Some States divide Chapter 4 into two parts: “Safety Actions Taken” and “Safety Recommendations”. Safety actions taken may result from formal safety recommendations issued during the course of the investigation or as the result of corrective actions taken by the airline, manufacturer, [CAA], etc., without the issuance of formal safety recommendations. Both actions should be recorded in Chapter 4 as suggested in the following text.]]*

The *[Investigation Authority]* should include in Chapter 4 of the Final Report both safety recommendations made for the purpose of accident prevention, as well as any safety (corrective) actions taken during the course of the investigation. The *[Investigation Authority]* should use the guidance provided in ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part IV — Reporting, Chapter 1, when issuing safety recommendations during the course of the investigation and in its Final Reports. (See 10.8 for further details on safety recommendations.)

## 10.5 CONSULTATION

10.5.1 The *[Investigation Authority]* should follow the consultation provisions of ICAO Annex 13, Chapter 6. A confidential draft Final Report should be forwarded to all States that participated in the investigation requesting their substantive and relevant comments. The States include:

- a) the State that instituted the investigation;
- b) the State of Registry;
- c) the State of the Operator;

- e) the State of Manufacture; and
- f) any State that participated in the investigation.

10.5.2 In order to obtain substantive technical consultation on the draft Final Report, the *[Investigation Authority]* should send, through the State of the Operator, a copy of the draft Final Report to the operator to enable the operator to submit comments. Similarly, the *[Investigation Authority]* should send, through the State of Design and the State of Manufacture, a copy of the draft Final Report to the organizations responsible for the type design and the final assembly of the aircraft to enable them to submit comments.

10.5.3 The letter of transmittal for the draft Final Report should also request each recipient to notify the *[Investigation Authority]* of any interim safety actions taken, or safety actions under way, that can be included in the Final Report. Comments should be received within sixty days, unless a mutually agreed delay is granted. If the comments from another State are accepted, the draft Final Report should be amended. If the *[Investigation Authority]* does not agree with the comments, in part or in whole, then the comments from that State should be appended to the Final Report, unless that State elects not to have their comments appended.

10.5.4 The draft Final Report should also be forwarded to the key parties in *[Name of State]* (airline, *[CAA]*, aircraft manufacturer, etc.) that participated in the investigation in order to obtain their substantive and relevant comments. The same procedures for timing of receipt of comments and handling of the comments as specified in ICAO Annex 13, Chapter 6 should be followed for the parties from *[Name of State]*.

*Note.— The [Investigator Authority] should include intended safety recommendations in the draft Final Report, inviting comments from recipients.*

## 10.6 RECIPIENTS OF THE FINAL REPORT

The *[Investigation Authority]* should forward with minimum delay a copy of the Final Report to:

- a) the State that instituted the investigation;
- b) the State of Registry;
- c) the State of the Operator;
- d) the State of Design;
- e) the State of Manufacture;
- f) any State that participated in the investigation;
- g) any State having suffered fatalities or serious injuries to its citizens; and
- h) any State that provided relevant information, significant facilities or experts.

## 10.7 DISTRIBUTION AND PUBLICATION OF FINAL REPORTS

10.7.1 Lessons learned during the investigation contained in the Final Report are important for improving aviation safety. Wide distribution of the Final Report is essential for the prevention of future occurrences and to inform the general public. Accordingly, the *[Investigation Authority]* should adhere to the requirements of ICAO Annex 13, paragraph 6.5 and should make Final Reports publicly available as soon as possible and, if possible, within twelve months.

10.7.2 The *[Investigation Authority]* should distribute copies of the Final Report to all States and parties that participated in the investigation, as well as to the families of the victims of the accident when requested. The

*[Investigation Authority]* should also forward copies of the Final Report to ICAO, when the aircraft involved has a maximum mass of over 5 700 kg.

10.7.3 Transparent distribution to the general public assists in maintaining public confidence in the aviation system. The *[Investigation Authority]* should make the Final Report available to the general public on its internet website.

10.7.4 If the Final Report cannot be made publicly available in twelve months, the *[Investigation Authority]* should make an interim statement publicly available on each anniversary of the occurrence, detailing the progress of the investigation and any safety issues raised.

## 10.8 SAFETY RECOMMENDATIONS

### 10.8.1 General

10.8.1.1 Because the sole objective of accident and incident investigations are conducted in accordance with ICAO Annex 13, the *[Investigation Authority]* should recommend in a dated transmittal letter to the appropriate authorities in *[Name of State]*, as well as authorities in other States, any prevention action that it considers necessary to be taken promptly to enhance aviation safety. The *[Investigation Authority]* should address any safety recommendations arising from its investigations in a dated transmittal letter to the accident investigation authorities of other States concerned and, when ICAO documents are involved, to ICAO.

10.8.1.2 Furthermore, the *[Investigation Authority]* should encourage that all participants in an investigation take appropriate and immediate safety actions to correct identified safety deficiencies, without the need for the issuance of formal safety recommendations.

10.8.1.3 The *[Investigation Authority]* investigators should provide information on any safety issues identified, safety actions already taken, and proposals for safety recommendations to be considered for inclusion in the Final Report. The *ICAO Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part IV — *Reporting*, contains detailed guidance on formulating safety recommendations and language for writing safety recommendations.

### 10.8.2 Follow-up of safety recommendations

10.8.2.1 The *[Investigation Authority]* has a safety recommendation “tracking system” to ensure follow-up on safety recommendations issued to organizations in *[Name of State]* and to other States to determine if safety actions have been taken to satisfy the recommendations, if actions are planned, or the reasons why the recipients are not taking actions. For safety recommendations received from another State, the *[Investigation Authority]* should inform the proposing State, within ninety days of the transmittal correspondence, of safety actions taken or under consideration, or the reasons why no actions should be taken.

10.8.2.2 Records of outgoing and incoming safety recommendation follow-up correspondence with *[Name of State]* organizations and with other States should be maintained as part of the accident investigation files at the *[Investigation Authority]*.

### 10.9 REOPENING OF AN INVESTIGATION

If, during the course of an investigation, even after the Final Report has been released, new factual information becomes available, or if the original analyses were determined to be in error, the *[Investigation Authority]* should reopen the investigation to examine any new evidence or erroneous analyses, using the same procedures for the original investigation. Depending on the results of the reopened investigation, the *[Investigation Authority]* should correct the factual record of the investigation and publish a revised Final Report, if necessary.

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## Chapter 11

### REPORTING TO THE ICAO ACCIDENT/INCIDENT DATA (ADREP) REPORTING SYSTEM

#### 11.1 ADREP PRELIMINARY REPORTS

11.1.1 When the aircraft involved in an accident is of a maximum mass of over 2 250 kg, the *[Investigation Authority]* should send the Preliminary Report (reference to ICAO Annex 13, Chapter 7, paragraph 7.1) to:

- a) the State of Registry or the State of Occurrence, as appropriate;
- b) the State of the Operator;
- c) the State of Design;
- d) the State of Manufacture;
- e) any State that provided relevant information, significant facilities or experts; and
- f) ICAO.

11.1.2 When an aircraft involved in an accident has a mass of less than 2 250 kg and when airworthiness or matters considered being of interest to other States are involved, the *[Investigation Authority]* should forward the Preliminary Report (reference to ICAO Annex 13, Chapter 7, paragraph 7.2) to:

- a) the State of Registry or the State of Occurrence, as appropriate;
- b) the State of the Operator;
- c) the State of Design;
- d) the State of Manufacture; and
- e) any State that provided relevant information, significant facilities or experts.

11.1.3 The Preliminary Report should be sent within 30 days of the date of the accident. When matters directly affecting safety are involved, the Preliminary Report should be sent as soon as the information is available and by the most suitable and expeditious means available (reference to ICAO Annex 13, Chapter 7, paragraph 7.4).

11.1.4 The *[Investigation Authority]* should dispatch the Preliminary Report to the States involved and ICAO, in accordance with ICAO Annex 13, Chapter 7, paragraphs 7.1 to 7.4.

## 11.2 ADREP ACCIDENT/INCIDENT DATA REPORTS

11.2.1 When the aircraft involved in an accident is of a maximum mass of over 2 250 kg, the *[Investigation Authority]* should send, as soon as practicable after the investigation, the Accident/Incident Data Report to ICAO. Further, the *[Investigation Authority]* should, upon request, provide other States with pertinent information in addition to that made available in the Accident/Incident Data Report (reference to ICAO Annex 13, Chapter 7, paragraphs 7.5 and 7.6).

11.2.2 When the *[Investigation Authority]* conducts an investigation into an incident to an aircraft of a maximum mass of over 5 700 kg, the *[Investigation Authority]* should send, as soon as is practicable after the investigation, the Incident Data Report to ICAO (reference to ICAO Annex 13, Chapter 7, paragraph 7.7).

11.2.3 The *[Investigation Authority]* should dispatch the Accident/Incident Data Report to the States involved and ICAO, in accordance with ICAO Annex 13, Chapter 7, paragraphs 7.5 to 7.7.

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## Chapter 12

# ACCIDENT PREVENTION MEASURES — ACCIDENT/INCIDENT DATABASE SYSTEM

*[[Mandatory and voluntary incident reporting systems are required by ICAO Annex 13, Chapter 8. This chapter should include the details of the State's incident reporting systems, as well as its policies and procedures for analyses and sharing of data from such systems. Suggested text follows.]]*

### 12.1 INCIDENT REPORTING SYSTEMS

12.1.1 In accordance with ICAO Annex 13, Chapter 8, *[Name of State]* has established a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies. *[Name of State]* has also established a voluntary incident reporting system that is non-punitive and affords protection to the sources of the information.

12.1.2 The information contained in accident and incident investigation reports and in incident reporting database(s) should be analysed to determine any preventive actions required. If the analyses of data identify safety matters of interest to other States, *[Name of State]* should forward such safety information to other States as soon as possible.

12.1.3 Regardless of the source of safety recommendations (accident/incident reports, database analyses, or safety studies), if they should be sent to another State, they should also be transmitted to that State's investigation authority.

### 12.2 EUROPEAN CO-ORDINATION CENTRE FOR AVIATION INCIDENT REPORTING SYSTEMS (ECCAIRS) DATABASE, ANALYSES AND SHARING OF DATA

*[[If the State has an accident and incident database and data analysis system compatible with the ICAO ADREP system, that system should be described in this paragraph. If the State does not have an accident and incident database and analysis system compatible with the ICAO ADREP system, it may consider adopting the European Co-ordination Centre for Aviation Incident Reporting System (ECCAIRS) programme to meet ICAO Annex 13, Chapter 8 requirements, as suggested in text below.]]*

12.2.1 ICAO Annex 13 contains requirements for States to establish and maintain an accident and incident database to facilitate the effective analysis of information on actual and potential safety deficiencies obtained, including that from its incident reporting system, and to determine any preventive actions required.

12.2.2 States should consider implementing an ICAO ADREP-compatible system for their accident/incident reporting system, as well as for collecting, storing and disseminating relevant safety information.

12.2.3 It is noted that the European Union (EU) has established an accident and incident database based on ECCAIRS software, which is fully compatible with the ICAO ADREP system. States are encouraged to implement their accident and incident database based on ECCAIRS, which is made available at no charge.

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## **APPENDICES**



## Appendix A

### ***[Name of State]* Legislation on Aircraft Accident and Incident Investigation**

— Aviation Act of *[Name of State]*

— *[Decree or other Law]* of *[Name of State]*

*[[Note.— The relevant State legislation that created the independent accident and incident investigation authority and provided its rights and responsibilities should be inserted in this appendix. Legislation regarding the funding of the authority should also be included in this appendix.]]*

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## Appendix B

### ***[Investigation Authority] Operating Regulations***

*[[Note.— The operating regulations of the [Investigation Authority] should be appended here. The regulations should address, at a minimum, the national requirements emanating from the legislation pertaining to accident and incident investigation and should provide standardized investigation processes in conformance with the SARPs contained in ICAO Annex 13, as well as guidance provided in the ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756).]]*

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## **Appendix C**

### **Agreements and Memoranda of Understanding (MoUs) with other Organizations**

*[[Note.— This appendix should contain copies of MoUs and other agreements regarding assistance and cooperation between the [Investigation Authority] and other organizations within the State, such as judicial authorities, the CAA, emergency response agencies, ATS, etc., as well as between the [Investigation Authority] and other States.]]*

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## Appendix D

### List of Examples of Serious Incidents (Reference to ICAO Annex 13, Attachment C)

*Note.— The incidents listed are typical examples of incidents that are likely to be serious incidents. The list is not exhaustive and only serves as guidance to the definition of serious incident.*

- Near collisions requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate.
- Controlled flight into terrain only marginally avoided.
- Aborted take-offs on a closed or engaged runway, on a taxiway<sup>1</sup> or unassigned runway.
- Take-offs from a closed or engaged runway, from a taxiway<sup>1</sup> or unassigned runway.
- Landings or attempted landings on a closed or engaged runway, on a taxiway<sup>1</sup> or unassigned runway.
- Gross failures to achieve predicted performance during take-off or initial climb.
- Fires and smoke in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents.
- Events requiring the emergency use of oxygen by the flight crew.
- Aircraft structural failures or engine disintegrations, including uncontained turbine engine failures, not classified as an accident.
- Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft.
- Flight crew incapacitation in flight.
- Fuel quantity requiring the declaration of an emergency by the pilot.
- Runway incursions classified with severity A. The Manual on the Prevention of Runway Incursions (Doc 9870) contains information on the severity classifications.
- Take-off or landing incidents. Incidents such as under-shooting, overrunning or running off the side of runways.

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1. Excluding authorized operations by helicopters.

- System failures, weather phenomena, operations outside the approved flight envelope or other occurrences which could have caused difficulties controlling the aircraft.
  
  - Failures of more than one system in a redundancy system mandatory for flight guidance and navigation.
-

## Appendix E

### Individual Development Plan

#### Individual Development Plan — Aircraft Accident Investigator

<b>Investigator name:</b>					
<b>Title (operations/engineering/ATC/survival factors/etc.):</b>					
<b>Grade or position:</b>					
<b>Supervisor name:</b>					
<i>Knowledge, skills and experience</i>	<i>Source /course</i>	<i>Date obtained</i>	<i>Date of practical experience</i>	<i>Date scheduled for training</i>	<i>Remarks (No. of years, grades, etc.)</i>
<b>Initial response procedures</b>					
On-call procedures					
Notification of other national authorities and organizations					
Securing of records, recordings and samples					
Accident site jurisdiction and security					
Investigator safety — biological hazard training and equipment					
Investigator safety, including psychological stress familiarization					
Recovery of human remains					
Requests for autopsies					
Family assistance					
<b>Investigation procedures</b>					
Authority and responsibilities					
Size and scope of the investigation					
Investigation management (group chairman and IIC) — on-scene domestic and overseas					

<i>Knowledge, skills and experience</i>	<i>Source /course</i>	<i>Date obtained</i>	<i>Date of practical experience</i>	<i>Date scheduled for training</i>	<i>Remarks (No. of years, grades, etc.)</i>
Use of specialists					
Parties to the investigation, accredited representatives, advisers and observers					
Dealing with news media					
Specialty procedures (operations, engineering, human factors, etc.)					

**Investigator name:**

**Title (operations/engineering/ATC/survival factors/etc.):**

**Grade or position:**

**Supervisor name:**

<i>Knowledge, skills and experience</i>	<i>Source /course</i>	<i>Date obtained</i>	<i>Date of practical experience</i>	<i>Date scheduled for training</i>	<i>Remarks (No. of years, grades, etc.)</i>
<b>Report writing</b>					
Internal and external correspondence					
Specialist field notes and factual reports					
Specialist analysis report					
Safety recommendations					
Final Reports					
Technical papers					
Speeches					
<b>Seminar and meeting attendance</b>					
International Society of Air Safety Investigators (ISASI)					
Flight Safety Foundation (FSF)					

<i>Knowledge, skills and experience</i>	<i>Source /course</i>	<i>Date obtained</i>	<i>Date of practical experience</i>	<i>Date scheduled for training</i>	<i>Remarks (No. of years, grades, etc.)</i>
Seminars related to technical specialty					
ICAO working groups					
Regional working groups					
Other					
<b>Basic, advanced or specialty courses attended and certificates — after being hired</b>					
<i>Name of course or institution</i>	<i>Dates</i>		<i>Remarks (certificates, etc.)</i>		
<b>Recurrent training</b>					
<i>Name of course or institution</i>	<i>Dates</i>		<i>Remarks (certificates, etc.)</i>		
<b>On-the-job-training (OJT) (minimum of two cases)</b>					
<i>Identification of accidents</i>	<i>Dates</i>		<i>Remarks</i>		
OJT — domestic accident					
OJT — domestic accident					
<b>Participation as an observer (OJT) at investigations conducted by other States</b>					
<i>Identification of accidents</i>	<i>Dates</i>		<i>Remarks</i>		

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# Appendix F

## Wreckage and Parts Release Form

**[Investigation Authority]  
Investigation Number**

The [Investigation Authority] is conducting an investigation into the following aviation safety matter.

Investigation title and/or other description — aircraft make, model, registration, date of occurrence, etc.
---

The items listed below are no longer required by the [Investigation Authority] as part of its safety investigation.

*Note.— It is strongly recommended that components be inspected by authorized personnel where it is intended for them to be returned to operational service.*

Item details (description and condition)	Date returned

**[Investigation Authority] IIC or Delegate**

Signature of IIC/Delegate

Name of IIC/Delegate

Date

Phone

Fax

Email

**Please return a signed copy of this form to the above person at the [Investigation Authority]**

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**Owner or agent acknowledgement**

I accept custody of the listed items.

Owner or Agent's name

Phone

Signature of Owner or Agent

Date

— END —





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