



Aviation Occurrence Investigation Course: Flight Data, Root Causes and Safety Recommendations



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Introduction:

Aviation occurrence investigation, covering flight data, root causes and safety recommendations, is a 1-week course for safety investigators, safety officers and quality staff in airlines, airports, maintenance organisations, ground handlers and air navigation services, ending with an Occurrence Investigation Report and Corrective Action Tracking Plan. Many internal investigations stop at the front-line error, so the same occurrence returns with a different crew, shift or aircraft. Nominees already receive and triage occurrence reports, and teaching is by case study on flight data extracts, maintenance records and interview notes. CoreConcept Training Center delivers this aviation occurrence investigation course.

Course Objectives:

- Classify reported occurrences against accident, serious incident and incident definitions and decide which events warrant an internal investigation
- Plan an occurrence investigation, set its scope and terms of reference and secure perishable evidence
- Collect and interpret evidence from flight data monitoring, maintenance records, air traffic recordings, CCTV and witness interviews
- Reconstruct the sequence of events and analyse root causes using causal factor charting, 5 Whys, fishbone diagrams, Bow-Tie barrier analysis and HFACS
- Write findings and safety recommendations that address organisational causes rather than individual blame
- Track corrective actions to closure and review their effectiveness through the safety management system

Target Audience:

- Safety investigators responsible for internal occurrence investigations and reports
 - Safety officers responsible for receiving, classifying and triaging occurrence reports
 - Quality and compliance staff responsible for audit findings and corrective action follow-up
 - Flight data monitoring analysts responsible for exceedance review and event validation
 - Maintenance and ground handling supervisors who take part in investigation teams
 - Air traffic and airport operations staff who contribute evidence and interviews to investigations
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Course Outline:

Day 1: Occurrences, Reporting and Investigation Triggers

- Annex 13 Definitions of Accident, Serious Incident and Incident
- Annex 19 Occurrence Reporting Within the Safety Management System
- Serious Incident Identification Using Published Guidance Lists
- Severity and Risk Triage Matrix for Reported Occurrences
- Investigation Decision Criteria and Terms of Reference Template

Day 2: Investigation Planning and Analysis Methods

- Doc 9756 Investigation Organisation and Planning Principles
- Causal Factor Charting of Events and Conditions
- 5 Whys and Fishbone Diagram Application Limits
- Bow-Tie Diagram and Barrier Failure Analysis
- HFACS Classification of Unsafe Acts and Latent Conditions

Day 3: Evidence Collection and Event Reconstruction

- Flight Data Monitoring Extract Review and Parameter Validation
- Maintenance Records, Task Cards and Technical Log Examination
- Air Traffic Recordings and Airport CCTV Evidence Handling
- Cognitive Interview Technique for Crew and Staff Witnesses
- Sequence of Events Timeline Construction From Multiple Sources

Day 4: Findings, Recommendations and Problem Cases

- Evidence Conflicts and Missing Data Resolution Methods
- Hindsight and Outcome Bias Checks in Analysis
- Findings Statement Structure Linking Evidence to Causes
- SMART Safety Recommendation Drafting and Owner Assignment
- Corrective and Preventive Action Effectiveness Review Criteria

Day 5: Case Study Investigation and the Final Report

- Unstable Approach Case Study Using Flight Data Extracts
 - Ramp Damage Case Study Using CCTV and Interviews
 - Maintenance Error Case Study Using Records and HFACS
 - Recommendation Peer Review and Corrective Action Plan
 - Occurrence Investigation Report Completion and Briefing
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Skills You Will Gain:

- Occurrence Classification
- Investigation Planning
- Flight Data Interpretation
- Witness Interviewing
- Event Timeline Reconstruction
- Barrier Analysis
- Safety Recommendation Writing
- Corrective Action Verification

Why Attend This Course:

- Deliver an Occurrence Investigation Report with safety recommendations and a Corrective Action Tracking Plan to the safety review board and the accountable manager
- Decide which reported occurrences need a full investigation, a short review or trend monitoring only
- Avoid repeat occurrences, aircraft damage costs and audit findings caused by investigations that stop at individual error
- Coach colleagues on the triage criteria, interview technique and analysis methods practised during the case studies

Conclusion:

Back at work, the participant gives the Occurrence Investigation Report and Corrective Action Tracking Plan to the safety manager, the safety review board and the heads of flight operations, maintenance and ground operations. They use it to decide which recommendations to accept, who owns each corrective action and when it is due. After the first actions close, the organisation should check whether similar occurrences, flight data exceedances and audit findings have fallen, and reopen any action that has not changed them.

Frequently Asked Questions FAQ:

What should participants know before an aviation occurrence investigation course?

Participants should already handle occurrence reports, audits or safety reviews in an airline, airport, maintenance organisation, ground handler or air navigation service. Bringing an anonymised occurrence report, a flight data extract or a closed corrective action helps them apply the case studies to their own organisation.

How does an aviation occurrence investigation course differ from a State air accident investigation course?

This course covers investigations an operator or service provider runs inside its own safety management system, from triage to corrective action. State accident investigation courses cover independent investigations of accidents and serious incidents, including wreckage examination and flight recorder readout, which this course does not teach.

Why do aviation occurrence investigations need root cause analysis beyond the front-line error?

Root cause analysis finds the procedures, training, equipment, supervision and organisational pressures that made the error likely. Recommendations that address only the individual leave those conditions in place, so the same occurrence returns with different people, shifts or aircraft.

What do participants take back from the aviation occurrence investigation course?

Participants take back an Occurrence Investigation Report with a sequence of events, root cause analysis, findings, safety recommendations and a Corrective Action Tracking Plan, along with triage criteria and interview guides they can use on the next occurrence.
