ICAO SAFETY

AIG Turnkey Project
Session 4

Fernando Camargo

Regional Officer, Technical Assistance

September 2022

Objective

To assist Caribbean and Central American States in the area of AIG by:

a) Building/enhancing national capacity in accident and incident investigation;

b) Enabling the establishment/consolidation of Investigation Cooperative Mechanisms (ICMs); and

c) Enabling the future adoption of a RAIO approach

Agenda

- Training Programme
- Periodic Training Plan
- Training Implementation Records

Training Programme

6.123 Has the State/investigation authority developed a formal training programme detailing the type of training to be provided to its investigators?

6.123 Has the State/investigation authority developed a formal training programme detailing the type of training to be provided to its investigators?

Key elements:

1. Formal training programme
2. Type of training

6.123 Has the State/investigation authority developed a formal training programme detailing the type of training to be provided to its investigators?

Formal training programme:

What is a training programme?

6.123 Has the State/investigation authority developed a formal training programme detailing the type of training to be provided to its investigators?

Formal training programme:

Document through which the authority details the competencies necessary for the employee to be designated to act as an investigator

6.123 Has the State/investigation authority developed a formal training programme detailing the type of training to be provided to its investigators?

Type of training:

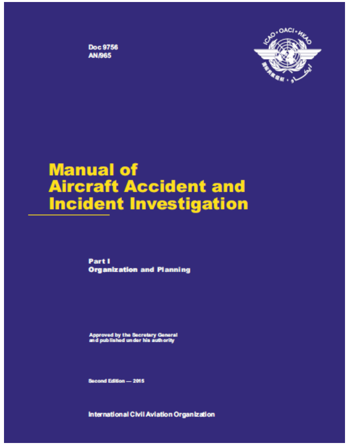
- Theoretical, practical, both
- Format (face-to-face, virtual, online)

ICAO references

GM
Doc 9756, Part I, C2
Doc 9734, Part A, C3
Doc 9962, 4.3
Cir 298

ICAO REFERENCES

DOC 9756, I



Doc 9756
AN/965

Manual of
Aircraft Accident and
Incident Investigation

Part I
Organization and Planning

Approved by the Secretary General
and published under his authority

Second Edition — 2015

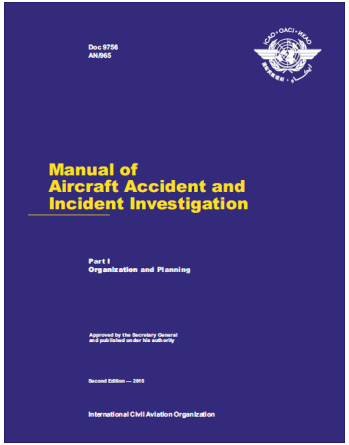
International Civil Aviation Organization

2.5 PERSONNEL

2.5.1 Aircraft accident investigation is a specialized task, which should be undertaken only by qualified investigators. However, many States may not have personnel dedicated solely to accident investigation. In these States, appropriately qualified personnel should be identified and trained in accident investigation techniques prior to being assigned to accident investigation duties…

2.5 PERSONNEL

ICAO REFERENCES
DOC 9756, I



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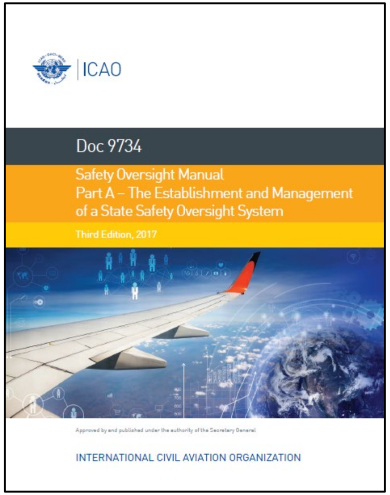
2.5.1 …When assigned to an accident investigation, such personnel should be relieved of their regular duties. If investigators assigned to the investigation are not employees of the independent accident investigation authority (e.g. temporary seconded investigators), provisions must be in place to ensure that the seconded investigators are able to operate with full independence in the conduct of the investigation and the publication of findings, recommendations and the Final Report, and that they are alleviated of any potential retribution when they return to their regular duties.

Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

DOC 9734
(PART A, C3)



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Doc 9734

Safety Oversight Manual
Part A – The Establishment and Management of a State Safety Oversight System

Third Edition, 2017

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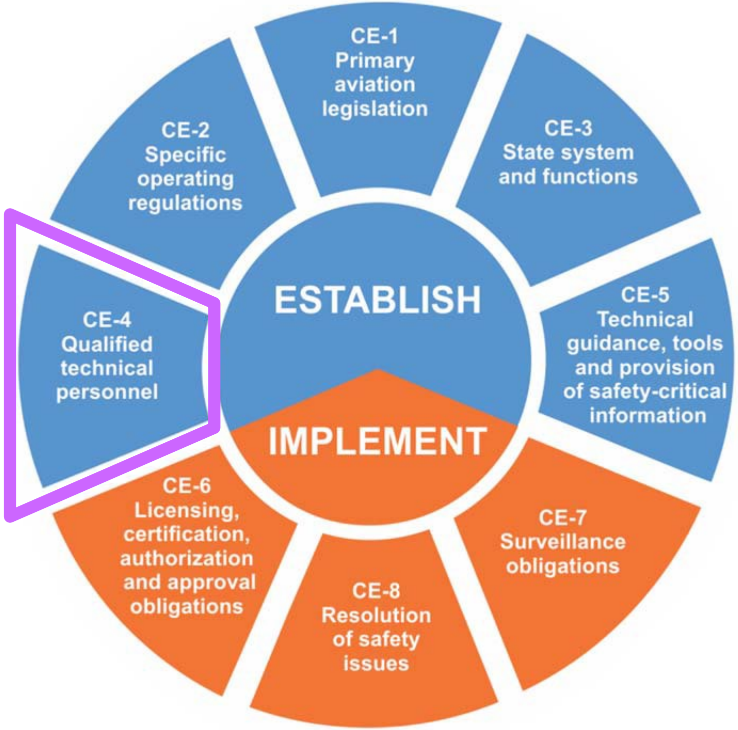


CE-1 Primary aviation legislation

CE-2 Specific operating regulations

CE-3 State system and functions

ESTABLISH

CE-4 Qualified technical personnel

CE-5 Technical guidance, tools and provision of safety-critical information

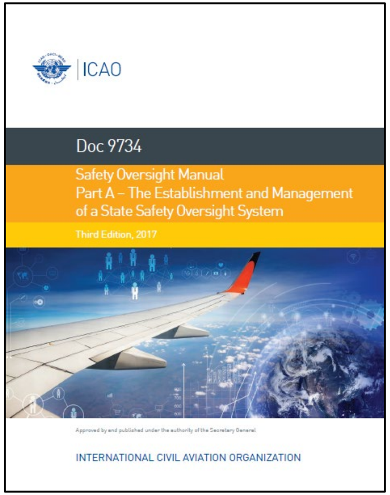
IMPLEMENT

CE-6 Licensing, certification, authorization and approval obligations

CE-7 Surveillance obligations

CE-8 Resolution of safety issues

DOC 9734
(PART A, C3)



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Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

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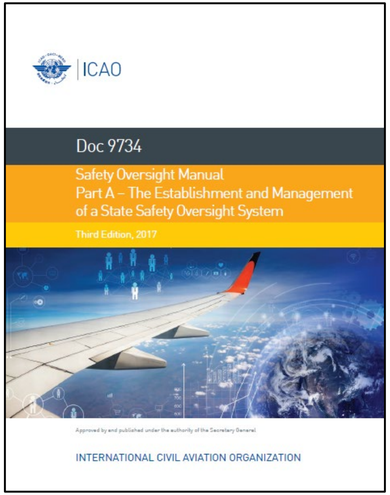
3.4.2 Training of technical personnel

3.4.2.1 To ensure that technical personnel receive the required training in an effective manner and maintain their competency, a robust training system needs to be established and implemented by the State authorities. This system should be based on a documented training policy established and signed at the management level of the State authorities.

DOC 9734
(PART A, C3)



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Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

…

3.4.2 Training of technical personnel

3.4.2.2 The training policy should commit to provide all necessary training to all technical personnel in all areas, including initial training (e.g. induction and basic training), on-the-job training (OJT), recurrent training and specialized or advanced training. Furthermore, the training policy should require the establishment of a training programme for each technical staff position and training plans for each technical staff member.

Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

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3.4.2 Training of technical personnel

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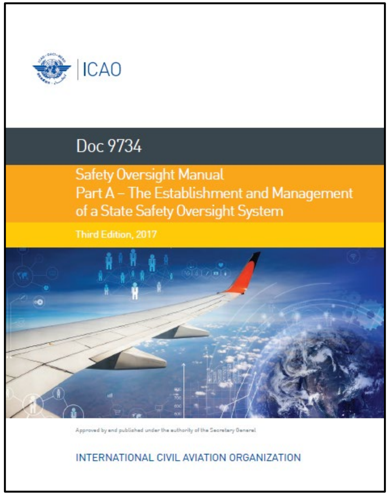
(PART A, C3)



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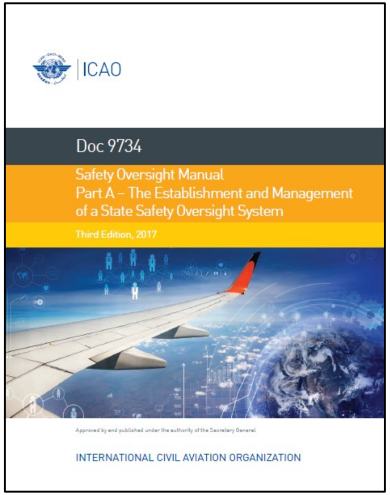
3.4.2.3 The State authorities also need to provide the necessary financial resources and time for their technical personnel to receive the required training.

Training Programme

DOC 9734
(PART A, C3)



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Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

…

3.4.2 Training of technical personnel

3.4.2.4 A training programme should be developed for each technical staff position. The training programme should include all the training required for the incumbent of the position to acquire and maintain the necessary competencies for the position as well as to effectively perform the related safety oversight functions and activities. The required training includes initial training, OJT, recurrent training and all the specialized training necessary for that technical position, with the minimum content for each type of training, as applicable.

Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

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3.4.2 Training of technical personnel

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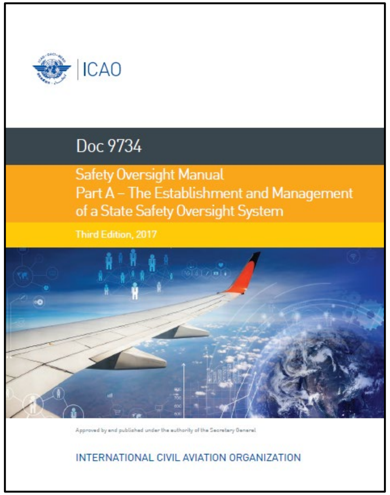

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3.4.2.5 For each technical staff member, a periodic training plan should be developed based on the training programme established for the staff member’s position. The training plan should detail the type of training to be provided during a specified timeframe as well as the training priorities. As a principle, a staff member can only be authorized to perform safety oversight duties in the area or subject where the staff member has satisfactorily completed the required training and maintains the required competence.

Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

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3.4.2 Training of technical personnel

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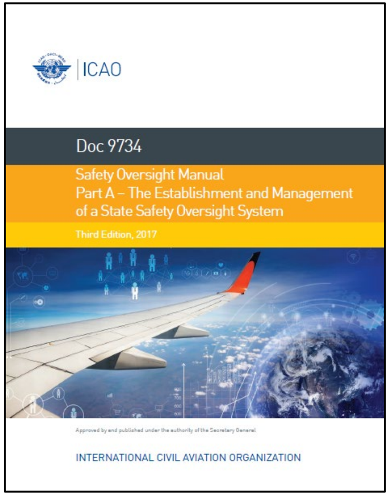
(PART A, C3)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3.4.2.6 Training of the State's technical personnel is not limited to strictly professional elements, such as the maintenance of competency and currency. In particular, it is essential that civil aviation investigators also be provided with training on subjects such as applicable CAA/AIA regulations, investigators' skills, knowledge, duties and responsibilities, and CAA/AIA procedures for the implementation ~~and enforcement of requirements.~~

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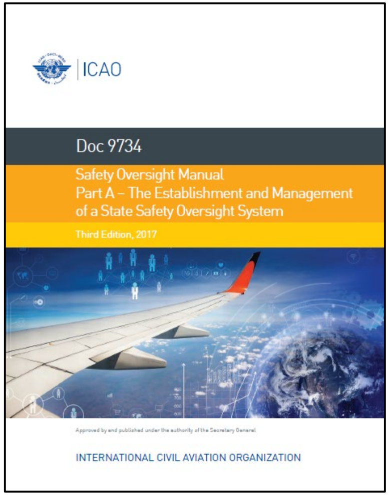
(PART A, C3)



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Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

…

3.4.2 Training of technical personnel

3.4.2.7 Technical personnel should satisfactorily complete OJT before being assigned to investigation-related tasks and responsibilities. OJT should be provided by experienced, senior technical staff in the subject area or task, and should follow a structured process, such as observing, working under supervision, competence assessment and authorization, etc. It is important to ensure that staff are only authorized to perform tasks after having been assessed as qualified. The completion of the OJT, including the competency assessment, should be properly documented.

Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

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3.4.2 Training of technical personnel

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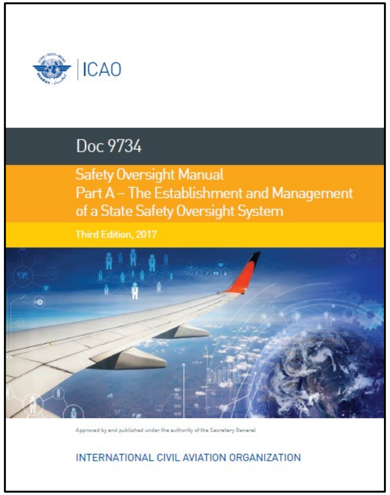

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3.4.2.8 The State's technical personnel represent the authority and, as such, require the continuing development of knowledge and skills related to their respective responsibilities. This should be accomplished through periodic training and refresher courses in all the disciplines for which the technical personnel are responsible. Participation in seminars and workshops organized by ICAO and international and regional aviation-related organizations can also enable the State's technical personnel to widen their horizons and share experience with experts from other Member States…

Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

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3.4.2 Training of technical personnel

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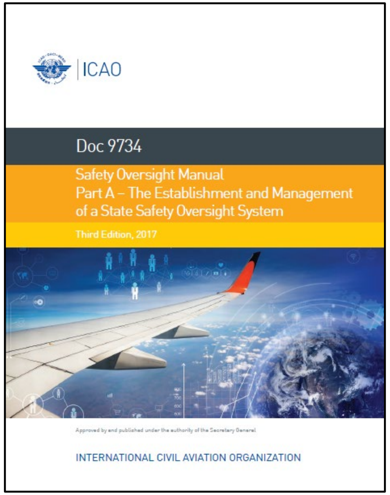

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3.4.2.9 Periodic practical and theoretical specialized (technical) training will enable the State’s technical personnel to achieve and maintain a high level of knowledge and expertise and thus undertake their duties and responsibilities in a more effective and efficient manner.

Chapter 3

CRITICAL ELEMENTS OF A STATE SAFETY OVERSIGHT SYSTEM

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3.4.2 Training of technical personnel

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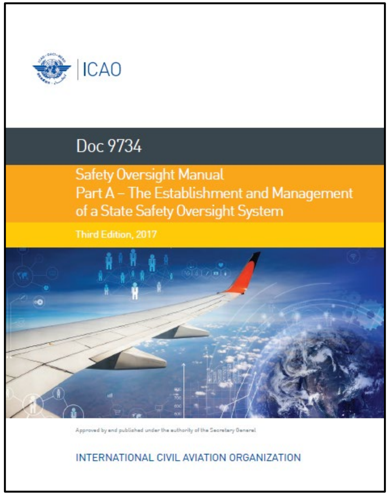

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3.4.2.10 The State authorities should establish and implement a system for the maintenance of training records for their technical personnel. This includes records of the OJT received, reflecting the various phases of the OJT completed (i.e. observation, performance of tasks under supervision and final assessments) as well as the assessment of competence of the personnel.

4.3 INVESTIGATOR TRAINING

DOC 9962

ICAO

Doc 9962

Manual on Accident and Incident Investigation Policies and Procedures

Second edition, 2019

Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION

4.3.1 It is the policy of the *[Accident Investigation Authority]* to provide appropriate training to investigators consistent with international standards and best practices. In particular, the *[Accident Investigation Authority]* should follow guidance provided in ICAO Circular 298, Chapters 3 and 4, which contain 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 INVESTIGATOR TRAINING

DOC 9962

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Doc 9962

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4.3.2 One means to determine and manage training needs, as well as to monitor and evaluate the training needs and training outcomes of the *[Accident Investigation Authority]* staff, is through the use of an individual development plan (IDP). A template for an IDP is provided in Appendix E, containing the required elements of an investigator's or manager's training programme. Based on an individual's job description and his or 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 INVESTIGATOR TRAINING

DOC 9962

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Doc 9962

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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 INVESTIGATOR TRAINING

DOC 9962

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Doc 9962

Manual on Accident and Incident Investigation Policies and Procedures

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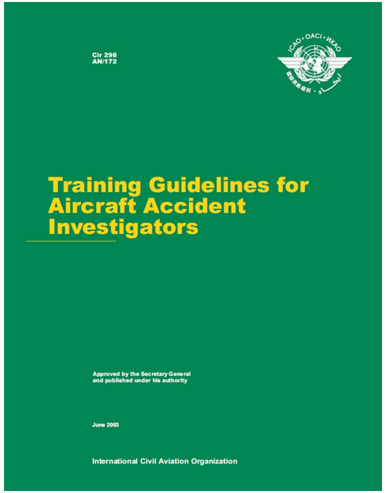
4.3.4 The IDP contains the basic requirements of knowledge, skills and abilities that each person either must possess when hired, or must gain through a structured training programme. The IDP also provides a tool to manage and plan each person's training, including a means to project an annual training 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 the position of Operations Investigator to Investigator-in-charge. The completed IDP for each person becomes his or her training record, and it is filed along with supporting materials such as certificates and other records of training and experience.

Training Guidelines for Aircraft Accident Investigators

CIR 298



Cir 298
AN/172

Training Guidelines for Aircraft Accident Investigators

Approved by the Secretary General and published under his authority

June 2003

International Civil Aviation Organization

The circular discusses the experience and employment background required for training as an aircraft accident investigator. It also outlines the progressive training that is considered necessary to qualify a person for the various investigation roles, including appointment as the investigator-in-charge of an investigation into a major accident involving a large transport category aircraft. ICAO acknowledges that training guidelines are evolutionary in nature and may need to be updated periodically

We'll exam the Circular in detail

Conditionalities of a Training Programme

- How to build a training programme?
  - Background experience required from an investigator
  - The investigation system in place
  - Training assessment

Conditionalities of a Training Programme

- Background experience required from investigators

Pilot *and/or*
Aeronautical/Maintenance Eng. } + Aviation Infrastructure

Conditionalities of a Training Programme

- Background experience required from investigators
  - knowledge of applicable national and international legislation
  - knowledge of investigation techniques
  - understanding of aircraft operations and the relevant technical areas of aviation
  - ability to obtain and manage the relevant technical assistance and resources

Conditionalities of a Training Programme

- Background experience required from investigators
  - ability to collect, document and preserve evidence
  - ability to identify and analyse pertinent evidence
  - ability make safety recommendations
  - ability to write statements and reports

Conditionalities of a Training Programme

- The investigation system in place
  - Independent AIA
  - Semi-independent AIA (AIA under a Ministry with regulatory functions)
  - Investigation unit under the CAA
  - Internal organization of the authority and established processes of investigation

Framework of the Training Programme

- Training a person for aircraft accident investigation involves several phases, including:
  - initial training (familiarization)
  - basic accident investigation course
  - advanced accident investigation course
  - specialized courses

Framework of the Training Programme

- Although Cir 298 lists on-the-job training (OJT) as a phase, it should be better seen as a complement to the theoretical training provided in each phase

Framework of the Training Programme

Training content needs to cover all necessary competencies, including:

- National/international legislation
- Policies and procedures
- Available infrastructure
- Investigation processes
- Taxonomy
- Investigation techniques
- Photography
- Reporting
- Formulation of safety recommendations

Framework of the Training Programme

- The assessment of the training received needs to be detailed in the programme
    - Assessment of theoretical courses
    - Assessment of OJT
    - Minimum accepted performance
    - Process to deal with failure cases

Framework of the Training Programme

- Training needs to be structured in accordance with the different roles and responsibilities that will be taken by the trainee after its conclusion:

- investigator-in-charge
- group leader
- Investigator (team member)
- accredited representative
- adviser
- expert/specialist

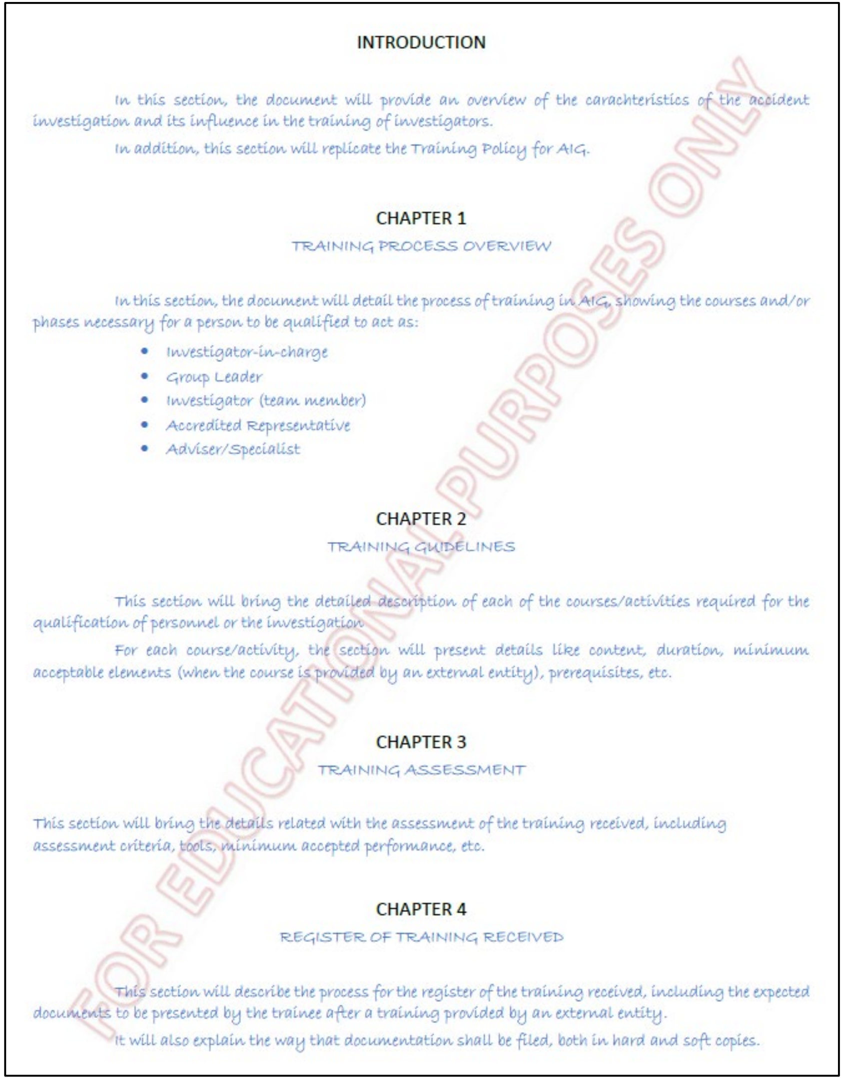
EXERCISE 1

- Building the structure of a training programme
    - Create the structure of a training programme, considering the essential elements mentioned so far during the session
    - The structure will be made by the titles of each Chapter/Section of the document and a simple description of their content

EXERCISE 1

- Building the structure of a training programme
  - Example:
    - Chapter 1 – Training Policy (the Policy applicable to training in the Authority of Coronaland)
    - Chapter 2 - …

EXAMPLE ANSWER



INTRODUCTION

In this section, the document will provide an overview of the carachteristics of the accident investigation and its influence in the training of investigators.

In addition, this section will replicate the Training Policy for AIG.

CHAPTER 1

TRAINING PROCESS OVERVIEW

In this section, the document will detail the process of training in AIG, showing the courses and/or phases necessary for a person to be qualified to act as:

- Investigator-in-charge
- Group Leader
- Investigator (team member)
- Accredited Representative
- Adviser/Specialist

CHAPTER 2

TRAINING GUIDELINES

This section will bring the detailed description of each of the courses/activities required for the qualification of personnel or the investigation

For each course/activity, the section will present details like content, duration, minimum acceptable elements (when the course is provided by an external entity), prerequisites, etc.

CHAPTER 3

TRAINING ASSESSMENT

This section will bring the details related with the assessment of the training received, including assessment criteria, tools, minimum accepted performance, etc.

CHAPTER 4

REGISTER OF TRAINING RECEIVED

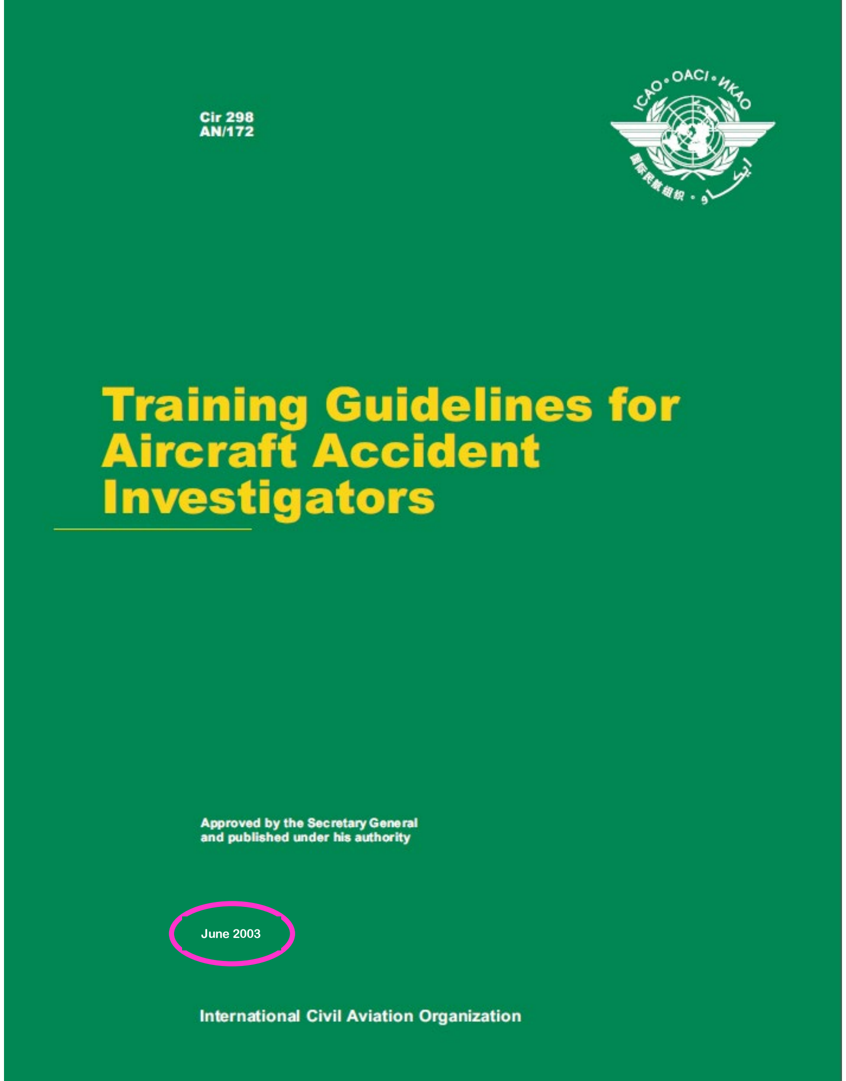
This section will describe the process for the register of the training received, including the expected documents to be presented by the trainee after a training provided by an external entity.

It will also explain the way that documentation shall be filed, both in hard and soft copies.

FOR EDUCATIONAL PURPOSES ONLY

CIRCULAR 298

Let’s explore the content of Cir 298



Cir 298
AN/172

Training Guidelines for Aircraft Accident Investigators

Approved by the Secretary General
and published under his authority

June 2003

International Civil Aviation Organization

Chapter 3

TRAINING GUIDELINES

3.1 General

3.2 Phase 1 –- Initial Training

3.3 Phase 2 - On-the-job Training

3.4 Phase 3 - Basic Accident Investigation Courses

3.5 Phase 4 - Advanced Accident Investigation Courses and Additional Training

Chapter 4

ACCIDENT INVESTIGATION COURSE GUIDELINES

4.1 Basic Course

Chapter 4

ACCIDENT INVESTIGATION COURSE GUIDELINES

4.1 Basic Course

- General introduction
- Accident notification procedures
- Investigation management
- Investigators’ equipment
- Accident site safety
- Protection of evidence
- Initial action at the accident site
- Information gathering techniques
- Communication and recording media
- General introduction
- Accident notification procedures
- Investigation management
- Investigators’ equipment
- Accident site safety
- Protection of evidence
- Initial action at the accident site
- Information gathering techniques
- Communication and recording media
- Witness interviews
- Recorders
- Examination of relevant maintenance documents
- Fires and explosions
- Survival aspects
- Structures
- Systems
- Aerodynamics
- Power plants
- Rotary wing aircraft
- Organizational information
- Human performance
- Determination of the flight crew’s suitability for the flight
- Methods of analysing the factual information gathered
- Report writing
- The news media and public relations

Chapter 4

ACCIDENT INVESTIGATION COURSE GUIDELINES

4.1 Basic Course

4.2 Advanced Course

4.3 Specialty Courses

Questions & Comments

- Circular is outdated (for the training of investigators, the concept of Competency-based training should be considered)
- Not accurate in regards to OJT
- Doesn’t cover the assessment

Training Assessment

- Assessment for both theoretical and practical (OJT) parts
- Establishment of minimum performance level (and actions to address cases of failure in achieving minimum grade)
- Means of assessment (tests, checks, etc.) and pertinent tools (bank of questions, forms, etc.)

EXERCISE 2

- Building the a training programme
  - Using the structure created in Exercise 1, now you will populate the document with the appropriate content
    - For the purposes of the exercise, we won’t care about the approval and amendment control process of the document (required when developing your official manual)
    - When detailing the syllabus, you may copy and paste from the Cir 298 those subjects you find there. For other subjects, summarize the content

EXERCISE 2

- Building the a training programme
  - Using the structure created in Exercise 1, now you will populate the document with the appropriate content
    - It is essential to establish the different courses and what they will entitle the trainee to do after completion
    - Establish the assessment process for both theoretical and OJT
      - Remember that OJT requires, at a minimum, 3 levels of performance (demonstration, execution under supervision, and proficiency)

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Mexico City

South American (SAM) Office
Lima

ICAO Headquarters Montréal

Western and Central African (WACAF) Office
Dakar

European and North Atlantic (EUR/NAT) Office
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Eastern and Southern African (ESAF) Office
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Asia and Pacific (APAC) Sub-office
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Asia and Pacific (APAC) Office
Bangkok

THANK YOU