CLEARWATER AIR, INC.

SAFETY MANAGEMENT SYSTEM MANUAL

This manual issued to: MASTER COPY

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LIST OF EFFECTIVE PAGES

REVISION LOG

The Director of Safety will revise this manual as needed. Upon updating any hard copy of this manual, the user shall log the revision in the table below and acknowledge completion of the revision to the Director of Safety.

REVISION #	DATE	ENTERED BY

(Reproduce this page as required for continuous history of revisions)

1 OVERVIEW

1.1 Safety Principles

Clearwater Air is committed to conducting operations safely and to the safety management system (SMS) described in this manual. Our commitment is based on the following safety principles:

- Safety is a value.
- "Safety" is not the same as "Risk Free".
- Safe practices and skills are learned behaviors.
- The potential for human error is unavoidable.
- Unintentional human errors can reveal weaknesses in organizational systems.
- Clearwater Air and its leaders are accountable for Company safety.
- Personal responsibility for safety includes the safety of Clearwater Air coworkers and customers.

The specific SMS elements described in this manual were developed using the guidance of the International Civil Aviation Organization (ICAO) and the Federal Aviation Administration (FAA). These agencies identify four basic components of a Safety Management System:

1. Safety Policy – Senior management's commitment to continually improve safety and clearly defined policies, procedures, and organizational structure to meet safety objectives.
2. Safety Risk Management – A formal system to determine the need for and adequacy of new or revised risk controls.
3. Safety Assurance – Evaluation methods to determine the effectiveness of implemented risk control procedures and identification of new hazards.
4. Safety Promotion – Training and communication programs to establish a positive safety culture and competent performance.

1.2 Key Programs

This SMS manual defines several programs designed to ensure that safety risks and hazards are managed and effective safety controls and corrective actions are implemented.

Some of the key Clearwater Air programs in this manual are:

1. The documented policies, processes, and guidance of this SMS Manual
2. The Clearwater Air SMS website portal and database http://clearwatersms.com/
3. Safety promotion meetings, training, and communication
4. Emergency Response Planning and Drills
5. Safety Issue Reports
6. A Safety Risk Management process and responsibilities
7. Safety Assurance methods
8. Quality Assurance (QA) audits and reviews

1.3   SMS Manual

The Director of Safety has authority for the content of this manual and those responsibilities include:

- Maintain the master copy of the SMS manual at the Company's principal operations base.
- Publish and distribute hard copies and revisions of this manual to members of the Safety Committee.
- Electronically publish pertinent parts of this manual on the Company SMS website: http://clearwatersms.com/
  - The website shall at least include the Clearwater Air safety commitment statement and the safety reporting system.
  - The Director of Safety is responsible for assigning user names and initial passwords to allow website reporting access to employees and contractual customers.
  - Employees shall inform the Director of Safety regarding any website access questions or problems.
- Maintain a list indicating to whom or where manuals have been distributed, and periodically inspect the status of these manuals.
- Issue revisions as needed and distribute them to all manual holders; and –
  - Assess the potential risks of any proposed revisions and the likely effect on safety established prior to their issuance.
  - Maintain the currency of the information contained on the Clearwater Air website.
  - Distribute hard copy revisions and ensure the currency of published manual copies.

Revisions and Currency Control

- Each page of this manual indicates the page number, revision date, and revision number.
- The List of Effective Pages (LEP) indicates the revision status of all pages in the manual. An "O" in the revision column of this page shall indicate "Original."
- Any content from this manual that is downloaded or copied is uncontrolled and may not be current or considered to be in effect.

Nothing in this manual shall contradict or be construed as contrary to the regulations of 14 CFR, nor shall this manual be contrary to the policies and procedures of the Clearwater Air General Operations Manual (GOM) or any other documented procedures used by the Company. Anyone who discovers such inconsistencies shall report them to the Director of Safety.

1.4   Clearwater Air SMS Website

Clearwater Air uses a web-based SMS database application to support the administration of this safety management system. The database application, "SMS Pro" is a product developed and supported by NorthWest Data Solutions in Anchorage, Alaska. The database was specifically designed for aviation safety management systems and is in use throughout the world by air carriers, airports, and governmental agencies. The Director of Safety is responsible for administering the Clearwater Air SMS database and serves as the primary liaison with NorthWest Data Solutions.

The URL of this application is: http://clearwatersms.com.

The Clearwater Air SMS website is an effective method for communicating safety information, reporting safety issues, and retention of SMS records. It provides consistent guidance for adherence to SMS processes such as safety risk management and management of change. Key features of the SMS database are:

- 24/7 secure access to all employees
- A safety reporting system that allows employee, public, and anonymous reports
- Automated messaging to and from management for safety information with a record of sending and receiving
- Details and status of current safety management processes and actions
- History of Clearwater Air SMS hazard management actions, including identified hazards, potential consequences, risk assessment, management actions, risk controls, and process measurements
- Clearwater Air safety commitment and policies
- Safety Committee notes
- Access controls for different user groups, including the public, Clearwater Air customers, Clearwater Air employees, and Clearwater Air management

Screenshot of Clearwater Air SMS Website Home Page
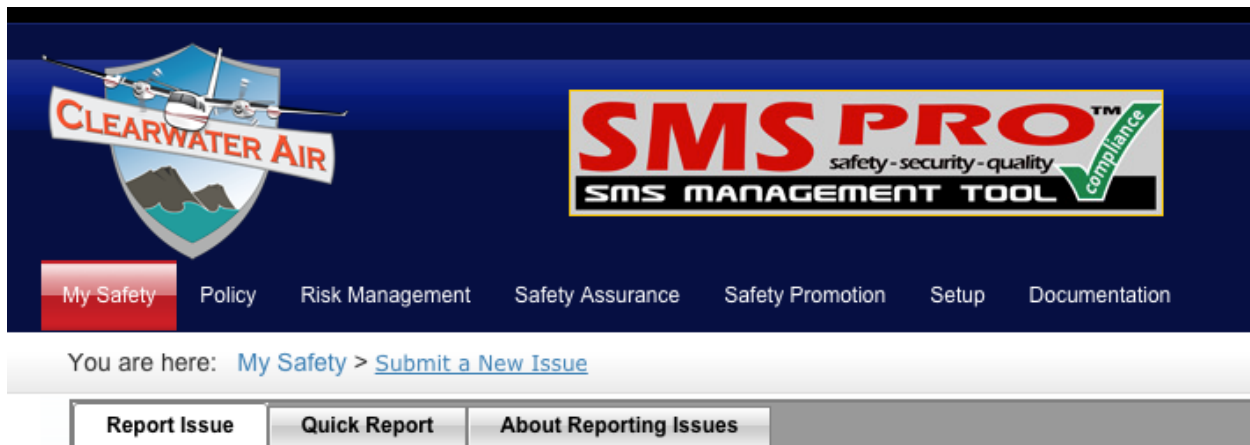
1.5   Terms & Definitions

Accident – Unplanned event or series of events that results in death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment.

Aircraft Accident – Occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage. Ref 49 CFR Part 830, §830.2

Analysis – Process of identifying a question or issue to be addressed, modeling the issue, investigating model results, interpreting the results, and possibly making a recommendation.

Assessment – Process of measuring or judging the value or level of something.

Attributes – System Attributes, or the inherent characteristics of a system, are present in any well-defined organization and apply to an effective SMS. System Safety Attributes were first developed for the Air Transportation Oversight System (ATOS) but there are conceptual differences when applied to SMS.

> **Authority** – Who can direct, control, or change the process, as well as who can make key decisions such as risk acceptance.

> **Controls** – Checks and constraints that are designed into a process to ensure a desired result or outcome. Controls can be hardware, software, special procedures or procedural steps, and supervisory practices designed to keep processes on track to achieve their intended results.

> **Interfaces** – Interactions between processes that must be managed in order to ensure desired outcomes. This includes examining such things as lines of authority between departments, lines of communication between employees, consistency of procedures, and clearly delineating lines of responsibility between organizations, work units, and employees. Interfaces are specifically designed into the interactive relationships between safety risk management processes and safety assurance processes.

> **Procedure** – Specified and documented way to carry out an activity or a process, i.e. detailed, clear step by step instructions of how to do something.

> **Process Measurement** – Audits, inspections, evaluations, and reviews used to validate a process and identify problems or potential problems in order to correct them. A basic principle of safety assurance is that fundamental processes be measured so that management decisions can be data-driven.

> **Responsibility** – Who is accountable for management and overall quality of the process (planning, organizing, directing, controlling) and its ultimate accomplishment.

Audit – Scheduled, formal reviews and verifications that evaluate whether an organization has complied with policy, standards, regulations, and/or contract requirements.

Competency – Observable, measurable set [pattern] of skills, knowledge, abilities, behaviors, and other characteristics that an individual needs to perform work roles of occupational functions successfully.

Conformity – Fulfilling or complying with a requirement. This includes but is not limited to complying with Federal regulations. It also includes complying with Company requirements, risk controls, or policies and procedures.

Continual Improvement – Set of activities an organization routinely carries out to enhance its ability to meet requirements in response to an ongoing feedback system. Can be accomplished by carrying out internal audits, performing management reviews, analyzing data, and implementing corrective and preventative actions.

Continuous Monitoring– Uninterrupted (constant) watchfulness (checks, audits, etc.) over a system.

Control (or **Risk Control**) – Steps taken to eliminate (remove) hazards or to mitigate (lessen) their effects by reducing the severity and/or likelihood of risk associated with those hazards.

Corrective Action – Action to eliminate (remove) or mitigate (lessen) the cause or reduce the effects of a detected nonconformity or other undesirable (unwanted) situation.

Documentation – Information or meaningful data and its supporting medium (e.g., paper, electronic, etc.). In this context, documentation is different from records because documentation is the written description of policies, processes, procedures, objectives, requirements, authorities, responsibilities, or work instructions; whereas Records are the evidence of results achieved or activities performed.

Evaluation – An independent review of company policies, procedures, and systems [ref. AC 12059A]. If accomplished by the company, the evaluation should be done by a person or organization other than the one performing the function being evaluated. The evaluation process builds on the concepts of auditing and inspection. An evaluation is an anticipatory process designed to identify and correct potential problems before they happen. An evaluation is synonymous with the term "systems audit".

Hazard – Condition, object, activity, or event with the potential of causing injuries or death to personnel, damage to equipment or structures, loss of material, or reduction of the ability to perform a prescribed function. A hazard is a condition that might cause (is a prerequisite to) an accident or incident.

Hazard Management - Hazard Management as used in this manual refers to the integrated use of multiple SMS data processes to discover and manage hazards and their safety risks. This diagram illustrates the reiterative nature of SMS processes and their interaction with each other.

Incident – A near-miss episode with minor consequences that could have resulted in greater loss. An unplanned event that could have resulted in an accident or did result in minor damage. An incident indicates that a hazard or hazardous condition exists, though it may not identify what that hazard or hazardous condition is.

Likelihood – The estimated probability or frequency, in quantitative or qualitative terms, of an occurrence related to the hazard.

Management of Change – A documented process to identify external or internal changes that may have an adverse effect on safety. This process uses the existing safety risk management process.

Probability – see Likelihood

Objective – The desired state or performance target of a process. Usually it is the final state of a process and contains the results and outputs used to obtain the desired state or performance target.

Output – The product or end result of an SMS process which is able to be recorded, monitored, measured, and analyzed. Outputs are the minimum expectation for the product of each process area and often become the **Input** for the next process area. Outputs of a process should have a specified method of measurement. Measurement does not need to be quantitative if this is not practical, but some method of providing objective evidence of attaining the expected output is necessary.

Preventive Action – Preemptive action to eliminate or mitigate the potential cause or reduce the future effects of an identified or anticipated nonconformity or other undesirable situation.

Process – A set of interrelated or interacting activities that transform inputs into outputs.

Records – Evidence of results achieved or activities performed.

Responsible Manager – The person who has authority for a system or task, including its risk management controls.

Risk (or **Safety Risk**) – Potential outcome of a hazard and by SMS procedures is expressed as the product of the likelihood (how probable) and the severity (how bad) of the harm.

Risk Assessment Matrix – A matrix (or table) combining Risk Likelihood and Risk Severity to determine a assessed risk value.

Risk Control – See **Control**

Safety– The state in which risks associated with aviation activities are reduced and controlled to an acceptable level.

Safety Assurance – The SMS process function assuring safety. It includes processes of Safety Performance Monitoring and Measurement, Management of Change, and Continuous Improvement.

Safety Culture – The product of individual and group values, attitudes, competencies, and patterns of behavior that determine the Company's commitment and proficiency to manage safety. Organizations with a positive safety culture are characterized by communications founded on mutual trust, shared perceptions of the importance of safety, and confidence in the efficacy of preventive measures.

Safety Management System (SMS) – A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies, and procedures

Safety Objective – A goal or desirable outcome related to safety. Objectives are generally based on the Company's safety policy and are typically enduring and ideological in nature.

Safety Risk – See **Risk**

Safety Promotion – A combination of safety culture, training, and data sharing activities that support the implementation and operation of an SMS in an organization.

Safety Risk Management (SRM) – The SMS process that describes the system, identifies the hazard, analyzes and assesses the associated risk, and controls the risk.

Safety Target – Specific and practical safety outcomes that are defined in terms of "SMART" features, i.e. Specific, Measureable, Achievable, Realistic, Time-sensitive.

Severity – The degree of loss or harm resulting from a hazard.

System – An integrated set of constituent elements that are combined in an operational or support environment to accomplish a defined objective. These elements include people, hardware, software, firmware, information, procedures, facilities, services, and other support facets.

System Attributes – See **Attributes**

2   SAFETY POLICY AND OBJECTIVES

2.1   Executive Policy Statement

CLEARWATER AIR

Safety Policy Statement

Clearwater Air's overriding consideration in all of our operations is and will continue to be the safety of our employees and customers.

For the past five years, I have been committed to the continuous improvement of the safety culture of Clearwater Air. During that time we have made many advances in the safety of all of our operations, both ground and flight. As a part of that ongoing commitment, we are implementing a formal Safety Management System (SMS).

The SMS is a systematic approach to the management of risk and will build on the culture that we've all helped to create at Clearwater Air. Maintaining compliance with Company safety standards and regulatory requirements is the most important responsibility that we have. The SMS is the mechanism by which we will ensure that compliance.

The leadership team is responsible for setting and regularly reviewing our safety goals and objectives to ensure strong performance of the SMS. Each of us is responsible for ensuring that those goals are relevant and achieved.

The duty to report any safety hazard or potential hazard falls on each and every employee. Clearwater Air has a comprehensive safety reporting system that is available to all employees and clients.

Thank you for your past commitment to safety and for your support in the successful implementation of our Safety Management System.

Andrew Harcombe
President
1 March 2015

2.2   Safety Conduct and Reporting Policy

CLEARWATER AIR

Safety Conduct and Reporting Policy

No employee will be asked to compromise safety or standards to accomplish the job.

Any employee who knows of an unsafe action or condition has a professional and moral obligation to report it. Clearwater Air will allow anonymous reporting of any safety issue.

CWA will fairly consider all reported issues and no one will ever be punished for reporting a safety issue.

When investigating a reported safety issue, Clearwater Air will seek the root cause of the issue and assess the need for development or revision of Company practices. If illegal actions, negligent behavior, or willful disregard for safety are discovered, they will be appropriately disciplined, but Clearwater Air will prevent any safety investigation from becoming a pursuit for blame.

Any issue regarding adherence to these "Just Culture" principles and commitments shall be reported as a safety issue and will be thoroughly investigated.

Andrew Harcombe
President
1 March 2015

2.3   Safety Principles and Management Culture

2.3.1   Job Performance and Management Principles

- Always operate in the safest manner that is practical.
- Never take unnecessary risks.
- Everyone is responsible for identification and management of risk.
- Each person's responsibility for safety includes the safety of co-workers and customers.
- Compliance with Standards.
  - All personnel have the duty to comply with approved standards including Clearwater Air policies and procedures, equipment manufacturers' procedures, and governmental regulations.
  - Management is committed to identifying deviations from standards and taking immediate corrective action.
- Management recognizes employees for positive performance and demonstration of safe practices.
- Management does not direct or reward employees for accomplishing a job by breaking the rules.
- Management demonstrates commitment to the SMS and to compliance by example.
- Management recognizes that mistakes occur and often indicate systemic weaknesses.
- Management is committed to mitigating human error by improving systems and making processes tolerant of human error.

2.3.2   Administrative Guidelines for a Just Safety Culture

The Safety Committee will monitor and ensure management observes the following "Just Culture" guidelines in response to the findings from safety reports.

Nature of the behavior involved	System or Task Design Actions	Employee Actions
Proactive Voluntary Report	Modify the System	Recognize & Reward
Human Error	Modify the System	Console & Train
At-Risk Behavior	Modify the System	Coach
Reckless or Illegal Behavior		Punish

2.4   Clearwater Air Safety Goals and Targets

Clearwater Air is committed to continuously improving our level of quality and safety performance. The management of Clearwater Air has committed the necessary financial and logistical resources to support this commitment and ensure that we meet our goals.

The safety committee has developed the following lists of safety objectives and targets. The objectives are enduring and ideological in nature. The targets are more tangible indicators of progress toward the attainment of the objectives. The safety committee reviews and determines the objectives and targets annually.

Objectives:

- Provide a safe and healthy working environment for all employees.
- Incorporate proactive risk management in all areas of operations.
- Provide employees with efficient safety communication methods.
- Maintain the Company's accident free record.
- Maintain compliance with all safety regulations.
- Fully implement the Clearwater Air SMS.

2015 Safety Targets:

- Submission of receipt of 6 voluntary Safety Reports in 2015.
- Flight risk assessment forms completed prior to every flight.
- Each employee attends at least two (2) Company safety meetings in 2015.
- Safety bulletin issued bimonthly during the operating season.
- Development of internal audit checklists for ERP drills, maintenance facilities and records, pilot training and flight records, and the GOM and training manual.

2.5   Safety Authority & Responsibilities

2.5.1   Organizational Chart

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                    │  President   │
                    └──────┬──────┘
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        │                  │                          │   Safety    │
 ┌─────────────┐   ┌─────────────┐                    │ Committee   │
 │   General   │   │ Director of │                    └─────────────┘
 │   Manager   │   │   Safety    │
 └─────────────┘   └─────────────┘
        ┌──────────────────┬──────────────────┐
 ┌─────────────┐   ┌─────────────┐
 │ Director of │   │ Director of │
 │ Operations  │   │ Maintenance │
 └─────┬───────┘   └──────┬──────┘
       │         ┌─────────────┐   ┌─────────────┐
       ├─────────│ Chief Pilot │   │    Line     │
       │         └─────────────┘   │  Mechanics  │
       │                           └─────────────┘
       │         ┌─────────────┐   ┌─────────────┐
       └─────────│ Line Pilots │   │  Contract   │
                 └─────────────┘   │ Maintenance │
                                   │  Providers  │
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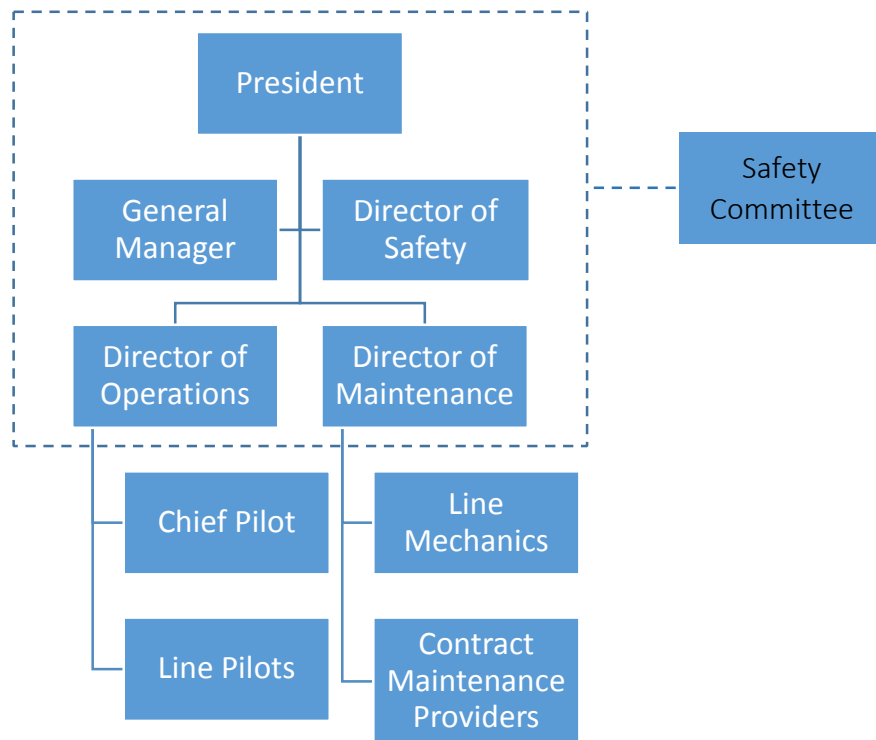
2.5.2   Safety Committee

The Safety Committee consists of the Clearwater Air President, Director of Safety (chair), Director of Operations, Director of Maintenance and General Manager. Ad hoc safety committee members may be appointed by the Director of Safety as needed for any reason.

The Safety Committee is responsible for establishing and reviewing SMS and quality policies, goals, and effectiveness. Specific SMS responsibilities include:

- Review the President's Safety Policy Statement (annually).
- Establish the Company's SMS and quality policies and review them annually.
- Determine the Company's safety objectives and targets with defined performance measures and dates; and annually review the attainment of those targets.
- Review the safety issue reports filed since the last committee meeting.
- Review the status of open safety issues or investigations.
- Review the results of accident and incident investigations.
- Establish the goals and targets of a quality assurance program and provide the resources needed for QA activities.
- Review the findings of quality assurance activities.
- Evaluate the effectiveness of the SMS and QA programs.

2.5.3 President

The President is the accountable Clearwater Air executive for the safety performance of the Company. The President shall perform the following SMS functions:

- Issue the Clearwater Air Safety policy statement.
- Provide the resources required to implement and support the functions of the Clearwater Air SMS.
- Serve on the Safety Committee.

2.5.4 Director of Safety

The Director of Safety reports directly to the President and is the accountable Company manager for SMS development, implementation, and operation throughout the Company. The Director of Safety shall hold either a pilot or mechanic FAA certificate and be qualified by professional training for SMS principles and administration. Specific SMS responsibilities of the Director of Safety include:

- Chair the Safety Committee and appoint additional ad hoc members as needed.
- Publish, distribute, review, and revise the SMS manual.
- Maintain SMS documents and records.
- Administer the Clearwater Air SMS database application and act as the primary contact with the web-based database contractor.
- Conduct the safety risk management process in accordance with the procedures of this manual for any hazards included in Safety Issue reports.
- Assign responsibility and due dates to Safety Meeting actions.
- Conduct safety investigations.
- Report to the Safety Committee on the performance and needs of the SMS.
- Ensure that Clearwater Air safety requirements are communicated throughout the Company.
- Maintain familiarity with current SMS best practices by attending recurrent training or seminars at least once each year.
- Arrange appropriate SMS training for the Safety Committee members and key management personnel at least once a year.

2.5.5 General Manager

The General Manager reports directly to the President and is the accountable Company manager for quality assurance (QA). To perform this function, the General Manager shall be qualified by administrative experience. Specific SMS responsibilities of the General Manager include:

- Develop, implement, and operate the Company's QA program.
- Coordinate QA activities with the Director of Safety.
- Coordinate with department managers when conducting operational reviews and audits.
- Keep the Safety Committee and employees informed of QA findings.
- Maintain familiarity with current QA best practices and audit procedures by attending recurrent training or seminars at least once every two years.

2.5.6   **Director of Operations**

The Director of Operations reports directly to the President and is the accountable Company manager for flight operations. Specific SMS responsibilities of the Director of Operations include:

- Maintain authority and act as the Responsible Manager for the risk controls of Company flight operations.
- Maintain familiarity with current best safety practices for flight operations.
- Routinely review and determine the safety risk acceptance of existing flight operations.
- Ensure that the Chief Pilot integrates risk management procedures in the pilot training program.
- Administer the Company Check Airman program and ensure that its check functions include compliance with risk management procedures and practices.
- Serve on the Clearwater Air Safety Committee.

2.5.7   **Director of Maintenance**

The Director of Maintenance reports directly to the President and is the accountable Company manager for aircraft airworthiness. Specific SMS responsibilities of the Director of Maintenance include:

- Maintain authority and act as the Responsible Manager for the risk controls of Company maintenance operations.
- Routinely review and determine the safety risk acceptance of the aircraft maintenance operations, aircraft airworthiness, and aircraft ground handling and servicing.
- Maintain familiarity with current best safety practices for performance of aircraft maintenance, and aircraft ground servicing.
- Administer a quality management program for aircraft parts and service vendors.
- Administer a mechanic training program for risk management and technical requirements.
- Serve on the Clearwater Air Safety Committee.

2.5.8   **Pilots & Mechanics**

When performing their assigned duties, pilots and mechanics are responsible for the following safety aspects of their jobs:

- Maintain technical competence.
- Maintain currency with required training and checks.
- Operate in accordance with approved standards and procedures.
- Observe the risk management principles and processes contained in this manual.
- Identify and managing risk when it is discovered.

Job-specific duties and responsibilities of pilots and mechanics are described in the general operations manual.

2.6   Documents and Records

2.6.1   Company Policy and Procedure Documents

Clearwater Air publishes written documents containing the policies and procedures for conducting operations. Examples of these documents include, but are not limited to the General Operations Manual (GOM), Training Manual, Company Flight Manual, Emergency Response Plan (ERP), SMS Manual, etc.

Publication policies for these documents include:

- Company documents are made available to affected employees and provide sufficient guidance for employees to perform their assigned job functions.
- Company documents shall not be contrary to applicable regulations, operations specifications, or equipment manufacturer's guidance.
- Company documents name the person who has authority for the document and its contents.
- For currency and revision control, each page is marked with a unique page number and the date and revision number of that page. The person with authority for the document maintains the master copy of the entire current manual and a record of its distributed copies.
- Company documents shall be revised to remain current when new or revised guidance, policies, or procedures are needed.

2.6.2   SMS Records

Clearwater Air shall maintain records of SMS outputs. The Director of Safety is responsible for maintaining Clearwater Air SMS records. Retained SMS records include those in the following table.

RECORDS	RECORDING / ARCHIVING MEANS	FILE DURATION
Safety Issue & Event Reports	Website database, and if applicable, paper original	Permanent
Hazard Register	Website database	Permanent
Details of Safety Risk Management	Website database	Permanent
Hazard Effects and Control tables and Bow-Ties *(when applicable)*	Paper and/or Website database	Permanent
Audit Checklists and Reports & Follow-up Corrective Actions	Paper and/or Website database	5 years
SMS Training Records	Paper and/or Website database	Permanent
Minutes of Safety Committee meetings & Company Safety Meetings	Paper and/or Website database	5 years

2.6.3   Hazard Register

The Clearwater Air SMS website database includes a "Hazard Register" module which serves as the electronic database record of SMS processes and outcomes, including safety reports, safety risk management, and safety assurance. The database qualities of the register allow it to be used as a reference when proactively managing new hazards.

3   SAFETY PROMOTION

3.1   Description and Responsibilities

Safety promotion programs are designed to ensure employees:

- Are aware of safety risks
- Understand that they directly affect the level of Clearwater Air's safety performance
- Know how they contribute to an effective SMS

Safety promotion activities are generally accomplished with training programs and ongoing communication programs. Specific examples of Clearwater Air safety promotion activities include:

- Publication and dissemination of management's safety commitment statement
- Defined competency requirements for key personnel
- Documented employee training, including SMS training
- Promotion of the safety reporting system and the importance of participation by all employees in the identification of hazards
- Company employee safety meetings
- Establishment and support of a "Just Culture" that ensures fairness and open reporting in dealing with human error
- Communication of SMS outputs to all employees
- Demonstrated commitment to SMS by the example of management

The Director of Safety is responsible for administering and developing safety-specific promotion activities, such as SMS training, safety bulletins, safety meetings, etc.

The respective employee managers and directors (Director of Operations, Director of Maintenance, and Chief Pilot) are responsible for administering technical competence training and communication of safety critical issues pertaining to their department.

All safety promotion programs, both training and communication, shall be included in the committee's annual SMS performance review.

3.2   Training

Training is required to establish a fundamental level of employee knowledge and competence. Training subjects include knowledge of applicable regulations, and the methods, procedures and policies for job performance. It also includes awareness of safety risks encountered in the performance of job functions. All training requires demonstrated competence in the subject matter before completion.

3.2.1   Safety Committee Member Training

Safety Committee members require initial and recurrent SMS process training to perform their oversight role. Minimum training requirements include:

- SMS principles
- Safety Risk Management and Safety Assurance Processes

The Director of Safety is qualified to hold the position by attending SMS-related professional training and seminars at least once a year, and shall at least complete formal training for SMS principles and elements, SMS administration and "root cause" analysis.

The General Manager is qualified to hold the position by attending QA-related professional training and seminars at least once every two years and shall at least complete formal training in quality audit procedures.

3.2.2   Employee Training

All employees receive initial and recurrent SMS and safety training, which includes the following elements:

- Safety policy
- Safety objectives
- Employee's role in the SMS
- Emergency response plan and simulated drill procedures
- Safety issue and hazard reporting system

Employee competency training includes:

- Initial and recurrent training of specific risks and risk controls associated with duty position job functions
- Initial and recurrent technical knowledge and skills training

3.2.3   Training Program Responsibilities and Descriptions

The pilot training program is contained in the Clearwater Air Training Manual and it is approved by the FAA. The Chief Pilot has authority for the content of the manual and has the administrative responsibility for the pilot training program.

The Director of Maintenance has authority and responsibility for mechanic training.

The Director of Safety has authority and responsibility for the training Safety Committee members.

Each training program includes minimum duty qualifications, training prerequisites, and applicable training curricula.

3.3   Communication

Established safety communication programs provide a recognizable means to disseminate and receive essential safety information and to encourage feedback and discussion. Effective communication programs demonstrate Clearwater Air's commitment to safety and promote a sound safety culture within the Company.

The Director of Safety shall seek to establish safety communication programs that perform the following functions:

- Promotion of the importance of hazard identification and the safety role of employees
- Awareness of SMS activities and outcomes
- Informing personnel of safety critical information with special attention to recently identified hazards, assessed risks, development of risk controls and procedures
- Announcement and rationale of recent management actions or plans that have safety effects
- Lessons learned from the outputs of the SMS
- Encouragement of feedback and response from all participants

Specific safety communication methods used by Clearwater Air include:

- Clearwater Air SMS web-based database notices and employee emails
- Company employee safety meetings
- Workplace safety briefings
- Workplace posters, notices, policy statements, technical resource materials, etc.
- Safety issue and hazard reports and the resolution and outputs of these reports
- Publication and dissemination of the Clearwater Air safety policy statement, reporting system, just culture principles, and the Clearwater Air safety objectives

3.4   Company Employee Safety Meetings

Employee safety meetings are scheduled on a regular and on a for-cause basis to disseminate, receive, and discuss safety information. Guidelines are:

- Scheduled at least every 3 months at each Clearwater Air facility and any remote bases operating for greater than 45 days
- Organized and conducted by the Director of Safety or another designated member of the Safety Committee
- Scheduled during regular work hours
- Notification issued by email at least 7 days prior to the meeting, including the meeting schedule, location, and agenda
- Required attendance for the employees at work at the time of the meeting
- Agenda items focus on matters that are new since the last scheduled employee safety meeting. Standard agenda items include:
  - Safety issues and reported hazards that are new, have been resolved, or are in the process of being resolved or mitigated

- Name of the person who has the authority for resolving and implementing new or open safety issues and the assigned date for resolution and dissemination of results
- Safety-critical information that was issued since the last meeting or is being considered for future issuance, including any operational changes that could pose a risk to existing operations
- Any new issues or suggestions

- Safety meeting minutes, including attendance lists, are posted on the Clearwater Air SMS website database for review by all employees.
  - Minutes shall include the attendance list, topics discussed, and any employee contributions such as SMS feedback, recommendations, new hazards, etc.

3.5 Workplace Safety Briefings

Safety briefings are flight crew or work group briefings aimed at confirming safe practices or specific processes.

Safety briefings are convened by a manager, Pilot-In-Command (PIC), or lead mechanic as required or at the discretion of the manager, PIC, or lead. Clearwater Air management encourages regular workplace safety briefings.

Safety briefings are required whenever a new or non-routine process is initiated, immediately following an event that interrupts the normal work routine, or as needed in the judgment of the manager, PIC, or lead.

Examples of circumstances where safety briefings are required include:

- A crew change at a remote location involving a flight crewmember or a lead mechanic
- A flight crew assigned to a different aircraft
- First day of a new work project, e.g., a new flight survey
- Prior to beginning a new or non-routine work process, e.g., a maintenance project involving a gear swing
- Immediately following a hazardous event or discovery of a hazardous condition, e.g., broken equipment or tools

Safety briefings can be as brief or as long as needed to review and confirm the safety concerns of the work assignment. All employees directly involved or affected by the work shall participate in the briefing. Examples of appropriate items to discuss during the briefing include: the project requirements and conditions, critical standard operating procedures (SOPs), identified safety concerns, needed equipment or materials, etc.

4   EMERGENCY RESPONSE PLANNING

4.1   Emergency Response Plan

Clearwater Air maintains an Emergency Response Plan (ERP) to mitigate the effects of an accident, incident, or operational emergency.

The Director of Safety has authority over the content of the ERP and shall electronically publish the ERP in the Clearwater Air website domain that is accessible to Clearwater Air management. Members of the Safety Committee shall also be provided a hard copy of the ERP.

The ERP does not replace or conflict with the regulatory requirements and procedures for accident and incidents. These mandatory reports and emergency response phone numbers are described and listed in:

- The General Operations Manual (GOM)
  Chapter 6 for aircraft accident and incidents and Chapter 7 for hazardous material incidents.
- Clearwater Air SMS website.

The Clearwater Air ERP ensures:

- Orderly and efficient transition from normal to emergency operations
- Delegation of emergency authority
- Assignment of emergency responsibilities
- Authorization by key personnel for required actions contained in the plan
- Coordination of efforts to cope with the emergency
- Safe continuation of operations, or return to normal operations, as soon as possible

The procedures of the ERP are activated when a Clearwater Air employee, customer, equipment, or facility are involved in any of the following types of critical incidents:

- Aircraft incident or accident
- Physical injuries
- Fire
- Evacuation
- Medical emergency
- Hazardous Material Spill
- Earthquake or other natural disaster causing injury or damage
- Impending threat to Clearwater Air operations from environmental conditions, terrorism, or any other condition with the potential for catastrophic impact

4.2   Emergency Response Plan (ERP) Drills

To verify the readiness and capabilities for ERP activation, the Director of Safety conducts ERP simulation drills at least two (2) times a year.

Guidelines for conducting ERP simulation drills:

- Director of Safety administers drills.

- Drills are conducted at least twice a year.

- Drill are announced and described as a DRILL ONLY to affected personnel at least 7 days prior to the scheduled event and again on the day before the event.

- Drill activities are signified by using the word "DRILL" at the beginning of all communication and actions during the drill and it is otherwise always made clear that actions and words are part of the readiness drill.

- Participant responses, actions, and discrepancies are documented by the Director of Safety during the drill.

- Drill members file a Safety Issue report for any discrepancies or hazards discovered during the drill.

- The Director of Safety conducts safety risk management processes for any identified drill issues and reports.

- The Director of Safety reports the ERP drill performance to the Safety Committee at its next meeting and records the report on the Clearwater Air SMS website database.

- The Safety Committee determines the need for any changes to the ERP or the drill procedures.

- The Director of Safety implements needed changes to the ERP and ERP drill process.

5   SAFETY ISSUE REPORTS

5.1   Description and Purpose

Clearwater Air promotes the use of voluntary safety reports to identify safety issues and hazards within the Company. These reports are independent from the regulatory requirements for reporting accidents and incidents. (*See the Clearwater Air GOM for reporting procedures of events required by regulation.*)

The safety reporting system uses reported information to improve the level of safety performance and it does not exist to attribute blame. This program enables assessment of the safety implications of reports and dissemination of the lessons learned.

Employees may report any issue they believe poses a hazard to Clearwater Air. More importantly, all employees have an obligation to report an unsafe act or condition. This includes promptly reporting any knowledge of:

- An unplanned occurrence or event that did or could impact the safety of persons, equipment, or the work environment.
- A condition with the potential of causing injury to personnel, damage to equipment or structures, loss of material, or reduction of the ability to perform.

The Director of Safety ensures reported hazards and safety issues are:

- Entered into the hazard register on the Clearwater Air SMS website.
- Assigned a deadline date for resolution and establishment of any needed corrective or preventive actions.
- Analyzed and assessed using the safety risk management processes described in this manual.
- Discussed at the next scheduled employee safety meeting and the next meeting of the Clearwater Air Safety Committee.
- Assigned a Responsible Manager who has authority for the system or task and any associated risk controls.
- Monitored for ongoing effectiveness of any risk controls developed or revised during the risk management process.

5.2   Reporting and Management Policies

The safety reporting program depends on the participation of Clearwater Air employees. The President has issued a Safety Conduct and Reporting policy and the Company is committed to a "Just Culture" for safety and safety issue reports. This includes the obligation to report safety issues and the guarantee that the management principles for a Just Culture will be observed when investigating and acting on safety reports.

See Chapter 2 of this manual regarding reporting policies and management guidelines for a Just Culture.

5.3   **How to Report a Safety Issue**

To report a safety issue, go to the homepage of the Clearwater Air SMS website, after sign-in:
http://clearwatersms.com

- Access to the Clearwater Air website requires assignment of a user name and password.
  - The Director of Safety assigns each employee a user name consisting of the initial of their first name followed by their last name (e.g. "bsmith") and the initial password: "clearwatersms".
  - Employees may change their password after their first sign-in.
  - Any questions about website access shall be directed to the Director of Safety.
- File either a brief report using the "Quick Report" tab on the website or a more detailed report using the "Report Issue" tab, which also allows attachments of photos, map locations, or any other descriptive files.
- Safety reports may be filed anonymously.
- All Clearwater Air employees are able to monitor and review management's response to any report.
- Any employee may file a non-website report to the Director of Safety, the President, or any member of the Safety Committee in person, by voice mail, by email, or by U.S. mail to:

Director of Safety	(907) 830-5644
Jake Turner	jacob.turner@clearwater.com
President	(907) 301-3311
Andy Harcombe	andrew.harcombe@clearwaterair.com
Clearwater Air	(907) 274-1705
	1100 Merrill Field Drive
	Anchorage, AK 99501

The Director of Safety is responsible for ensuring that identified hazards are recorded and processed using the "Issue Report" feature of the Clearwater Air SMS website, which automatically triggers the following website actions:
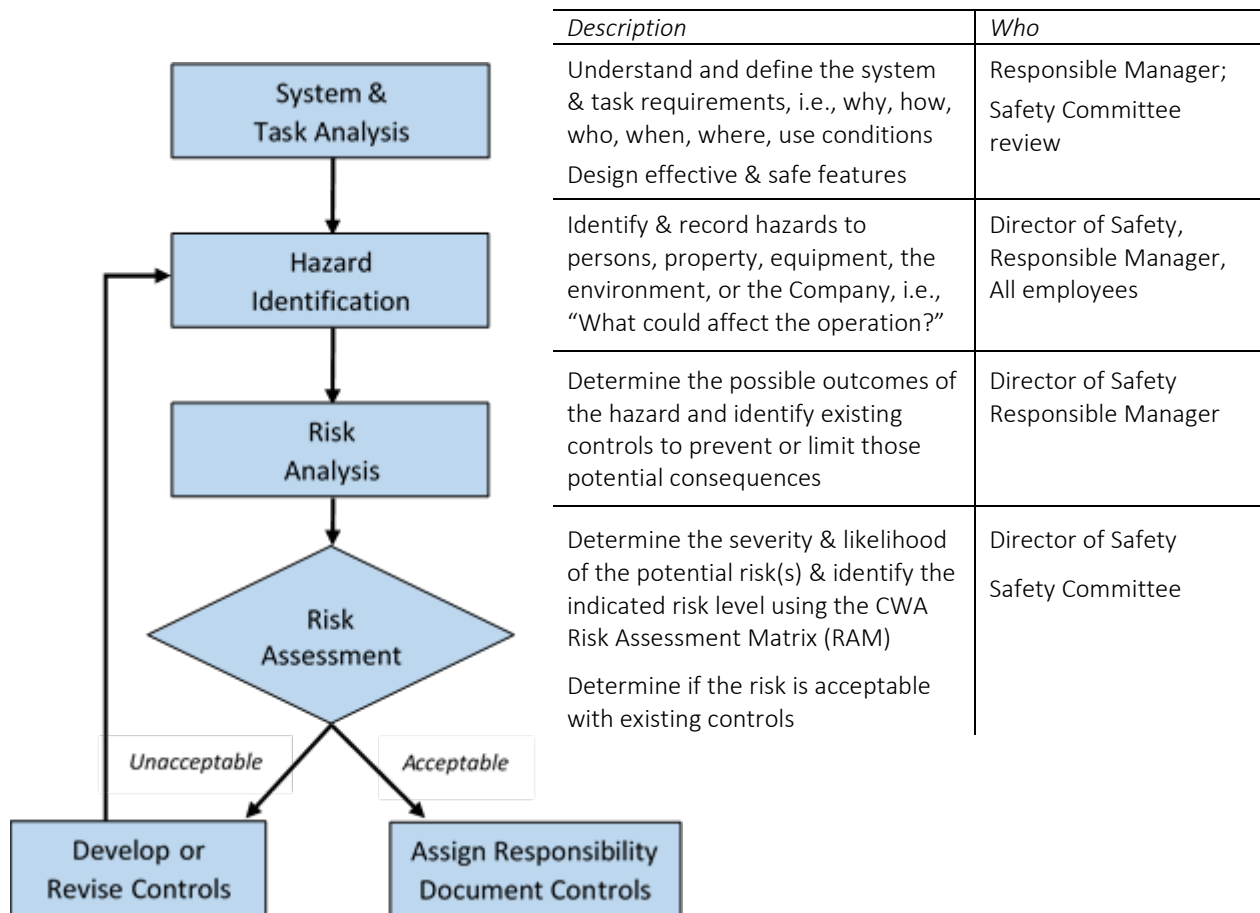
- The report is recorded in the Hazard Register.
- Notice is sent by email to the person who filed the safety issue informing them of available methods to track the Company's SMS actions and response.
- Notice of report is sent by email to the Director of Safety and Safety Committee members.
- The SMS website module "Issue Manager" organizes and records the successive SRM actions.

6   SAFETY RISK MANAGEMENT

6.1   Definition and Process Overview

Safety Risk Management (SRM) is the identification and control of risk. Clearwater Air uses the systematic process defined in this chapter to identify hazards and manage risk to a level as low as reasonably practical (ALARP).

The sequential process steps and outcomes of risk management can be understood in this diagram and description.

Description	Who
Understand and define the system & task requirements, i.e., why, how, who, when, where, use conditions Design effective & safe features	Responsible Manager; Safety Committee review
Identify & record hazards to persons, property, equipment, the environment, or the Company, i.e., "What could affect the operation?"	Director of Safety, Responsible Manager, All employees
Determine the possible outcomes of the hazard and identify existing controls to prevent or limit those potential consequences	Director of Safety Responsible Manager
Determine the severity & likelihood of the potential risk(s) & identify the indicated risk level using the CWA Risk Assessment Matrix (RAM) Determine if the risk is acceptable with existing controls	Director of Safety Safety Committee

Process flow diagram (left column):

- System & Task Analysis
- Hazard Identification
- Risk Analysis
- Risk Assessment → Unacceptable → Develop or Revise Controls
- Risk Assessment → Acceptable → Assign Responsibility Document Controls

If the risk is unacceptable, the Safety Committee meets to

- Develop or revise the controls.
- Determine if the new controls introduce new hazards.
- Re-assess and determine the acceptability of the risk with the new or revised controls.

If the risk is acceptable, the Director of Safety assigns responsibility for implementation, records the Risk Assessment actions in the Hazard Register, and informs the Safety Committee.

6.2   System and Task Analysis

System and task analysis is a proactive method of hazard identification that allows integration of appropriate safety controls before the system is implemented. When designing systems and tasks, the Responsible Manager initially defines and analyzes the system or process in terms of its purpose and the nature of its operation. This is best done by involving a team of managers, users, and, if necessary, subject experts who can answer simple questions about the task or process, such as why, what, who, how, and when. More importantly, the team must consider what kinds of things can make this task or process fail and what controls need to be integrated into the definition and design.

The outcome of appropriate system and task analysis includes a record of:

- The function and purpose of the system
- The system's operating environment
- An outline of the system's processes and procedures
- The personnel, equipment, and facilities necessary for the system's operation

Prior to completion of this SRM step, the Responsible Manager presents the documented analysis to the Safety Committee for review.

Note: The term "Responsible Manager" as used in this document is the person who has authority for a system or task.

6.3   Hazard Identification

A _Hazard_ is an object or condition with the potential for causing an accident or incident including:

- Injury, illness or death
- Damage to or loss of a system, equipment, or property
- Damage to the environment.

Hazards are identified through several Clearwater Air SMS processes and record keeping systems:

- Reports filed by management, employees or members of the public using the Safety Issue reporting process on the Clearwater Air SMS website
- Non-website and informal reports received by the Director of Safety
- Notes from employee safety meetings and meetings of the Safety Committee
- Accident, incident, injury, or damage investigation reports
- ERP drill checklists
- Audit findings and inspection checklists
- Management of Change records
- Analysis of operational data

6.4   Risk Analysis

6.4.1   Description

Risk is the potential outcome of a hazard expressed as the combination of the likelihood (how probable) and the severity (how bad) of the harm.

The Director of Safety, with the assistance of the Responsible Manager analyzes the hazard to determine its potential effects and to identify existing controls that control the hazard's risk. In other words, this process step attempts to answer the questions of what could go wrong, and do we have things in place that will prevent or limit those events and their effects.

6.4.2   Hazard Effects and Control Table

A Hazard Effects and Control table shall be used to record and ensure adequate analysis and identification of existing controls. This worksheet may be completed on a pre-printed form or electronically using a spreadsheet file. The Director of Safety works with the Responsible Manager to complete the following columns on the worksheet:

- Hazard #
- Hazard Description
- Causes
- System State
- Possible Effects(s)
- Severity / Rationale
- Likelihood / Rationale
- Existing Safety Controls
- Initial Risk Assessment Rating

Page 1 of the Hazard Effects and Control worksheet

Clearwater Air
Hazard Effects and Control Worksheet - 1

Hazard #	Hazard Description	Causes	System State	Possible Effect(s)	Severity/ Rationale	Likelihood/ Rationale	Existing Safety Controls	Initial Risk

6.4.3   Bow-Tie Risk Analysis

A "bow-tie" model is a more comprehensive risk analysis method that identifies systems or events prior to and following a hazardous event. The bow-tie model is designed to:

- Understand and record hazard causes and identify controls that can prevent or limit hazard effects prior to their occurrence.
- Understand and record hazard effects and design controls that allow recovery or mitigation of those effects after they occur.

This diagram depicts the bow-tie analysis model:
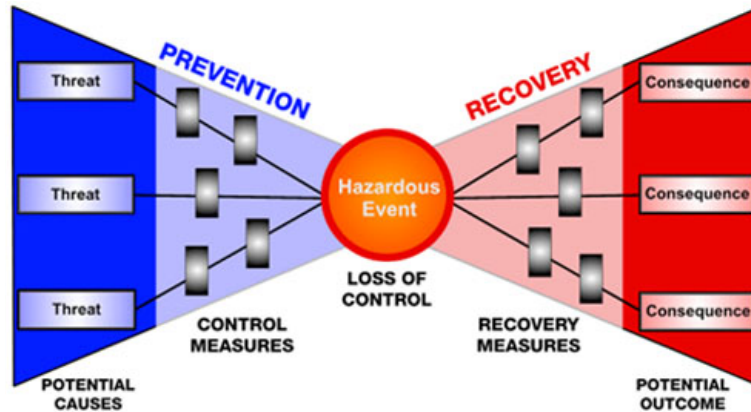
The following terms are often used during Bow-Tie analysis to distinguish types of risk controls:

Prevention Barrier: A Risk control aimed at preventing undesirable events and undesirable operational states.

Recovery Barrier: A risk control aimed at preventing an undesirable operational state (e.g. an incident) from becoming an accident.

Mitigation Barrier: A risk control mitigating the outcome (severity) of an incident or accident.

In addition to completing page 1 of the Hazard Effects and Control Worksheet, a bow-tie worksheet shall be completed to ensure adequate analysis of the hazard effects and needed controls. This may be done on a hard copy form but is best completed in an electronic spreadsheet format.

Sample model for a Bow-Tie worksheet or spreadsheet:

THREATS & CONDITIONS	PREVENTION CONTROLS & BARRIERS		RECOVERY & MITIGATION BARRIERS	HAZARD CONSEQUENCE SCENARIOS
		HAZARDOUS EVENT		

6.5   Risk Assessment Process

The Director of Safety assesses the risk and determines its acceptability using the Risk Assessment Matrix.

6.5.1   Risk Assessment Matrix

	SEVERITY LEVELS				LIKELIHOOD LEVELS				
Rating	*Physical Injury*	*Damage to the Environment*	*Damage to Assets or Potential Loss of Revenue*	*Damage to Reputation*	**A** Unknown but Possible in Aviation	**B** Known in the Aviation Industry	**C** Occurred In The Company	**D** Reported >3x/Year within the Company	**E** Reported >3x/Year at a Particular Location
0	No Injury	No Effect	No Damage	No Impact	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
1	Minor Injury	Minor Effect	Minor Damage < $25K	Slight Impact	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable with Mitigation
2	Serious Injury	Contained Effect	Substantial Damage < $125K	Limited Impact	Acceptable	Acceptable	Acceptable with Mitigation	Acceptable with Mitigation	Acceptable with Mitigation
3	Single Fatality	Major Effect	Major Damage < $500K	Considerable Impact	Acceptable	Acceptable with Mitigation	Acceptable with Mitigation	Unacceptable	Unacceptable
4	Multiple Fatalities	Massive Effect	Catastrophic Damage ≥ $500K	Catastrophic Impact	Acceptable with Mitigation	Acceptable with Mitigation	Unacceptable	Unacceptable	Unacceptable

6.5.2   Definitions

➤ **Likelihood Levels**

A   Unknown, but possible in the aviation industry

B   Known in the aviation industry

C   Occurred in the company

D   Reported more than three times per year within the company

E   Reported more than three times per year at a particular location

➤ **Severity Levels**

Physical Injury:

0   No Injury

1   Minor Injury – Less than a "serious injury"

2   Serious Injury – Any of the following:

    a.   Hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received

    b.   Fracture of any bone (except simple fractures of fingers, toes, or nose)

    c.   Severe hemorrhages or nerve, muscle, or tendon damage

    d.   Any internal organ is affected

    e.   Second, or third-degree burns, or any burns affecting more than 5% of the body surface.

3   Single Fatality

4   Multiple Fatalities

Damage to the Environment:

0   No effect

1   Minor Effect – Event is immediately addressed with available materials and does not result in fines or violations.

2   Contained Effect – Event does not extend beyond Company property or leasehold and does not cost more than $50,000, including fines.

3   Major Effect – Any of the following:

    a.   Extends beyond Company property or leasehold

    b.   Does not extend beyond Company property or leasehold but costs more than $50,000

    c.   Results in a Notice of Violation from a regulatory agency

4   Massive Effect – Any of the following:

    a.   Costs more than $1 million, including fines

    b.   Negatively affects human health

    c.   Diminishes the ability of the community to enjoy the environment

    d.   Causes irreversible damage to the environment

Damage to Assets or Loss of Revenues

0   No Damage / No increased cost or lost revenue

1   Minor Damage / Loss – Less than $25,000

2   Substantial Damage / Loss – From $25,000 to less than $125,000

3   Major Damage / Loss – From $125,000 to less than $500,000

4   Catastrophic Damage / Loss – $500,000 or greater

Damage to Corporate Reputation:

0   No implication

1   Slight Impact – limited localized implication

2   Limited Impact – Regional or State-wide implication

3   Considerable Impact – National implication

4   Catastrophic Impact – International implication

6.6   Risk Acceptability and Hazard Effects Management

It is important at this step of the SRM process to remember that identified hazards and their potential risks shall be managed to a level as low as reasonably practical (ALARP), and the decision to accept the risk depends significantly on the acceptability of the controls to accomplish ALARP.

6.6.1   Actions in Response to Risk Assessment

Based on the initial risk assessment, i.e. the RAM color and type of risk, the Director of Safety documents the process, informs the Safety Committee of the results, and initiates the following actions.

➢ "Acceptable" (GREEN)

- Route the issue report to the Responsible Manager.
- Confirm that any needed risk controls are documented, trained (if needed), and implemented.
- Ensure the hazard is included in existing safety assurance procedures and checklists.
- Close the safety issue in the SMS website and record the SRM records in the Hazard Register.

➢ "Acceptable with (*existing*) Mitigation" (YELLOW):

Note: If the existing or considered controls achieve ALARP, the risk is acceptable and the risk management process is concluded in the same manner as risks assessed in the green portion of the RAM.

- Route the issue report to the Responsible Manager.
- Confirm that any needed risk controls are documented, trained (if needed), and implemented.
- Ensure the hazard is included in existing safety assurance procedures and checklists.
- Close the safety issue in the SMS website and record the SRM records in the Hazard Register.

➢ "Acceptable with (_needed_) Mitigation" (YELLOW):

- Establish a deadline within 14 days for development or revision of needed controls.
- Distribute a Safety Notice to all affected employees regarding the hazard and require suspension or modified use of the process so that the hazard is avoided until corrective action is implemented.
- Route the issue report to the Safety Committee and schedule a meeting for resolution.
- Lead the committee in developing or revising risk controls to ALARP using both page 1 and 2 of the Hazard Effects and Control worksheet. Page 2 includes these additional analysis steps:
  - Recommended Safety Controls
  - Residual Risk
  - Control Assigned to (person who has authority for the process, task, or system)
  - Control Documentation, Training & Implementation Date
  - Follow up Audit Date (initial audit must be within 180 days)
- Ensure the risk controls are documented in the appropriate Clearwater Air manual or document. If the Responsible Manager does not have document authority, he will coordinate publication of the risk controls with the person who does.
- Ensure the Responsible Manager(s) communicates the controls, conducts any needed training, and implements operation of the process, task, or system with the new controls.
- Develop safety assurance procedures to monitor the hazard.

➢ "Unacceptable" (RED):

- Establish an immediate stop-work order for the process, task, or system.
- Establish a deadline within 72 hours for resolution.
- Route the issue report to the Safety Committee and schedule a meeting for resolution.
- Lead the committee in developing barriers, controls, and recovery procedures for the hazard and document the process using Bow-Tie methodology and page 2 of the Hazard Effects and Control Worksheet.
- Ensure the risk controls are documented in the appropriate Clearwater Air manual or document. If the Responsible Manager does not have document authority, he will coordinate publication of the risk controls with the person who does have the authority.
- Ensure the Responsible Manager communicates the controls, conducts any needed training, and implements operation of the process, task, or system with the new controls.
- Develop safety assurance procedures to monitor the hazard.

Page 2 of the Hazard Effects and Control worksheet

Clearwater Air
Hazard Effects and Control Worksheet - 2

Recommended Safety Controls	Residual Risk	Control Assigned To:	Control Documentation Training and Implement Date	Follow-up Audit Date

6.6.2 Development or Revision of Risk Controls

The Director of Safety shall lead the Safety Committee meetings when developing or revising risk control. Controls shall have the following characteristics.

- Provide sufficient reduction of the risk to a level that is as low as reasonably practical (ALARP).
- Consist of equipment, work processes, standard operating procedures, training, or any combination of these means.
- Developed from an understanding of the root cause of the hazard and risk.
- Documented and communicated to all affected employees, and, if necessary trained for competence and compliance.
- Include specific process controls that can be inspected to determine compliance.
- Added to safety assurance checklists and management reviews.

When developing controls for risks assessed to be "Unacceptable" (RED), the risk controls must include at least one of the following types of controls – in priority order of preference:

1. A design feature that has eliminated the hazard by modifying the system (this includes hardware/software systems, physical hazards, and organizational systems).
2. Installation of physical guards or barriers that reduce hazard and risk exposure or severity.
3. Installed warnings, advisories, or signals for the hazard.
4. Procedural changes to avoid or reduce the potential likelihood or severity of the associated risk.
5. Training to avoid the hazard or to reduce the likelihood of an associated risk.

After developing any new risk control, and before it is implemented, the Safety Committee shall:

- Reassess the hazard with the newly introduced control(s) using the risk management process.
- If no new hazards are introduced and risk will be reduced to an "acceptable" level (ALARP) with the newly developed or revised controls, the process or system may be implemented online.

The Safety Committee will review any newly developed or revised control measures within six (6) months after these measures have been introduced. This review shall determine compliance with the new controls and determination of risk exposure. The Director of Safety shall maintain the schedule for these Safety Committee reviews and lead the follow-up review using the tools in the Clearwater Air SMS website.

6.6.3   Risk Management and Implementation Diagram
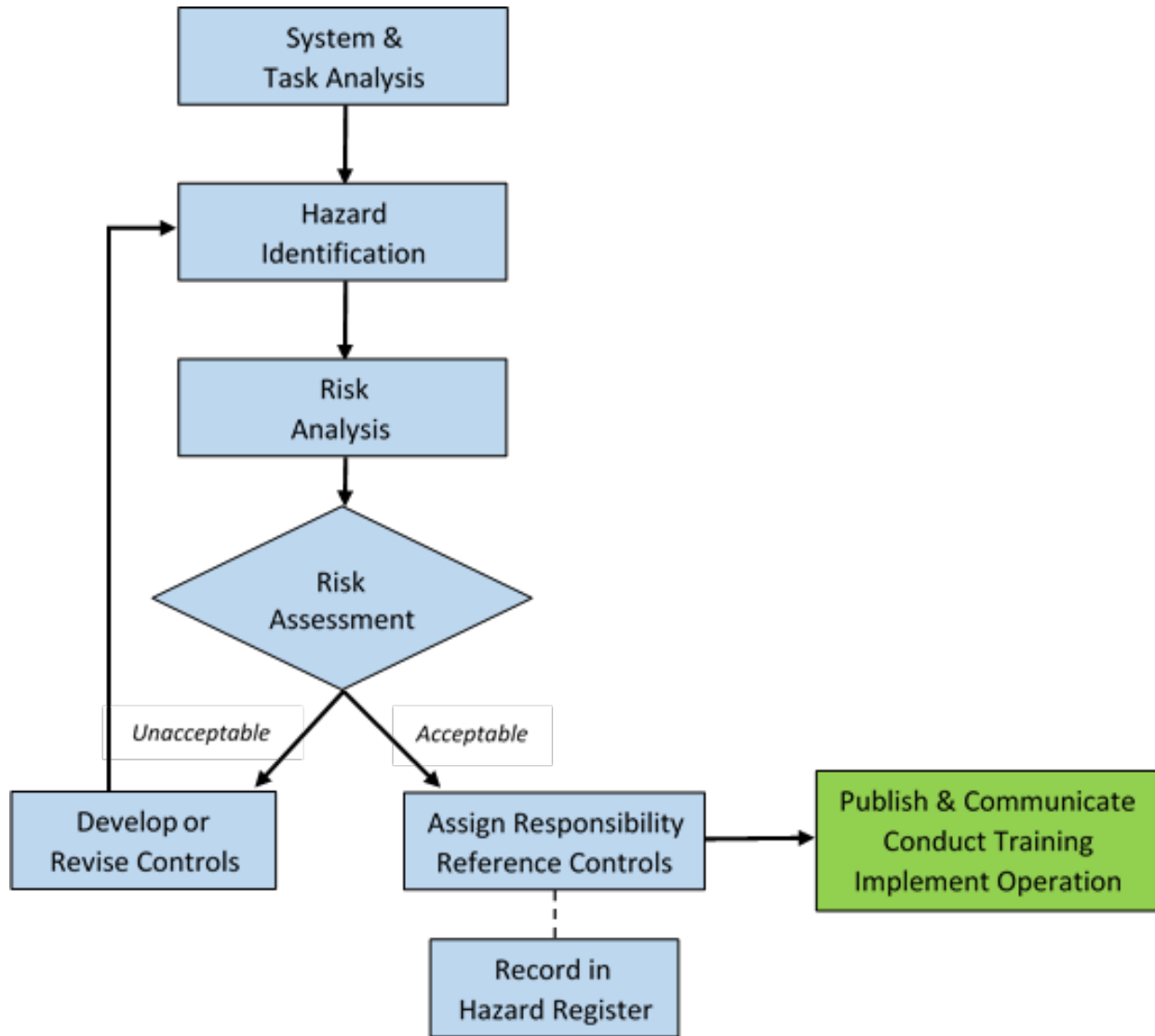
7   MANAGEMENT OF CHANGE

The change management process ensures that the SMS is adaptable and remains effective. It is a proactive process that begins before change is implemented and continues through the implementation and monitoring.

Change management is used for these kinds of events (not an inclusive list):

- Implementation of new processes, tasks, or systems
- Managerial reorganization or personnel changes
- New aircraft type or variant
- Opening a new operations base
- Revision of operations specifications or applicable regulations
- Facility or equipment changes
- New maintenance procedures, equipment, or tools
- New training provider or other type of contractor
- Significant financial or economic influences on the Company

7.1   Management of Change Diagram
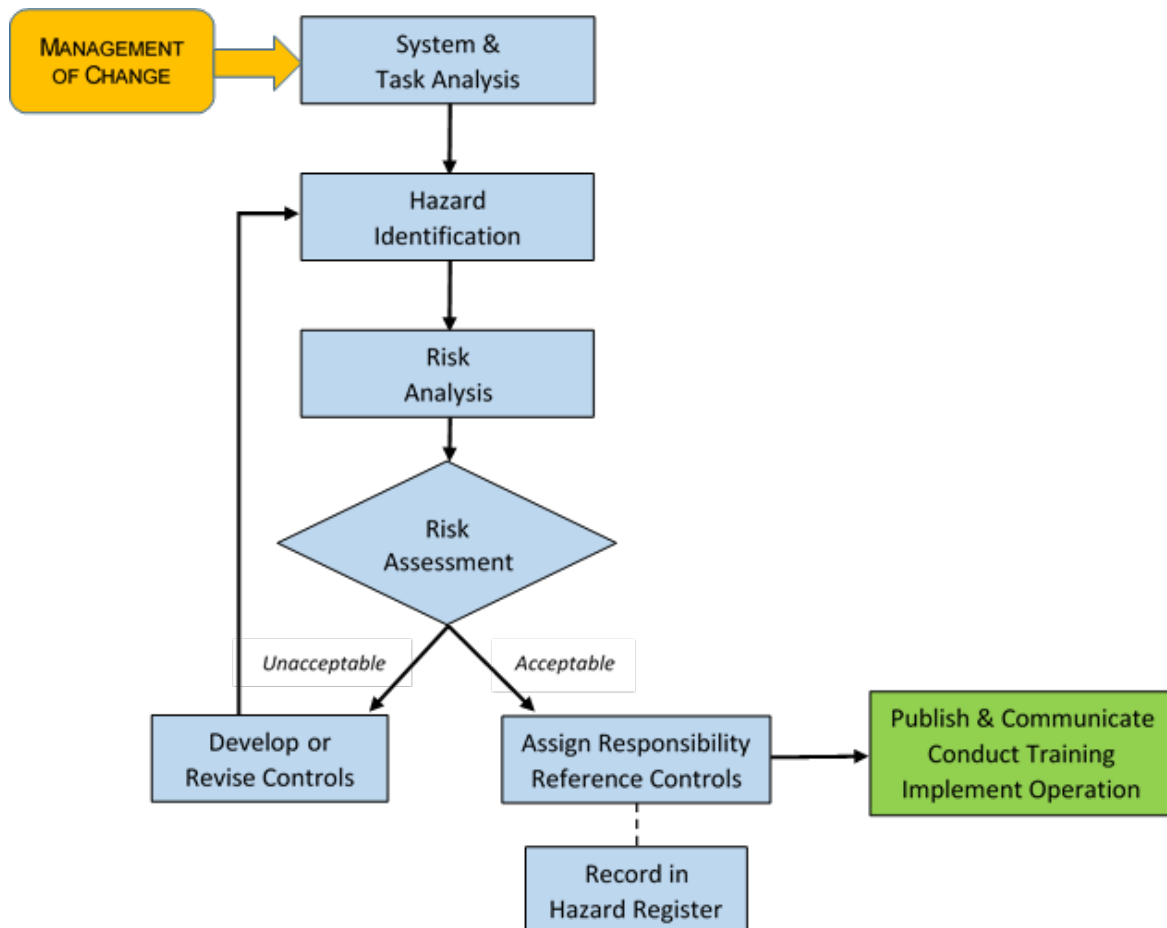
7.2   Process Responsibilities and Considerations

The Director of Safety has process authority and the Safety Committee has the responsibility for change management. The Clearwater Air SMS website database tools are used for recording, communicating, and tracking the actions of the process.

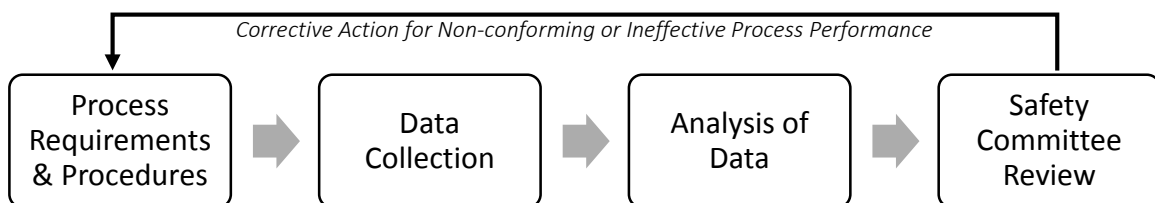To be effective, the change management process include these procedures:

- Identify the key personnel who will assist in implementing the change and involve them in the change management process.
- Consider the effects of the change to:
    - Operational procedures (GOM, training program, SOP's, maintenance practices, etc.)
    - Personnel staffing and competencies
    - Infrastructure (equipment, facilities, etc.)
    - Aircraft and equipment maintenance
- Analyze and assess the risks associated with the change as well as the risks associated with the implementation process.
    - Identify the applicability and adaptability of existing risk controls.
    - Consider whether the change could introduce confusion with existing controls.
    - Develop appropriate controls if needed and ensure ALARP.
- Define an implementation plan, assess related financial costs, and approve the change.
- Implement the actions as defined in the plan.
    - Consult and involve personnel who are affected by the change.
    - Acquire the resources and equipment.
    - Inform personnel of the changes, publish affected procedures in Company documents, and conduct any needed training.
- Monitor performance and the effects of the changes with established Safety Assurance processes.

8 QUALITY ASSURANCE

8.1 Purpose and Description

The purpose of quality assurance (QA) is to ensure effective design and use of Clearwater Air processes so that Clearwater Air operations and services are compliant and valuable. The activities of QA seek to identify and manage process failures that can result in undesirable practices and outcomes. One of the key elements of QA is an independent audit function conducted by persons who are not performing or managing work that is audited.

QA uses a systematic approach to measure and continually improve process performance and outcomes.

Corrective Action for Non-conforming or Ineffective Process Performance

Process Requirements & Procedures → Data Collection → Analysis of Data → Safety Committee Review

The first and last steps in the QA process model require leadership to solicit the concerns of Clearwater Air's interested parties, including

- Company management
- Regulatory agencies
- Company customers and clients
- Company employees

Senior management ensures that standards and procedures are developed and reviewed with respect for the needs and values identified by these parties.

The 2nd and 3rd process steps of QA are based on the principle of ongoing process monitoring. These data steps primarily consist of compliance audits and analysis of their results.

The reiterative nature of the QA process encourages reliable performance, valuable operations, and continual improvement.

Quality assurance and safety assurance share the principles of ongoing monitoring, data-based decision making, and the opportunity for continuous improvement. These two functions are also mutually supportive.

8.2   **QA Responsibilities**

The General Manager (GM) is responsible for QA activities and for reporting their results to the Safety Committee. The Safety Committee, in addition to its primary commitment to safety, provides the leadership and commitment for.

QA management principles and responsibilities include:

- Leadership –
  The Safety Committee solicits and considers the needs and values of the Clearwater Air's interested parties when establishing Company objectives, and performs an annual review of QA activities and results. Standards and procedures are developed and monitored against these standards and procerus.

- Involvement of People –
  - The GM informs Clearwater Air employees and other interested parties of the purpose and results of QA activities during Safety Meetings, annual training, and routine interaction with regulators and clients.
  - The GM coordinates with the Responsible Manager for the system or task, to –
    - Obtain the input and involvement of affected Company employees when developing or revising system processes, process controls internal audits, etc.
    - Design effective process steps that are compliant with standards and regulations
  - Responsible Managers coordinate the design or revision of systems or tasks with the Director of Safety to ensure that management of change procedures are followed for the new or revised systems or tasks.

- Process Monitoring –
  - Responsible Managers include process controls and operational record keeping practices in the design of systems and tasks.
  - The GM establishes routine audits of operational data and employee performance.

- Management Competence –
  The GM shall maintain familiarity with QA audit practices by attending recurrent professional training or seminars at least once every two years; and shall ensure that any outside auditors enlisted by the Company are competent to perform audits.

- Continual Improvement –
  - The GM shall recommend and the Safety Committee shall determine the need for system and task correction when there is evidence of ineffective or non-conforming process performance.
  - Responsible Managers shall act on the decisions of the Safety Committee using QA design principles and Management of Change procedures when developing or revising system or task processes. This duty requires coordination with the GM and the Director of Safety.

8.3   Audits & Inspections

Internal QA audits are scheduled inspections designed to monitor Clearwater Air safety performance, including conformity to safety risk controls, Company procedures, and regulatory requirements. QA audits shall be conducted for flight operations, aircraft maintenance, training programs, and the documents and record keeping functions.

At a minimum, the inspected items include manuals, logs and records, equipment, facilities, and management systems. Inspections may also include personnel interviews and performance observation.

The General Manager schedules internal audits and ensures:

- Completion of at least one scheduled audit each year for each operations base, maintenance facility, and administrative office.
- Random audits are scheduled at the discretion of the General Manager or when an audit is needed to immediately address a compliance issue.
- The GM notifies the department head and lead personnel at least seven days in advance for scheduled audits, and at least 24 hours prior to any random audit.
- Audits are conducted by the General Manager or a member of the Clearwater Air Safety Committee who is selected by the General Manager.
  - Selection preference for the auditor will be given to personnel who are qualified by training to conduct audits.
  - The General Manager may appoint personnel from outside the Company to conduct a Clearwater Air internal audit provided the person or agency is qualified by training to conduct audits and has a working knowledge of the subject area to be audited.
- No auditor may inspect his or her own work.
  - This does not preclude department managers from establishing operational checklists or routinely conducting operational reviews of department activities.
- Audit inspections are recorded using a Clearwater Air checklist or an alternative checklist based on recognized standards. Checklist information shall include at least:
  - Date and description of the functional area and location of the audit
  - Name of the auditor
  - List of inspection items and their corresponding findings
  - List of required corrective actions
- The GM ensures that audit findings are forwarded to the Director of Safety and recorded in the Hazard Register of the Clearwater Air website database.
- The GM informs the Director of Safety if any hazards are identified by audits and ensures that such hazards are entered and managed on the Clearwater Air website database.
- The GM shall forward a completed copy of the audit checklist to the department head within seven (7) days after the audit.
- The GM shall ensure that a follow-up audit is completed within two (2) months after any findings of non-compliance with regulatory or Clearwater Air guidance.

8.4   Contractor and Vendor Qualification Audits

The GM shall ensure that department directors conduct a qualification or audit function with any vendors who maintain an ongoing relationship with the Company, including

- Aircraft maintenance service and parts vendors
- Aircraft ground and fueling contractors
- Outsource training facilities and contractors

8.5   SMS QA Audit by External Auditor

The General Manager arranges a qualified, external aviation entity to conduct an audit at least every two years of Clearwater Air's SMS and/or its operational processes. The purpose of this audit is to:

- Obtain an independent review and opinion of Clearwater Air processes and compliance performance.
- Identify evidence of non-compliance with regulations or SMS processes.
- Examine and judge the quality of SMS records and identify evidence of any trends or anomalies.
- Validate the design of SMS processes.

8.6   External Audits Initiated by an External Entity

Upon arrangement with the Company, audits of Clearwater Air operations may be occasionally conducted by organizations who maintain a business relationship with the Clearwater Air. Such audits normally focus on compliance with regulations and/or the requirements of the external entity. These audits can include inspections and examination of flight operations, aircraft maintenance, SMS functions and administrative practices.

The General Manager will formally request a copy or report of the findings from audits or inspections conducted by external organizations. The guidelines for managing internal audits and for managing the QA SMS audit shall be used when external audits are conducted and for the retention of their records.

Examples of the types of external auditors and organizations who may arrange and conduct audits of Clearwater Air operations include:

- Governmental contract customers, e.g. US DOI Office of Aviation Services
- Corporate contract customers, e.g. G.E., Google, etc.
- Regulatory agencies, e.g. FAA
- Aviation industry association or audit agencies, e.g. Medallion Foundation
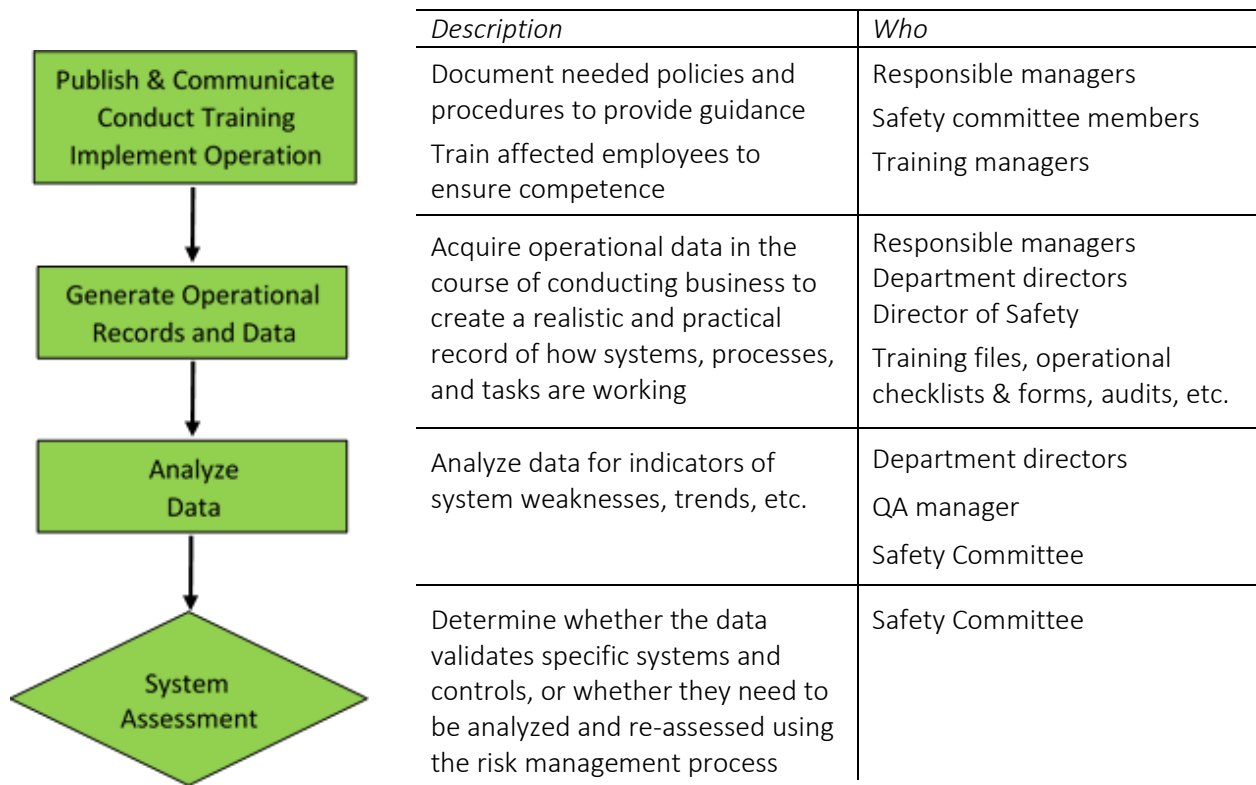
9 SAFETY ASSURANCE

9.1 Description

Safety assurance activities allow Clearwater Air to continuously monitor and improve the level of safety performance. Safety assurance programs give Clearwater Air the ability to:

- Discover and correct systemic weaknesses
- Ensure compliance with regulatory requirements, Company procedures, and SMS processes.
- Identify and manage new hazards
- Ensure the adaptability of the SMS
- Evaluate the practical use and effectiveness of existing safety risk controls

Safety Assurance can be understood in the following diagram and table:

	Description	*Who*
Publish & Communicate Conduct Training Implement Operation	Document needed policies and procedures to provide guidance Train affected employees to ensure competence	Responsible managers Safety committee members Training managers
Generate Operational Records and Data	Acquire operational data in the course of conducting business to create a realistic and practical record of how systems, processes, and tasks are working	Responsible managers Department directors Director of Safety Training files, operational checklists & forms, audits, etc.
Analyze Data	Analyze data for indicators of system weaknesses, trends, etc.	Department directors QA manager Safety Committee
System Assessment	Determine whether the data validates specific systems and controls, or whether they need to be analyzed and re-assessed using the risk management process	Safety Committee

9.1.1 Communicate and Train

Safety assurance fundamentally relies on communicating clear expectations, providing written guidance for tasks and processes, and training for competence. The responsible manager for a system or task shall ensure that adequate guidance is published and needed training is conducted as often as needed for understanding, competence, and compliance.

9.1.2   Acquisition of Operational Data

The purpose of acquiring operational data is to capture a realistic picture of the use of risk controls. An example of one type of operational data are the documents that act as process controls, such as a sign-out form, a written checklist, a log entry, etc. In general, data sources include:

- Company training records and programs
- Personnel training files and testing / check records
- Process control checklists, e.g. FRAT, maintenance inspection checklists, etc.
- Operational forms, e.g. flight logs, discrepancy logs, MEL records
- Audit inspection checklists
- Safety issue reports
- Safety meeting minutes
- Accident and incident investigations

9.1.3   Data Analysis

The purpose of data analysis is to discover suspected safety issues. The larger the dataset of a specific type of information, the easier it is to objectively discover the effectiveness and validity of the risk controls and systems. Special attention should be given to identifying the nature and frequency of these types of data patterns and trends which often indicate system weakness:

- Broad evidence of non-conforming performance for specific tasks, procedures, etc.
- Recurring types of record keeping anomalies or failures
- Conspicuous increase or decrease of safety issue reports
- Recurring identification of similar hazards and risks
- Unexplainable findings during audit inspections
- Types of accidents and incidents

Data analysis can be enhanced by researching the FAA Aviation Safety Information Analysis and Sharing (ASIAS) website: http://www.asias.faa.gov/

This website allows users to perform integrated queries across multiple databases. It can be used to research and discover aviation hazards and risks experienced in operations similar to those of the Company.

9.1.4   System Assessment

Based on the data analysis, the Safety Committee makes an objective determination of the validity and effectiveness of the system and controls. When making this determination, it is important to distinguish the root cause of system failures. For example, risk controls can fail due to:

- Non-conformance with process procedures caused by insufficient training
- Non-conformance caused by impractical or unrealistic process design
- Conformance with risk control procedures that fail to prevent or limit a hazard

The Safety Committee re-analyzes the system or task using the risk management process any time there is evidence of ineffective or impractical risk controls. Insufficient training issues may indicate the need for re-training affected employees and it may also require risk management analysis of the training program.

9.2   Investigations

Safety investigations collect and analyze events, determine causal and contributing factors, draw conclusions, and make recommendations as needed. The objective of a safety investigation is to correct system weaknesses and prevent future injuries or damage.

Clearwater Air safety investigations are initiated by the Director of Safety and are independent of any investigations conducted by regulatory agencies after a reportable accident or incident.

A Clearwater Air safety investigation is initiated in response to:

- Accidents and incidents
- Recurring hazards and risks
- Any data or evidence that indicates a suspected safety issue, such as unexplainable findings during audit inspections, a conspicuous increase or decrease of safety issue reports, recurring anomalies in record keeping procedures, etc.

The Director of Safety is responsible for conducting Clearwater Air safety investigations.

- The Director of Safety may delegate the investigation activities to another member of the Clearwater Air Safety Committee or a team appointed by the Director of Safety, but he retains authority and responsibility for the investigation.
- Any person or entity to whom the investigation is delegated shall be qualified by training to determine root cause of events and conditions
- Upon completion, the Director of Safety records the investigation details and recommendations in the Clearwater Air SMS database

9.2.1   Investigation Process

General guidelines for the investigation process are:

- Define the scope of the investigation and designate the investigator(s)
- Determine the investigation activities and needed resources
- Collect data and evidence about the event or condition, avoid making assumptions or accusations and use relevant data sources, for example,
    - Physical examination
    - Documentation and files
    - Interviews with persons involved
    - Observation of actions
    - Safety database and expert consultants
- Analyze the scenario
    - Identify the relevant events or conditions (including influences from personnel, equipment, facilities, or the environment) and reconstruct the scenario.
    - Trace back the sequence of events and consider root cause.
    - Determine the causes and identify the associated hazards.
    - Integrate all investigation elements.

- Determine the risk level and risk acceptability.
- Identify and assess risk controls and determine corrective / preventive action.
- Communicate the investigation results to all concerned.
- Complete the investigation and archive the records in the SMS database.

9.2.2 Accident & Incident Investigations Conducted by NTSB or FAA

The President shall act, or appoint a member of the Safety Committee to act, as the Company liaison for any accident or incident investigation conducted by the NTSB, FAA, or other regulatory authority.

The Director of Safety ensures that the results of any accident or incident investigations that have been conducted by regulatory authorities are:

- Examined for any unidentified hazards
- Managed by the Safety Committee using risk management processes
- Recorded in the Clearwater Air SMS website

9.3 Annual SMS Review by the Safety Committee

The Director of Safety schedules an annual Safety Committee review of the SMS using the Clearwater Air SMS database tools to prepare and lead the review process. The meeting shall at least include the following agenda items and purposes:

- Review the process measures of any new safety controls implemented in the last 12 months and make an initial assessment of their effectiveness.
  - The new risk controls will be re-assessed with risk management processes when the review indicates a lack of conformity or effectiveness to control the safety risks.
  - Any risk controls judged by the Safety Committee to lack adequate data to judge their effectiveness are re-scheduled for review at the next Safety Committee meeting.
- Review the hazard register for evidence of any trends.
  - Hazard report patterns of where, when and what is reported or not reported.
  - The review will not assume or make judgment of any trends until they are fully understood and assessed to identify any hazards and their associated risks; avoid missing evidence of positive as well as negative trends.
- Measure the Company's safety performance in relation to the SMS performance objectives and indicators.
  - Assess the need for any changes to the administration of the SMS including the design or execution of the risk management and safety assurance processes.
  - Conduct the annual Committee review of Clearwater Air safety policies and performance indicators and confirm or revise them for future SMS administration.
  - The performance indicators shall be reviewed to ensure they are specific, measureable, achievable, realistic, and time sensitive.
- Minutes from the annual SMS review meeting are recorded in the Clearwater Air SMS database and include at least the agenda items, key discussion points, and actions taken.