



Event Investigation Program

Revision: Original

15 August 2009

Serial Number: _____

Assigned to: _____	Position: _____
AIRCRAFT N _____ (if applicable)	Date of Assignment: _____

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Record of Revisions

Program Serial Number: _____

Insert all revisions immediately.

Record a brief description of the revision, effective date and the initials of the person inserting the revision.

Revision	Description of Change	Revision Effective Date	Revision Inserted By
Original	Original Issuance	15 August 2009	N/A
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Your Company Acceptance:

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Event Investigation Program

1. INTRODUCTION

Investigation of civil aircraft accidents is the responsibility of the National Transportation Safety Board or similar government agency in any country that is a signatory to the ICAO Conventions. Under both ICAO and U.S. rules, the operator of a civil aircraft has certain responsibilities in the event of an accident or incident. These responsibilities include proper reporting, preservation of evidence, and support of the investigation team. The operator may also be invited by the NTSB to participate in the investigation, along with airframe and engine manufacturers, and other technical experts. To be qualified to join the investigation, invited participants must have the technical expertise to support the investigation as well as an understanding of the accident investigation process, in order to provide accurate and timely support.

Civil Aviation Authorities only become involved in those events (accident or incidents) that are required to be reported by regulation. However, many events occur that are not reportable to Civil Aviation Authorities which, under slightly different circumstances, could easily have become an accident. Your Company therefore investigates all accidents, incidents, near-accidents, injuries and other safety-related occurrences, regardless of whether such events require a formal report to government authorities. Through these investigations, root causes and contributing factors can be identified, and risk controls or corrective actions applied to prevent similar reoccurrences.

2. ACCIDENT CAUSES

A. LATENT CONDITIONS AND ACTIVE FAILURES

Over 80% of all aviation accidents are the result of human error. Recent research and accident investigation reports suggest, however, that human error is merely the last link in a chain of events that leads to an accident. Accidents typically result from complex interactions between human error, weaknesses or deficiencies in systems, and failure of technical components, whereby **latent conditions** combine with **active failures** to produce the accident.

Latent conditions are weaknesses or deficiencies in a system that can contribute to an incident but that will not, by themselves, cause an accident. Latent conditions can lie undetected and dormant within a system for years. On their own, they are not sufficient to cause any major damage to the system, but if combined with active failures, they will inevitably lead to an accident. Examples of latent conditions include poor system or process design, inadequate supervision or risk controls, failed risk controls, improper procedures, human perceptions and attitudes (such as complacency), and impending maintenance failures that have not been detected.

Active failures are failures that have a direct impact upon the safety of a system. They are errors and failures that have an immediate adverse affect, but the effects are usually relatively short-lived. Active failures typically occur on the front-line of a system where there is almost always human interaction. Active failures include errors made by pilots, mechanics or other front-line personnel, mechanical failures, and undesired interactions or conflicts between hardware, software, and systems.

B. CHAIN OF EVENTS

In the majority of cases, accidents happen as a result of an unbroken chain of events that ultimately results in total system failure, but the events that form the chain can be controlled. As soon as the sequence of events is positively altered, the chain is broken and the accident prevented. The event is then reported as an incident, or "near-accident".

C. BREAKING THE CHAIN

Breaking the chain is a challenge that all aviation organizations are confronted with. Some do it systematically and very effectively. Others do it by trial and error. The latter method very often costs lives and large sums of money. Accident and incident investigation enables us to identify **latent systemic deficiencies** that could have contributed to an accident or incident. Once these deficiencies or latent conditions are identified, risk controls and corrective actions may be developed and implemented to correct them.

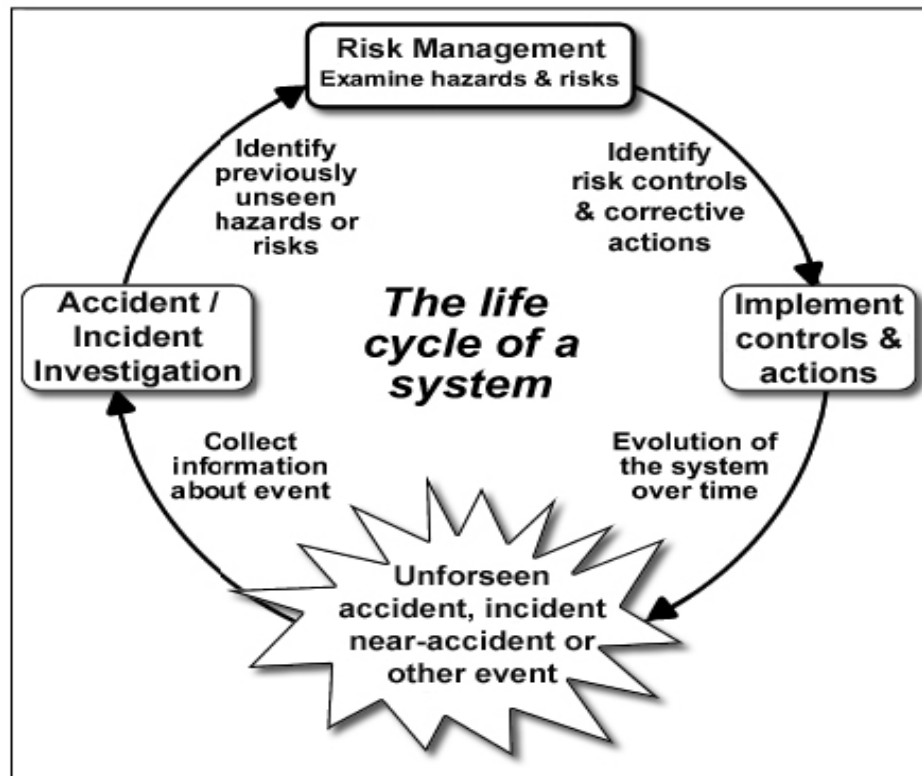
NOTE:

Thorough and prompt event investigation is necessary to ensure that systemic deficiencies which have contributed to an accident or incident are corrected. This includes the investigation of near-accidents and other safety-related events.

3. POLICIES

A. INVESTIGATION OF ACCIDENTS & INCIDENTS

Your Company investigates all aircraft and non-aircraft related accidents, incidents and injuries in order to determine probable causes and latent conditions which may have contributed to the event. Results of these investigations are channeled into the company's Risk Management Program for development of risk controls and corrective actions that will help prevent the reoccurrence of similar events.



Risk assessment and accident analysis (modified)
 (Blackett et al., 2005)

By collecting information, analyzing the event, identifying hazards / risks and implementing preventive actions, a feedback loop and cycle of continual improvement are created to ensure the continued health of YCO's complex system of aviation operations and maintenance.

B. NEAR-ACCIDENTS & REGULATORY NON-COMPLIANCE

Your Company also investigates near-accidents and other reported events, including instances of potential regulatory non-compliance. Near-accidents, near-misses, and other irregularities or occurrences may be caused by latent conditions or systemic deficiencies which have yet to be identified. These events may occur on the ground or in flight, and may or may not involve aircraft. A near-accident, for example, could involve ramp personnel narrowly escaping injury from ground equipment, or maintenance personnel accidentally spilling a hazardous substance in stores.

Near-accidents and instances of potential regulatory non-compliance are typically indicative of a system error or latent condition which, if conditions are right, could recur elsewhere at another time and potentially lead to catastrophe. They are “free” lessons learned, in that system deficiencies and gaps in system defenses may be identified without suffering the costs of an accident or injury. The results of these investigations are channeled into the company’s Risk Management Program for development of risk controls, or corrective actions to risk controls that have failed to perform.

C. NON-PUNITIVE INVESTIGATION POLICY

Your Company strongly desires to learn from all incidents, occurrences and errors made, in order to improve our systems and enhance safety. To promote and encourage the uninhibited open and honest sharing of information, all personnel are advised that no disciplinary action will be taken against any person who makes an unintentional error, even if that error results in an incident or other occurrence. Even at-risk errors (negligence) will be treated as a learning opportunity, both for the individual who made the error and the company. Only exceptional cases involving recklessness will result in a disciplinary outcome.

All personnel are therefore encouraged to participate openly and honestly in the investigation process, without the need to protect or “cover” for a co-worker who has made an error. If such an error involves a violation of regulations, YCO management will make every effort to protect all employees involved from certificate action and civil penalties by assisting employees with ASRS reporting, and by developing voluntary disclosures to Civil Aviation Authorities that emphasize organizational deficiencies rather than blaming an employee. This course of action protects both the company and the individuals involved in the violation.

NOTE:

This policy will not apply to those personnel who have behaved in a “reckless” or illegal manner, or who have committed a series of human errors that indicate a general lack of care and professionalism.

D. RISK CONTROLS & CORRECTIVE ACTIONS

Development of risk controls, or corrective actions applied to risk controls which have failed to perform, are the end result of a successful investigation. They are implemented by YCO management through the instructions and procedures set forth in the YCO **Risk Management Program**.

Regarding personnel, corrective actions may include improved procedures, increased or enhanced training, or in rare cases involving recklessness, actions to discipline employees involved in the occurrence. Discipline is mandatory in those instances where employee carelessness or willful disregard of safety rules or YCO procedures results in an accident or incident. Disciplinary action should also be considered anytime an employee exhibits conduct which shows a lack of concern for safe operating procedures, even if no accident results.

Proposed risk controls, corrective actions and comprehensive fixes will be reviewed by YCO supervisors and department managers. In the event of disagreement as to causes or solutions, the matter will be resolved by the Safety Committee or the appropriate risk-decision authority.

E. CONFIDENTIALITY

Certain managers and other YCO employees may be called upon to investigate an accident, incident, near-accident or other safety-related event. These company representatives may be invited by Civil Aviation Authorities to provide technical information and expertise during a formal accident investigation, or may be working independently when investigating non-reportable occurrences. In any case, YCO investigators shall not speculate or offer opinions or theories regarding the cause of an accident to any person or persons.

All information relative to an accident or incident should be treated as extremely sensitive and held in strictest confidence; no information should be given to any employee or other person. "Heat of the moment" statements may be admissible as evidence in court trials involving liability even though they may be hearsay.

Therefore, it is YCO company policy and in the best interest of all concerned to decline responses to questions that seek an expression as to the cause of any accident. All communication with regard to an accident / incident or other emergency will come from senior management only, and all inquires should be referred to either the appropriate Civil Aviation Authorities or YCO senior management for response.

4. OBJECTIVES

A. TIMELY INVESTIGATIONS

Investigations of major or minor accidents, or an incident resulting in personnel injury or illness, should be initiated within 24 hours after the occurrence. If it becomes apparent that more than 72 hours will be required to investigate the occurrence, notify the Director of Safety and follow up with status until investigation notes can be entered into Incident Reporter.

NOTE:

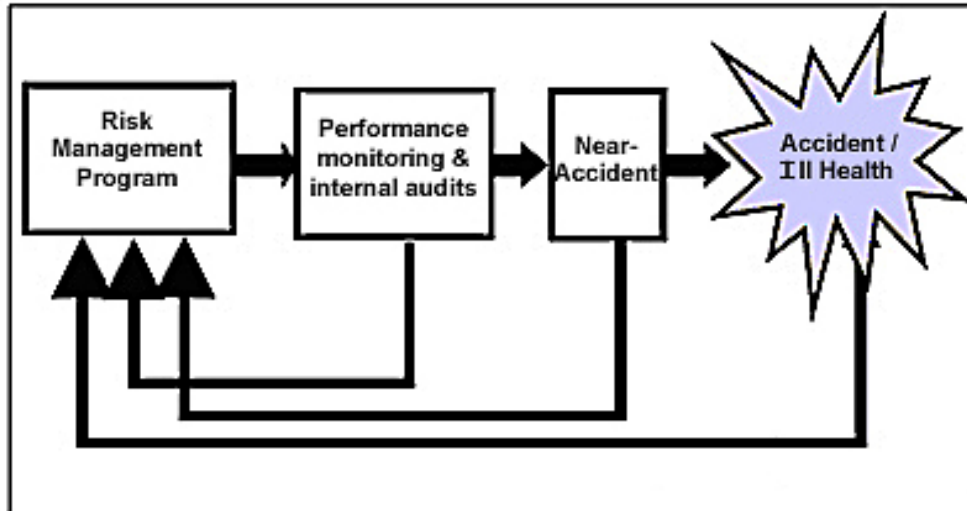
Investigations of incidents with only minor damage and no injury or illness should commence as soon as circumstances permit. Complete the investigation and enter notes into IR within 10 calendar days.

B. IDENTIFICATION OF HAZARDS & LATENT CONDITIONS

The objective of all YCO event investigation efforts is to identify and analyze hazards and latent conditions within YCO's aviation system that may have contributed to an accident, incident or other safety-related event. These may be previously established risk controls which are no longer performing to expectations (for example, employees taking shortcuts in normal operating procedures), or new hazards as a result of system changes (such as system element computerization, the introduction of new equipment or a change in operating season or geographic area of operations).

C. APPLICATION OF RISK MANAGEMENT

By identifying all root causes and contributing factors, including human factors, systemic factors and other latent conditions that may have contributed to the event, risk management efforts are applied through the YCO **Risk Management Program**. Application of risk management results in the implementation of new risk controls, corrective action to failed risk controls, and communications of lessons learned, in order to preclude a similar event from occurring in the future.



How investigation outputs become inputs for safety risk management

D. DISSEMINATION OF LESSONS LEARNED

Most company investigations of accidents, incidents, near-accidents or other events should result in the identification of one or more latent conditions which are systemic or organizational in nature, and may have contributed to the event. These root causes, contributing factors and any risk controls or corrective actions implemented by YCO management will be disseminated throughout the organization as **safety lessons learned** to appropriate managers and personnel using various methods of communication as set forth in the YCO **SMS Manual**. Lessons learned are communicated in order for all personnel to see the results of the company's investigative efforts, and to arm personnel with knowledge and information that will aid them in preventing similar events from occurring in the future. Lessons learned may also be shared with other operators, regulators and the aviation industry in general.

5. TERMINOLOGY

The term 'accident' as used herein refers to both accidents and incidents, unless otherwise stated. The term 'system' is used to refer to the functionally related parts of the organization, such as:

- Equipment,
- Technology,
- Individual employees,
- Employee groups,
- Supervisors,
- Management, and
- The working environment.

An occurrence is any event other than normal operations that is not an accident or incident. Refer to the YCO **SMS Manual Section 6: Employee Reporting System** for further clarification of events that are considered occurrences.

6. ROLES & RESPONSIBILITIES – AIRCRAFT ACCIDENTS & INCIDENTS

A. CIVIL AVIATION AUTHORITY NOTIFICATION

When an aircraft accident or incident occurs (as defined by Civil Aviation Authorities), the event must be reported to the appropriate Civil Aviation Authority in accordance with company procedures and the rules of the governing State.

Any employee who becomes aware of any of the listed occurrences specified below shall immediately notify YCO management personnel. Upon receipt of such notification, the Director of Operations shall immediately notify the appropriate Civil Aviation Authorities that an aircraft accident/incident has occurred. The Director of Operations shall furnish all agencies with the information required to be provided by regulations.

The Director of Operations (or Manager on Duty in the absence of the Director of Operations) shall immediately, and by the most expeditious means available, notify the appropriate Civil Aviation Authorities when an aircraft accident or any of the following listed incidents occur:

- Flight control system malfunction or failure;
- Inability of any required flight crewmember to perform his/her normal flight duties as a result of injury or illness;
- Failure of structural components of a turbine engine excluding compressor and turbine blades and vanes;
- Inflight fire; or
- Aircraft collide in flight.

Immediate notification is also required by the most expeditious means available, whenever damage to property, other than aircraft, estimated to exceed \$25,000 for repair (including materials and labor) or fair market value in the event of total loss (whichever is less). These notification requirements further apply to the company's large multiengine aircraft whenever:

- Inflight failure of electrical systems which requires the sustained use of an emergency bus powered by a backup source such as a battery, APU, or air-driven generator to retain flight control or essential instruments
- Inflight failure of hydraulic systems that results in sustained reliance on the sole remaining hydraulic or mechanical system for movement of flight control surfaces
- Sustained loss of power or thrust produced by two or more engines; and
- An evacuation of an aircraft in which an emergency egress system is utilized.

Immediate and expeditious notification shall be provided to Civil Aviation Authorities whenever an YCO aircraft is overdue and is believed to have been involved in an accident, regardless of the rules under which the flight was being operated.

B. CREWMEMBERS

In the event of an aircraft accident, the flight crew should ensure that the injured receive required medical attention. The flight crew may be required to stay with the aircraft until arrival of competent authority (FAA, NTSB, airport security, local police, etc.). Until relieved by YCO personnel, the ranking crew member (by crew position) should act as official-in-charge. The Manager on Duty can provide guidance according to the Emergency Response Plan.

Do not make statements to government or civilian authorities or to the media. Politely state that you will be willing to discuss the mishap after company representation. Crewmembers will be expected to debrief with the Civil Aviation Authority's investigation team and the team will understand your need for consultation.

Public release of any information concerning an accident or incident involving company aircraft, employees, property, or facilities shall not be made by flight operations personnel. All requests for such information from public or news media persons should be referred to YCO senior management or to the Civil Aviation Authority's Investigator-in-Charge.

C. COMPANY FIRST-PERSONS

The Emergency Response Plan provides detailed guidance for those YCO personnel who may be the first to arrive at the scene of an accident. First priorities are medical attention to the injured, and protection of personnel from further injury. If possible, remain in communication (via cell phone) with the Manager on Duty for guidance from the Emergency Response Plan.

D. STATES' RESPONSIBILITIES

Depending on where an accident occurs, various States (countries) will have a status that determines rights, obligations, entitlement and participation in the investigation. As a general rule, the accident investigation body of the State or country in which an accident occurs will conduct the investigation. This may be the country's Civil Aviation Authority, or a separate entity such as the NTSB, which is separate from FAA in the United States.

The State conducting the investigation is responsible for releasing the Final Report as soon as possible. It is recommended that, unless it has been released within twelve months after the occurrence, an interim report is released describing the progress of the investigation and any safety issues raised.

The Final Report will contain safety recommendations; a set of actions necessary to be taken to enhance aviation safety. The format of the Final Report typically follows the process of the investigation:

- (Gathering of) Factual Information,
- Analysis,
- Conclusions, and
- Safety Recommendations.

E. ROLE OF INVESTIGATIVE AUTHORITIES

The role of an investigative authority is to investigate accidents, determine the probable cause, and develop safety recommendations to preclude a recurrence. Pursuant to statute and regulation, the investigator-in-charge may designate "parties" to assist in such an inquiry, but parties are only to be those persons, government agencies, companies and associations whose employees, functions, activities, or products were involved in the accident and who can provide "suitable qualified technical personnel actively to assist in the investigation. Most investigative authorities appoint an investigator-in-charge (IA IIC) for every accident.

F. ROLE OF CIVIL AVIATION AUTHORITIES

Civil Aviation Authorities are responsible for the investigation of all accidents within their jurisdiction or geographical area, and must determine the facts surrounding any accident and whether any aircraft operator involved in an accident was in compliance with the regulations. For every accident which is jointly investigated, the Civil Aviation Authority appoints an investigator-in-charge (CAA IIC) to assist the IA IIC and to determine the level of CAA involvement. During this joint accident investigation, the CAA retains authority for investigating regulatory compliance. Through signed agreements, the IA IIC has agreed to keep the CAA IIC informed of all aspects of the investigation, and to make pertinent investigation records and reports available in a timely and orderly manner.

NOTE:

CAA Inspectors should have completed Aircraft Accident Investigation training before acting as a CAA IIC during accident investigations.

G. OPERATOR'S DESIGNATION AS PARTY TO THE INVESTIGATION

Under international ICAO Annex 13 rules, the Investigative Authority Investigator In Charge (IA IIC) has the discretion to designate parties that are allowed to participate in an investigation. Except for the local Civil Aviation Authority, party status is a privilege and not a right. Your Company, as the operator, may become an authorized party to provide knowledge and expertise, and should request party status if not invited to join the investigation. The Investigative Authority needs the company's expertise, and YCO needs to participate as an essential element of its accident prevention program. A team effort is necessary in order to develop a complete and accurate factual record of the accident. Each party representative must work under the direction of the IA IIC or other senior investigators at all times.

YCO managers who possess substantial knowledge or expertise are typically selected by senior management to participate as party representatives on behalf of the company. Manufacturers' representatives may also be solicited by the official investigating body to contribute knowledge and expertise. Persons in legal or litigation positions are specifically not permitted by Investigative Authorities to participate in accident investigation. No members of the news media or insurance personnel are permitted to participate in any phase of the investigation. Claimants or litigants (victims or family members) are also specifically prohibited from serving as party members.

H. ROLES OF COMPANY INVESTIGATORS

Specialists selected by senior management to participate as party representatives must be employees of YCO and must possess expertise to assist the Investigative Authority in its investigation. Providing technical assistance gives parties many opportunities to learn what happened and to formulate theories as to the cause of the accident. Party representatives are not permitted to relay information back to corporate headquarters without the consent of the IA IIC, and then only when necessary for accident prevention purposes. Information is not to be used for litigation preparation or for public relations. Sanctions for failing to abide by the Investigative Authority's party rules and procedures include the dismissal of individuals or even the party from the investigation team. Party representatives must sign a party pledge, which is a written statement agreeing to abide by the Investigative Authority's rules governing the party process.

I. QUALIFICATIONS OF COMPANY INVESTIGATORS

Department managers may investigate injuries, hazards, errors, occurrences and near-accidents within their respective departments. However, before being assigned to investigate a reportable accident or incident (as defined by NTSB reporting requirements) investigators must have received and successfully passed, within the preceding 12 calendar months, a suitable course of training which includes an accident investigation curriculum.

NOTE:

The Director of Safety maintains a current listing of all persons qualified to investigate NTSB-reportable accidents and incidents within YCO, and shall not assign persons as investigators unless properly qualified.