Session 5

Process of Accident Investigation

SEMINAR ON AIRCRAFT ACCIDENT INCIDENT INVESTIGATION
11-15 AUGUST 2014
Process of Accident Investigation

- Investigation
- Release of information in the course of an investigation
- Parties involved in an investigation
- Investigation process
INVESTIGATION
Investigation (1)

- By investigation is meant:
  - The gathering, recording and analysis of all relevant information on the occurrence
  - If appropriate, the issuance of safety recommendations
  - If possible, the determination of the causes and/or contributing factors
  - Completion of the Final Report
Investigation (2)

- In some States, the IIC is fully responsible for the investigation, including deciding on the conclusions and the final version of the report.

- In some other States, where there is an investigation board constituted with a number of board members, the IIC carries out the investigation work but it is the board that decides on the conclusions and the final version of the report.
Investigation Timeframe

- **Standard 6.5** – In the interest of accident prevention, the State conducting the investigation shall make the Final Report publicly available …, if possible, **within 12 months**.
Investigation Policies and Procedures

- **Recommendation 5.4.2** – The accident investigation authority should develop documented policies and procedures detailing its accident investigation duties.

- Policies and procedures should address:
  - Organization and planning
  - Investigation
  - Reporting
Release of Information in the Course of an Investigation
Preliminary Report

- **Standard 7.1** – (Accident involving aircraft > 2 250 kg)
  Preliminary Report must be sent by State conducting the investigation to:
  - State of Registry or State of Occurrence, as appropriate
  - State of the Operator
  - State of Design
  - State of Manufacture
  - State that provided information, significant facilities or experts
  - ICAO
Standard 7.2 – (Accident involving aircraft <= 2 250 kg and involving airworthiness or matters considered to be of interest to other States) Preliminary Report must be sent by State conducting the investigation to:

- State of Registry or State of Occurrence, as appropriate
- State of the Operator
- State of Design
- State of Manufacture
- State that provided information, significant facilities or experts
Release of Information

- **Recommendation 5.28** – State conducting the investigation should release, at least during the first year of the investigation, established factual information and indicate the progress of the investigation in a timely manner.
Long investigation

- **Standard 6.6** – If the report cannot be made publicly available within 12 months, the State conducting the investigation shall make an **interim statement** publicly available on each anniversary of the occurrence detailing the progress of the investigation and any safety issues raised.
Use of Information

- **Standard 6.2** – States shall not circulate, publish or give access to a draft report or any part thereof, or any documents obtained during an investigation of an accident or incident, without the express consent of the State which conducted the investigation, unless such reports or documents have already been published or released by that latter State.
Parties Involved in an Investigation
States involved

- State of Occurrence
  - State that instituted investigation

- State conducting investigation

- State of the Operator

- State of Registry

- State that provided information, facilities and experts

- “State of Victim” having suffered fatalities or serious injuries to its citizens

- State of Manufacture (Aircraft)

- State of Manufacture (Engine)

- State of Manufacture (Component)
Accredited Representatives

- **Standard 5.18** – The following States are entitled to appoint an accredited representative to participate in an accident investigation:
  - State of Registry
  - State of the Operator
  - State of Design
  - State of Manufacture

- **Standard 5.23** – Any other State which on request provides information, facilities or experts is entitled to appoint an accredited representative to participate in the investigation
Accredited Representatives (Cont’d)

- **Standard 5.22** – If specifically requested by the State conducting an investigation into an accident involving an aircraft > 2 250 kg, the State of Registry, State of the Operator, State of Design and State of Manufacture shall appoint an accredited representative to participate in the investigation.
Advisers

- **Standard 5.24** – A State entitled to appoint an accredited representative shall also be entitled to appoint one or more advisers to assist the accredited representative.

- **Standard 5.24.1** – Advisers participate under the accredited representatives’ supervision.
Participation Entitlement

- **Standard 5.25** – Participation entitlement:
  - Visit the scene of the accident
  - Examine the wreckage
  - Obtain witness information, suggest areas of questioning
  - Have full access to all relevant evidence
  - Receive copies of all pertinent documents
  - Participate in read-outs of recorded media
  - Participate in off-scene investigative activities such as component examinations, technical briefings, tests and simulations
  - Participate in investigation progress meetings
  - Make submissions in respect of the various elements of the investigation
Limitation to Participation
Entitlement

- **Standard 5.25** – Participation of States other then State of Registry, State of the Operator, State of Design and State of Manufacture may be limited to those matters which entitled such States to participate under 5.23
State having suffered fatalities or serious injuries to its citizens

- **Standard 5.27** – Such a State may appoint an expert to take part in the investigation:
  - Visit the scene of the accident
  - 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
  - Receive a copy of the Final Report

- He may assist in the identification of victims and in meetings with survivors from that State
Obligations

- **Standard 5.26** – Accredited representatives and their advisers shall:
  - Provide all relevant information to IIC
  - Not divulge information on the progress and the findings of the investigation without the express consent of IIC
Investigation Process
Investigation process

Four phases:
- Pre-field investigation
- Field (on-site) investigation
- Analysis and report writing
- Post-investigation
Phase 1: Pre-field investigation

- Notify other States/ICAO
- Make arrangement (e.g. with Police) to secure the aircraft, the wreckage and accident site
- Appoint an investigator-in-charge and advisers
- Form an investigation team
- Dispatch investigators to crash site
Size of Investigation Team

- Size will depend on the areas that need to be investigated into, e.g.:
  - Structure
  - Aircraft systems
  - Maintenance
  - Aircraft performance
  - Air traffic control
  - Weather
  - Dangerous goods
  - Airport operations
  - Aviation medicine
  - Human factors
  - Wreckage recovery/removal
  - Firefighting and rescue
  - Survivability
  - Organisational management
A Simple Investigation Team Structure

Inspector-in-charge (IIC)

Accredited Representative(s)

Operations
- ATC
- Flight Crew
- Weather
- Witness
- CVR / DFDR
- Human Factors
- Operations Records

Secretariat
- Public Relations
- Facilitation
- Notifications

Engineering
- Structures
- Powerplants
- Systems
- Maintenance
A more Complex Grouping of the Investigation Team

<table>
<thead>
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<th>Investigator-in-charge</th>
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<td>Flight operations</td>
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Phase 2: Field Investigation

- Recovery and read-out of CVR/FDR
- Impound/gather documents (ATC tape, ops/maintenance records, met data, cargo list)
- Recording of evidence, photo taking, mapping
- Identifying aircraft parts
- Interviews (pilots, ATCO, survivors, witnesses)
- Recovery of essential physical evidence for off-site analysis
Phase 2: Field Investigation

- Move the aircraft wreckage to another location, if necessary
- Daily briefing and debriefing
- Liaise with Crisis Management Centre
Flight Recorders

- **Standard 5.7** – State conducting the investigation shall arrange for the read-out of the flight recorders without delay.
Removal of Wreckage

The aircraft wreckage shall not be moved without authorisation, except for the purpose of:

- **Rescue**
- **Removing mails, valuables, dangerous goods**
- **Preventing further destruction**
- **Preventing obstruction to public of to air navigation**
Assistance of External Parties

- ATC service provider (ATC tapes, radar data)
- Airport operator (post-crash fire protection)
- Airline (CVR/FDR removal, round up crew/pax for interview)
- Engineering agent of the airline (technical investigation)
- Military/Police (aerial survey, security, combing of site, escort)
- Hospitals (medical/toxicological tests, autopsies)
Investigation Resources

Facilities, equipment and experts from:

- Airlines, aerospace companies within State
- Aircraft/engine/components manufacturers
- Tertiary educational institutions
- Research centres
- Foreign investigation agencies, e.g. Australia ATSB, Canada TSB, France BEA, UK AAIB, US NTSB
Phase 3: Analysis, Report Writing

- Analyse the data gathered
- Further research and testing
- Meetings and discussions
- Formulate and prove hypotheses
- Formulate/issue safety recommendations

Safety recommendations may be made at any stage of an investigation, and not necessarily only at the end of an investigation

- Draft Final Report
- Seek comments on Draft Final Report
Phase 4: Post-investigation

- Complete Final Report
- Release custody of aircraft, wreckage or parts thereof, if not already done
- Provide Accident/Incident Data Report to ICAO
- Disseminate investigation reports to the parties concerned and ICAO
- Make the investigation report public
Issue of Safety Recommendations
Safety Recommendations

- **Standard 6.8** – Safety recommendations may be made at any stage of the investigation.
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