AIRCRAFT ACCIDENT INVESTIGATION TECHNIQUES AND MANAGEMENT

OBJECTIVES
To provide participants with in-depth training in investigation techniques and an understanding of the organisational factors and management issues. The course will cover all aspects of the investigation process from preparation to report writing and discuss case studies on accident investigation focusing on management deficiencies.

OUTLINE
Module 1: Techniques and Regulations
  - ICAO Annex 13
    - International requirements
    - Rights and responsibilities of States involved
  - Preparation to Conduct an Investigation
    - National laws and procedures
    - Investigation equipment
    - Communications equipment
    - Transportation to accident site
    - Protective clothing
    - Accident site safety
  - On-site Investigation Tasks
    - Coordination with other agencies
    - Sources of evidence
    - Documenting the accident site
    - Wreckage recovery from the sea
  - Use of Critical Data in Investigation
    - Flight data recorder (FDR)
    - Cockpit voice recorder (CVR)
    - Radar data
  - Technical Investigation
    - Structures, power plants and systems
    - Maintenance records
    - Aerodynamics
    - Mid-air collisions
    - In-flight break-ups
  - Operations Investigation
    - Flight path
    - Crew history, duty times and competency
  - Human Factors
    - SHELM model
    - Reason model
    - Types of errors and examples
    - Techniques for investigating human factors
  - Survival Factors
    - Crashworthiness
    - Pathology
Module 2: Organisational Factors and Major Issues

- **International Requirements**
  - ICAO Annex audits
  - States’ responsibilities
  - Role of the accident investigation authority
  - New challenges

- **Management of Accident Investigations**
  - Overview
  - Dealing with media
  - Family assistance programmes
  - Case study maintenance issues
  - Case study accidents in mountainous terrain
  - Case study Swissair SR111 MD11
  - Developing safety recommendations

- **Organisational Factors in Safety from Airlines’ Perspective**
  - Investigation of anomalies in aircraft accidents
  - Crew resource management
  - Economic pressures and its effect on airline safety
  - Case study Commuter aircraft accident
  - Case study Major airline accident

- **Understanding Human Factors in Aircraft Accidents**
  - Human performance in the context of the total system
  - Human factors investigation principles
  - Human factors analysis and classification system

- **Safety Programme Management**
  - Basic safety concepts for airports, air traffic control and airlines
  - International safety management system (SMS) requirements
  - Hazards and risk assessment
  - SMS for accident investigators

- **Accident Site Hazards**
  - Biological hazard risks associated with aircraft accident investigation
  - Recognition of biological hazards
  - Modes of bloodborne pathogen transmission
  - Procedures to control exposure to bloodborne pathogens
  - Exposure control plan
  - Hepatitis B virus (HBV) vaccination information
  - Exposure incidents
  - Personal protective equipment
  - Personal protection equipment exercise
Case Studies
To illustrate and amplify the topics addressed, the following recent accident case studies will be discussed:
- MK Airlines take-off accident (Halifax)
- AirTransat A330 (Azores, Portugal)
- American Airlines A300 vertical fin loss (New York, USA)
- B727 accident (Benin)
- COPA B737 (Panama)
- IL76 accident (Timor Leste)
- Mid-air collision between a B77 and a TU154 (Uberlingen, Germany)
- Runway collision between a MD83 and a Shorts 330 (Paris, France)
- A310 CFIT accident (Kathmandu, Nepal)
- Helios Airways B737 accident (Athens, Greece)

Coping with the Reality of an International Investigation

Safety Products Approach and Landing Accident Reduction (ALAR) Tool Kit

Use of ALAR Tool Kit

KEY INSTRUCTORS
Mr Caj Frostell is former Chief of the Accident Investigation and Prevention Section, Air Navigation Bureau, ICAO, and has served on many special assignments. His promotion to Chief of the Section in 1996 followed his over 16 years of service as a section team member. Before joining ICAO,

Mr Frostell was Chief of Accident Investigation with the Board of Aviation in Finland for 13 years and investigated over 300 accidents. He is the International Councillor for the International Society of Air Safety Investigators and he is also a member of the Board of Advisors for the Southern California Safety Institute. Mr Frostell has been a key instructor at SAA's accident investigation courses since 2002.

Mr David McNair is a Senior Investigator in Canada with the federal government agency responsible for conducting aviation safety investigations. He has more than 25 years experience and has served as an investigator-in-charge, or as part of the investigation team for a variety of major aviation occurrences in Canada and internationally. Besides having a broad experience as an accident investigator and being a qualified trainer on the various facets of investigation, Mr McNair also has an Airline Transport Pilot Licence, and more than 9,000 flying hours worldwide, in a variety of military and large transport aircraft.

Mr Alain Guilldou is Head of Information and Communication of the French Bureau of Investigation (BEA). Mr Guilldou is actively involved in sharing the know-how of the BEA through bilateral institutional relations, communicating the BEA's international commitment and enhancing the capabilities and professionalism of its investigators. He has also been involved in a large number of tasks, including issuing, translating and publicising reports, developing the BEA Intranet and Internet, the family assistance cell, institutional communication and media relations. He began his career with the French Ministry of Education upon graduation from Sorbonne University.

Capt Paul McCarthy is the International Federation of Air Line Pilots Associations (IFALPA) Representative to ICAO. He has been a pilot with Delta Air Lines since 1973 flying B777 and MD11 as a Captain. He has more than 30 years of flying experience and was an attorney in admiralty law for nearly 20 years. Amongst the many roles he has held, Capt McCarthy is also Vice President (Technical) of IFALPA and Executive Air Safety Chairman for the United States Air Line Pilots Association, International. He received the Association's Air Safety Award in 1992, the union's highest recognition for air safety work.
Mr Alan Stray, PSM is former Director, International of the Australian Transport Safety Bureau (ATSB) and Deputy Director of Aviation Safety Investigations. He has more than 45 years of experience in the aviation industry and has been an aviation safety investigator with the ATSB and its predecessor, the Bureau of Air Safety Investigation since 1987. Mr Stray was awarded the Government’s Australia Day Council Achievement Medallion in 2005 and 2008 and the Australia Day Honours with a Public Service Medal in 2009, for his contribution and support in aviation safety.

Mr Chan Wing Keong is Director of the Air Accident Investigation Bureau under the Singapore Ministry of Transport. Prior to this, he headed Civil Aviation Authority of Singapore’s Airworthiness and Flight Operations Division and Air Cargo Division. He has an aeronautical engineering degree from the Ecole Centrale des Arts et Manufactures in France and master degrees from the National University of Singapore and the Massachusetts Institute of Technology, USA. He is also an Honorary Fellow of the Singapore Institute of Aerospace Engineers.

Dr Chew Peng Hoe is Medical Director, Aviation Medicine and Psychiatry of the Parkway Shenton Medical Group, providing aeromedical expertise to Singapore Airlines and specialist psychiatric services to the Medical Group. He is also a practising consultant psychiatrist and psychotherapist and an external lecturer cum examiner for the National University of Singapore in Psychotherapy. Dr Chew has served as medical regulator of both military and civil Airmen and was the former Head of General Staff in the Republic of Singapore Air Force Medical Service.

WHO SHOULD ATTEND
Accident investigators, chief investigators or management personnel involved in aircraft accident investigation from civil aviation authorities, airport authorities, safety and regulatory bodies, airlines and aircraft manufacturers, law enforcement, military and government agencies, airport emergency services.