# Safety Management System Toolkit

Edition 1

Compiled by the Joint Helicopter Safety Implementation Team (JHSIT)
an organization of the
International Helicopter Safety Team (IHST)

# FORWARD

The 2005 International Helicopter Safety Symposium marked the beginning of an international effort by the helicopter industry to reduce the accident rate by at least 80% by 2016. The International Helicopter Safety Team (IHST) was formed to lead efforts toward reaching the objective.

The IHST formed the Joint Helicopter Safety Analysis Team (JHSAT) to analyze the accident history and provide recommendations to reduce the accident rate and the Joint Helicopter Safety Implementation Team (JHSIT) to develop cost effective strategies and action plans to reduce accidents.

IHST is broadly inclusive and involves associations such as Helicopter Association International (HAI), European Helicopter Association (EHA), European Helicopter Operators Committee (EHOC), Cooperative Development of Operations Safety and Continuing Airworthiness Project (COSCAP) of the International Civil Aviation Organization (ICAO), Helicopter Association of Australasia, Centro de Investigação e Prevenção de Acidentes (CENIPA) in Brazil, American Helicopter Society (AHS) International, Airborne Law Enforcement Association (ALEA), Association of Air Medical Services (AAMS), International Association of Oil and Gas Producers (OGP), Tour Operators Program of Safety (TOPS) the military, aircraft and engine manufacturers, the insurance industry, helicopter industry customer base, and line personnel i.e. pilots, other crewmembers and maintenance technicians.

The JHSAT's initial report provides recommendations directed at specific missions as well as advice that pertain to the worldwide helicopter fleet. JHSAT's first and foremost finding is the need to implement a Safety Management System (SMS).

This document represents JHSIT's proposal for helping organizations understand the fundamentals of a SMS and serves as a guide to setup a SMS tailored to small organizations.

Examples and tools for each SMS attribute are accessible on the IHST website: http://www.ihst.org/SMStoolkit/. Refer to the Appendix Resource Guide in the back of this document for an itemized list of available materials.

# INTRODUCTION

The JHSAT analyzed 197 reported helicopter accidents for the year 2000 as recorded in the NTSB's U.S.A. database. The JHSAT found that a major contributing factor in most accidents was the *failure to adequately manage known risks*. Due to the lack of a systematic process, including leadership and accountability, operators did not adequately prioritize and address the risks that lead to most accidents.

The SMS Toolkit will help small operators develop a fit-for-purpose system that will show both a return on investment, and/or cost effectiveness from both financial and safety perspectives. It will help organizations develop a SMS designed to fit the size, nature and complexity of their organization. This toolkit provides easy-to-use guidance and proven methods that will assist in developing a systematic approach to managing hazards that cause accidents. Organizations that adopt the processes setout in this toolkit will benefit from the reduced exposure to risk, reduced costs associated with incidents and accidents, and better retention of personnel. The safety recommendations in this document must be economically viable and operationally appropriate to the individual operating environment and mission.

## Definition of an SMS

SMS can be defined as a coordinated, comprehensive set of processes designed to direct and control resources to optimally manage safety. SMS takes unrelated processes and builds them into one coherent structure to achieve a higher level of safety performance, making safety management an integral part of overall risk management. SMS is based on leadership and accountability. It requires proactive hazard identification, risk management, information control, auditing and training. It also includes incident and accident investigation and analysis.

## Developing a SMS Tool

The JHSIT reviewed several SMS models, regulations and guidance material from around the world in order to develop a SMS model specifically designed for the helicopter industry. The toolkit is a compilation of the best practices and solutions. Contributions came from small, medium and large helicopter operators as well as airlines, industry groups and governments.

The intent of this document is to assist organizations in achieving their desired safety performance objectives while allowing them to choose the best way to reach that outcome. This is commonly known as a "performance based approach," and encourages organizations to choose the solution that best suits their needs and ensures they meet their performance objectives. The toolkit helps the organization determine their level of compliance and develop an action plan to include the necessary components.

## Why is SMS Needed?

SMS is needed to help facilitate the proactive identification of hazards and maximize the development of a better safety culture, as well as modify attitudes and actions of personnel in order to make a safer work place. SMS helps organizations avoid wasting financial and human resources and management's time being focused on minor or irrelevant issues. SMS lets managers identify hazards, assess risk and build a business case to justify controls that will reduce risk to acceptable levels.

SMS is a proven process for managing risk that ties all elements of the organization together laterally and vertically and ensures appropriate allocation of resources to safety issues.

## Attributes of a SMS

Although the details and level of documentation of a SMS may vary, there are 11 fundamental attributes that will assist in ensuring the SMS is effective for any organization. The core attributes of the IHST's SMS are:

1) SMS Management Plan
2) Safety Promotion
3) Document and Data Information Management
4) Hazard Identification and Risk Management
5) Occurrence and Hazard Reporting
6) Occurrence Investigation and Analysis
7) Safety Assurance Oversight Programs
8) Safety Management Training Requirements
9) Management of Changes
10) Emergency Preparedness and Response
11) Performance Measurement and Continuous Improvement

## SMS Business Tools for Managers

It is important to view a SMS as a business/operations tool for owners/CEO's. The risk management processes within the SMS includes the need to determine the cost of implementing versus not implementing control measures. Example:

A two aircraft, four pilot organization experiences their third $5,000 hot-start incident in two years caused by the poor starting technique combined with weak aircraft batteries. The owner/CEO determines through discussions with the chief pilot, that a one-time training expense of $2,000 will prevent a recurrence. The cost of implementing the solution is $8,000 ($2,000 X 4 pilots = $8,000). The cost of not implementing is $15,000 ($5,000 X 3 hot starts = $15,000).

However, training may not be the only answer. In the same scenario, if the training costs $20,000, it would be more cost effective to install equipment that prevents hot starts if it can be done for $12,000.

Simple models that help managers arrive at the most appropriate answer are provided in this SMS Toolkit, and can ensure even the smallest operator can achieve their safety goals without the using a complex SMS.

# CHAPTER 1

# SAFETY MANAGEMENT SYSTEM ATTRIBUTES

This chapter identifies the requirements associated with each of the fundamental SMS attributes. Successful safety management systems are tailored to fit the size, nature and complexity of an organization. Although the details and level of documentation of a SMS may vary, respecting fundamental attributes will assist in ensuring the SMS is effective for any organization.

## 1.1 SMS Management Plan

A SMS Management Plan should clearly define safety objectives, how the organization intends to execute and measure the effectiveness of the SMS, and how the SMS will support the organization's business plan and/or objectives. The plan should:

- Express management's commitment to safety and clearly state the policies, objectives and requirements of the SMS
- Define the structure of the SMS as well as the responsibilities and authority of key individuals for managing the SMS
- Define each element of the SMS
- Convey the expectations and objectives of the SMS to all employees
- Explain how to identify and maintain compliance with current safety regulatory requirements

**Parallel Approaches in Business and SMS**

| **The Business Approach** | | **The Safety Approach** |
|---|---|---|
| Mission - | | Mission - |
| Vision - | | Vision - |
| Corporate Goals - | | Safety Goals - |
| Policies - | | Policies - |
| Requirements - | ⟷ | Requirements - |
| Business Processes: | | *SRA* Processes: |
| *Identify Non-Compliance* | | *Identify Hazards / Non-Compliance* |
| *Implement Solutions* | | *Implement Hazard Controls* |
| *Measure Performance* | | *Measure Performance* |
| *Lessons Learned* | **" SMS is the safety approach to the business"** | *Lessons Learned – Improve Process* |
| *Repeat the Process* | | *Repeat the Process* |

Figure 1.1

## 1.2 Safety Promotion

Safety must be recognized as a "core value." Procedures, practices, training and the allocation of resources must clearly demonstrate management's commitment to safety. Effective methods to promote safety include:

- Publish a statement of management's commitment to the SMS
- Management should demonstrate their commitment to SMS by example
- Communicate the outputs of the SMS to all employees
- Provide training for personnel commensurate with their level of responsibility
- Define competency requirements for those individuals in key positions
- Document, review and update training requirements
- Share "lessons learned" that promote improvement of the SMS
- Have a safety feedback system with appropriate levels of confidentiality that promote participation by all personnel in the identification of hazards
- Implement a "Just Culture" process that ensures fairness and open reporting in dealing with human error

## 1.3 Documents and Data Information Management

Organizations should have procedures to identify and manage the information necessary to ensure compliance with SMS policies, procedures and goals. Key elements include:

- Document and publicize the organization's safety policies, objectives and SMS procedures
- Identify the safety regulations that govern the organization
- Provide all employees access to pertinent regulatory information
- Consolidate documentation describing the systems for each SMS component
- Provide change control for all applicable documents
- Have a process to communicate changes in documents to all personnel

## 1.3 Document and Data Information Management (continued)

- Promptly remove obsolete documents
- Establish periodic review of documents

## 1.4 Hazard Identification and Risk Management

The SMS needs to include a process to identify hazards and develop processes to identify and manage risks. Key elements of hazard identification and risk management programs are:

- Proactive identification of existing and potential hazards. This includes those hazards associated with organizational change when the organization is undergoing rapid growth, introducing new services, new equipment or new personnel
- A process to prioritize risk management
- A method to track identified hazards

A risk assessment matrix is a useful tool to identify the level of risk and the levels of management approval required for any Risk Management Plan. There are various forms of this matrix, but they all have a common objective to define the potential consequences or severity of the hazard versus the probability or likelihood of the hazard.

| | | PROBABILITY | | | | |
|---|---|---|---|---|---|---|
| | | FREQUENT | PROBABLE | OCCASIONAL | REMOTE | IMPROBABLE |
| SEVERITY | I - CATASTROPHIC | 1 | 2 | 4 | 8 | 12 |
| | II - CRITICAL | 3 | 5 | 6 | 10 | 15 |
| | III - MARGINAL | 7 | 9 | 11 | 14 | 17 |
| | IV - NEGLIGIBLE | 13 | 16 | 18 | 19 | 20 |

Figure 1.2

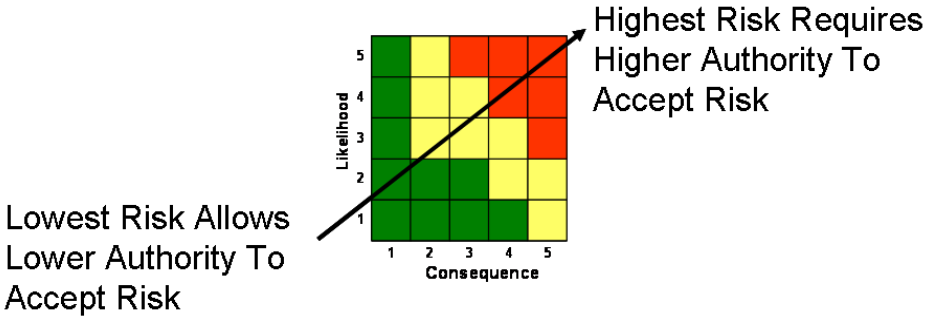


Figure 1.3

## 1.5 Occurrence and Hazard Reporting

Occurrences are unplanned safety related events, including accidents and incidents that could impact the safety of guests, passengers and personnel, equipment or the work environment.

The identification of a hazard provides an opportunity to learn how to prevent accidents and incidents it might cause. Procedures need to be in place for internal reporting of hazards. Timely collection of information allows the organization to react to the information.

A hazard reporting form should be simple, convenient and available to all employees. Hazard reporting programs should include:

- Feedback to the reporting person
- A process for analyzing data, safety reports and other safety related information
- Ongoing monitoring to confirm the effectiveness of corrective action
- Ongoing monitoring to identify hazardous trends
- A non-punitive discipline policy for persons that report hazards
- Provisions for anonymous reporting of hazards

## 1.6 Occurrence Investigation and Analysis

Every hazard, incident or accident needs to be investigated for the purpose of gathering information that may help prevent similar occurrences. An initial risk assessment will assist in determining the extent of the full investigation. Reports that demonstrate a high potential hazard should be investigated in greater depth than those with low potential. The investigation or hazard analysis should:

- Determine "what" and "why" the event happened, rather than, "who's to blame"
- Ensure the person(s) conducting the investigation is technically qualified and has access to other personnel with expertise that may assist with the investigation
- Identify immediate causal and contributing factors
- Look at organizational factors that may exacerbate the hazard or incident

## 1.6 Occurrence Investigation and Analysis (continued)

- Identify both acts of "omission" and "commission"

- Provide a report to the manager with the authority to implement recommendations

## 1.7 Safety Assurance Oversight Programs

Good oversight programs evaluate the effectiveness of the organization's SMS. They help management improve safety services.

Evaluation of the safety program should include external assessments by professional or peer organizations. Safety oversight is provided in part by some of the attributes of the SMS such as, occurrence reporting and investigation. However, safety assurance and oversight programs need to proactively seek out potential hazards based on available data as well as evaluating the organization's safety program. This can best be accomplished by:

- Conducting internal assessments of operational processes at regularly scheduled intervals

- Utilizing checklists tailored to the organization's operations when conducting safety evaluations

- Assessing the activities of contractors where their services may affect the safety of the operation

- Having assessment of evaluator's processes conducted by an independent source

- Documenting results and corrective actions

- Documenting positive observations

- Categorizing findings to assist in prioritizing corrective actions

- Sharing the results and corrective actions with all personnel

## 1.7 Safety Assurance Oversight Programs (continued)

- Utilizing available technology such as Health Usage Monitoring Systems (HUMS) to supplement quality and maintenance programs as well as supporting programs to monitor and evaluate aircrew operations

## 1.8 Safety Management Training Requirements

All personnel should be given introductory and recurrent SMS training. When establishing training requirements for the organization, you should:

- Include a safety orientation for all new personnel, stressing the organization's commitment to safety and everyone's roll in the SMS
- Document competency requirements for personnel
- Have a system to track training requirements
- Make effective use of conferences, workshops, literature and trade journals

## 1.9 Management of Changes

Unless properly managed, changes in organizational structure, personnel, documentation, processes or procedures can result in the inadvertent introduction of hazards and increased risk. When making changes, the following should be done to minimize the potential of increasing risk:

- Analyze changes in operational procedures or processes to identify any required changes in training, documentation or equipment
- Changes in location, equipment or operating conditions should be analyzed for any potential hazards
- Ensure all maintenance and operation manuals are kept posted with the most current changes
- Have a process to ensure that all personnel are made aware of and understand any changes in requirements, procedures and applicable maintenance and operator manuals
- Define the level of management that must approve a change

## 1.10 Emergency Preparedness and Response

An Emergency Response Plan outlines in writing what should be done when an emergency occurs, what to do after an accident happens, and who is responsible for each action. The better prepared an organization is for an emergency, the better the chances that injuries to personnel and damage to equipment, property or the environment can be minimized. The plan should:

- Be readily available at the work stations of those that may be the first to be notified or required to respond
- Be relevant and useful to people on duty
- Be exercised periodically to ensure the adequacy of the plan and the readiness of the people who must make it work
- Be updated when contact information changes
- Be briefed to all personnel along with their responsibilities
- Should be practiced so personnel receive training in emergency response procedures

The Emergency Response Plan should include checklists that define actions and responsibilities for the following:

- First response personnel such as flight operations, tower, fire and police
- Secondary responder personnel such as public relations, legal and maintenance
- Site security and accident investigation
- Next of kin notification
- Claims and insurance procedures
- Aircraft recovery

## 1.11 Performance Measurement

The safety performance of the organization needs to be proactively and reactively monitored to ensure that the key safety goals continue to be achieved. Relying on accident rates as a safety performance measure can create a false impression because not having accidents does not necessarily indicate the organization is safe. In reality, there will always be latent conditions within the system that might lead to an accident. Performance measurements must be tailored to the size, nature and complexity of the organization and:

- The results of all safety performance monitoring should be documented and used as feedback to improve the system
- Address individual areas of concern. The assessment of the improvements made to work procedures might be far more effective than measuring accident rates
- Must be specific, measurable, achievable, results oriented and timely (SMART)
- Safety performance measures must be linked to the organization's operations performance measures, for example:

| | |
|---|---|
| ***Organization Objective*:**<br>Reduce Costs | ***Organization Performance Measure:***<br>Reduction in insurance rates |
| ***Safety Objective*:**<br>Decrease number and severity of hangar incidents | ***Safety Performance Measure:***<br>Reduction in total number of events:<br>• Number of damage-only events<br>• Number of near-miss accidents<br>• Lessons learned from event analyses<br>• Number of corrective action plans developed and implemented |

# CHAPTER 2

# ORGANIZATION and HUMAN REQUIREMENTS

## 2.1 Organizational Requirements

In a SMS, policies and procedures are the ways organizations express and achieve their desired level of safety. Policies characterize the nature and performance of an organization, and procedures define how to execute policies.

## 2.2 Policy

Policy is information which establishes a basic requirement for how the organization functions (*what you want to do*). It should be short and to the point. Customers should also know what the organization's policies are so they can base their expectations on them. Policies guide the development of procedures.

For example, an organization may establish a fuel management policy to avoid low-fuel emergencies. That policy might state that day VFR flights must have adequate fuel reserves to allow the safe completion of the flight with a minimum of 30 minutes fuel on board at landing.

## 2.3 Procedures

Procedures define the actual methods that the organization uses to apply their policies (*how you do what you want done*). In the fuel management example above, the procedure may include various methods of positively determining the quantity of fuel onboard, the estimated duration of flight, and the projection of fuel consumption as part of the preflight procedures.

## 2.4 Human Requirements

People execute policies and procedures, and responsibilities, duties and authorities define their role.

### Responsibility

Responsibility involves the requirement to actually perform certain work. The responsible person must be trained and competent. There must be a way for the responsible person to take appropriate action when performance or conduct requires, such as counseling, training, re-qualification, discipline or removal of the person to whom authority has been delegated.

### Authority

Authority is the power vested to an individual. To be effective, the assigned responsibility must include commensurate authority. Authority does not have to be absolute, but it does have to be effective. Training must include limitations of authority.

Authority should be documented in employees' personnel records as well as the policy manual. This allows others to recognize their authority and to establish the transfer of authority from the responsible person to the employee.

### Duty

Duty is something a person o*ught to do*. It is a moral, ethical obligation to act. For example, all employees have the duty to report unsafe conditions. To be effective, a single method of reporting should be established to ensure that information is effectively managed. Every person's duties should be identified and the methods that they should use to execute those duties should be described.

Duties apply to persons at every level of an organization. Some may have long-term safety impact, such as the duty of mechanics to accurately maintain aircraft records. Some duties are immediate such as a medical technician's duty to waive off a landing due to an unsafe condition on a landing pad. Some duties are described at a higher level i.e. management's duty to maintain a safe work place, and that duty is tied to their responsibilities and authority.

The organization must train their personnel in their duties and authority. The duties and authorities should be spelled out in a short position description. The owner's or CEO's oversight may simply occur through day-to-day contact and could include onsite training. The goal should be to build a SMS that has well balanced duties, responsibilities and authorities.

# CHAPTER 3

# IMPLEMENTING A SMS

Integrating a coherent SMS can be done in incremental steps. This allows the organization to become acquainted with the requirements and results before proceeding to the next step. The following checklist is a guide in validating that the attributes of a SMS are implemented. Also included is a sample SMS that can be adopted for a small organization:

## Management Plan

- □ Policies, objectives and requirements of the SMS are published
- □ Organizational structure and key individuals and responsibilities are defined
- □ Elements of the SMS are defined
- □ Expectations and objectives of the SMS are conveyed to employees
- □ A method to identify and maintain compliance with safety and regulatory requirements

## Safety Promotion

- □ Senior management's commitment to the SMS published
- □ Senior management visibly demonstrates their commitment to SMS
- □ Outputs of the SMS is communicated to all employees
- □ Initial and recurrent training is provided to all personnel
- □ Competency requirements are defined for those individuals in key positions
- □ Training requirements are documented and periodically reviewed
- □ Lessons learned are shared to promote improvement of the safety program
- □ Employee safety feedback system is established
- □ A "Just Culture" process is in place

## Document and Data Information Management

- □ Safety policies, objectives and SMS requirements publicized
- □ Safety regulations that govern the organization identified
- □ Pertinent safety and regulatory information provided to all employees
- □ Documentation describing the systems for each SMS component consolidated
- □ Change control system in place for applicable documents
- □ Personnel are educated on changes in documents
- □ Obsolete documents are promptly removed
- □ Periodic review of documents

## Hazard Identification and Risk Management

- □ Procedures exist to proactively identify potential hazards
- □ Potential hazards are considered when making changes within the organization
- □ Risk Management Plans are prioritized and approved by appropriate level of management
- □ Identified hazards are tracked for closure

## Occurrence and Hazard Reporting

- □ Employees receive feedback on reported hazards
- □ Safety data analyzed
- □ Corrective actions monitored for effectiveness
- □ Hazards are monitored to identify trends
- □ A non-punitive disciplinary policy in place for reporting hazards
- □ Provisions for anonymous submittals of hazards

## Occurrence Investigation and Analysis

- □ Investigations conducted to determine root cause
- □ Person(s) conducting the investigation technically qualified
- □ Investigations identify what can be done to prevent future occurrences
- □ Both the immediate causal factors and the contributory factors identified
- □ Investigations include looking at organizational factors
- □ Acts of "omission" and "commission" identified
- □ Investigation reports provided to manager that has accountability and authority

## Safety Assurance Oversight Programs

- □ Evaluations of operational processes conducted at regular intervals
- □ Checklists are utilized to conduct safety evaluations
- □ Contractor activities included in safety oversight programs
- □ Processes evaluated by a non-stakeholder
- □ Results and corrective actions documented
- □ Positive observations documented
- □ Findings categorized
- □ Results and corrective actions shared with all employees
- □ Available technology used

## Safety Management Training Requirements

- □ Safety orientation for all new employees
- □ Competency requirements documented
- □ Training requirements documented
- □ Regularly scheduled safety meetings
- □ Key personnel continuously educated on safety management best practices

## Management of Changes

- □ Operational procedures analyzed
- □ Changes in location, equipment or operating conditions analyzed
- □ Maintenance and operator manuals are posted with current changes
- □ Personnel are made aware of and understand any changes
- □ Level of management with authority to approve changes identified

## Emergency Preparedness and Response

- □ Plan is readily available at work stations
- □ Plan is relevant and useful
- □ Emergency response plan periodically tested
- □ Be updated when contact details change
- □ Personnel briefed on the plan and their responsibilities
- □ Training in emergency response procedures provided
- □ Responsibilities defined for immediate response personnel
- □ Responsibilities defined for secondary response personnel
- □ Responsibilities defined for site security and accident investigation
- □ Procedures for next of kin notification
- □ Procedure for claims and insurance
- □ Procedures for aircraft recovery

## Performance Measurements

- □ Safety performance monitoring used as feedback to improve the system
- □ Address individual areas
- □ Are SMART (Specific, Measurable, Achievable, Results Oriented, Timely)
- □ Linked to the organization’s business performance measures

# Safety Management System

**for**

**(XYZ) ORGANIZATION**

Approved by:

Date:

# SAFETY MANAGEMENT SYSTEM MANUAL

This Safety Management System (SMS) Manual has been developed to direct all personnel in the safe operations of the organization. The manual defines the policy that governs the operation of the organization.

SMS is a pro-active, integrated approach to safety management. SMS is part of an overall management process that the organization has adopted in order to ensure that the goals of the organization can be accomplished. It embraces the principle that the identification and management of risk increases the likelihood of accomplishing the mission. Hazards can be identified and dealt with systematically through the Hazard Reporting Program that facilitates continuing improvement and professionalism. Auditing and monitoring processes ensures that aircraft are operated in such a way as to minimize the risks inherent in flight operations.

## Safety Management Plan

Safety holds the key to this organization's future and affects everything we do.

This SMS Manual defines the organization's Safety Management Plan. The Safety Management Plan is the tool used to define how SMS supports the organization's Operations Plan. Organization management is committed to the SMS, and is required to give leadership to the program and demonstrate through everyday actions, the commitment to safety and its priority in the achievements of the organization.

The processes in place in the Safety Management Plan include the active involvement of all managers and supervisors, who, through planning and review, must continue to drive efforts for continuing improvement in safety and safety performance. The term "Safety Management" should be taken to mean safety, security, health, and environmental management. The key focus is the safe operations of airworthy aircraft.

The processes in place in the Safety Management Plan include the active involvement of all managers and supervisors, who, through planning and review, must continue to drive efforts for continuing improvement in safety and safety performance. The term "Safety Management" should be taken to mean safety, health, and environmental management. The key focus is the safe operations of airworthy aircraft.

Safety audits are essential components of the Safety Management Plan. They review systems, identify safety issues, prioritize safety issues, must involve all personnel, and enhance the safety of operations.

## Mission Statement

The Mission is to provide quality service to our customers. This includes: (describe the missions you perform).

## Safety Policy

Management is committed to providing safe, healthy, secure work conditions and attitudes with the objective of having an accident-free workplace. The organization's owner/CEO is committed to:

- Ongoing pursuit an accident free workplace, including no harm to people, no damage to equipment, the environment and property
- A culture of open reporting of all safety hazards in which management will not initiate disciplinary action against any personnel who, in good faith, discloses a hazard or safety occurrence due to unintentional conduct.
- A culture of open reporting of all safety hazards
- Support for safety training and awareness programs
- Conducting regular audits of safety policies, procedures and practices
- Monitoring industry activity to ensure best safety practices are incorporated in to the organization
- Providing the necessary resources to support this policy
- Requiring all employees to have the duty to maintain a safe work environment through adherence to approved policies, procedures, and training, and shall familiarize themselves, and comply with safety policies and procedures
- All levels of management are accountable for safety performance, starting with the owner/CEO. To be a good leader, you must be a good safety leader
- The organization is strengthened by making safety excellence an integral part of all activities

## Safety Principles

Management embraces the following safety principles:

- Always operate in the safest manner practicable
- A culture of open reporting of all safety hazards in which management will not initiate disciplinary action against any personnel, who in good faith, due to unintentional conduct, disclose a hazard or safety incident
- Never take unnecessary risks
- Safe does not mean risk free
- Everyone is responsible for the identification and management of risk
- Familiarity and prolonged exposure without a mishap leads to a loss of appreciation of risk

## Organization Structure and Safety Responsibilities

The organization's structure is described in the operations manual. The Owner/CEO is responsible for the following safety accountabilities:

- All operations are conducted in the safest manner practicable
- Ensuring the safety of all employees, customers, passengers and visitors
- Development of long-term safety objectives, including establishment of safety policies and practices
- Implementation of management systems that will establish and maintain safe work practices

The chief pilot is responsible for the following safety accountabilities:

- Ensuring all flight operations personnel understand applicable regulatory requirements, standards, and organization safety policies and procedures
- Identification and development of resources to achieve safe flight operations
- Observe and control safety systems by monitoring and supervision of aircrews
- Measure aircrew performance compliance with organization goals, objectives and regulatory requirements
- Review standards and the practices of organization personnel as they impact flight Safety

The chief of maintenance is responsible for:

- Ensuring all flight maintenance personnel understand applicable regulatory requirements, standards, and organization safety policies and procedures
- Identification and development of resources to achieve safe maintenance operations
- Observe and control safety systems by monitoring and supervision of maintenance personnel
- Measure maintenance personnel performance compliance with organization goals, objectives and regulatory requirements
- Review standards and the practices of maintenance personnel as they impact flight Safety

## Compliance with Standards

All personnel have the duty to comply with approved standards. These include organization policy, procedures, aircraft manufacturer's operating procedures and limitations, and government regulations. Research shows that once you start deviating from the rules, you are almost twice as likely to commit an error with serious consequences.

Breaking the rules usually does not result in an accident; however, it always results in greater risk for the operation, and the organization supports the principle of, "NEVER take unnecessary risks."

## Intentional Non-compliance with Standards

*Behavior is a function of consequences.* Management is committed to identifying deviations from standards and taking immediate corrective action. Corrective action can include counseling, training, discipline, grounding or removal. Corrective action must be consistent and fair.

Organization management makes a clear distinction between honest mistakes and intentional non-compliance with standards. Honest mistakes occur, and they should be addressed through counseling and training.

Research has shown that most accidents involve some form of flawed decision-making. This most often involves some form of non-compliance with known standards. Non-compliance rarely results in an accident; however, it always results in greater risk for the operation.

Organization policy agrees with the following conclusions:

- Compliance with known procedures produces known outcomes
- Compliance with standards helps guarantee repeatable results
- Bad rules produce bad results
- Complacency affects the safe operation of the aircraft and cannot be tolerated
- Standards are mechanisms for change
- The hardest thing to do, and the right thing to do are often the same thing

## Rewarding People

Reward systems are often upside down. Reinforced bad behavior breeds continued bad behavior. This is unacceptable. This organization is committed to the principle that people should be rewarded for normal, positive performance of their duties that complies with organization standards. Personnel will not be rewarded for accomplishing the mission by breaking the rules.

## Safety Promotion

Safety is promoted as a "core value." Procedures, practices and allocation of resources and training must clearly demonstrate the organization's commitment to safety. We must change the perception that the mission is what's most important no matter the risk. The following methods are used to promote safety:

- Posting the Safety Policy in prominent locations around the base of operations
- Starting meetings with a comment or review about safety issues
- Having a safety bulletin board
- Having an employee safety feedback process

## Document and Data Information Control

All safety documents are controlled through the technical library. This includes the SMS, operations, maintenance and training manuals. Change control procedures are incorporated into each of these documents.

The safety officer is responsible for maintaining safety related data, including the minutes of safety meetings, information on hazard and risk analysis, risk management, remedial action, incident and accident investigations, and audit reports.

## Hazard Identification and Risk Management

Risk management is the identification and control of risk. It is the responsibility of every member of the organization. The first goal of risk management is to avoid the hazard. The organization should establish sufficient independent and effective barriers, controls and recovery measures to manage the risk posed by hazards to a level as low as practicable. These barriers, controls and recovery measures can be equipment, work processes, standard operating procedures, training or other similar means to prevent the release of hazards and limit their consequences should they be released. The organization should ensure that all individuals responsible for safety critical barriers, controls, and recovery measures are aware of their responsibilities and competent to carry them out. The organization should establish who is doing what to manage key risks and ensure that these people and the things they should do are up to the task.

The systematic identification and control of all major hazards is foundational. The success of the organization depends on the effectiveness of the Hazard Management Program.

Hazards are identified through employee reporting, safety meetings, audits and inspections.

The organization owner/CEO is responsible for accepting or denying operations, and manages risk through the Risk Assessment Matrix (RAM).

When a major change in operations, equipment or services is anticipated, the management of change process should include hazard identification and risk management processes.

The RAM is a graphic portrayal of risk as the product of probability on one axis (exposure, frequency or likelihood) and potential consequence on the other axis (loss generated from the outcome).

The Risk Assessment Matrix shows an assigned value, and has a broad application for qualitative risk determination as well as graphically presenting risk criteria.

The data from the risk assessment(s) is entered into the risk assessment form and is maintained by the chief pilot. These risk assessment forms make up the list of hazards for the organization.

PROBABILITY

| SEVERITY | FREQUENT | PROBABLE | OCCASIONAL | REMOTE | IMPROBABLE |
|---|---|---|---|---|---|
| I - CATASTROPHIC | 1 | 2 | 4 | 8 | 12 |
| II - CRITICAL | 3 | 5 | 6 | 10 | 15 |
| III - MARGINAL | 7 | 9 | 11 | 14 | 17 |
| IV - NEGLIGIBLE | 13 | 16 | 18 | 19 | 20 |

## Risk Assessment Forms

| RECORD OF ASSESSMENT | | | |
|---|---|---|---|
| Ref. No. | | | |
| Base:<br>Section/Department: | | Type of harm: | |
| Work Activity: | | Injury | |
| Team: | | Damage to environment | |
| | | | |
| Assessor Name: | Signature: | | |
| Date of Assessment: | Review date: | | |
| Employees at risk: | | | |
| | | | |
| Others who may be at risk: | | | |
| | | | |
| | | | |
| IF ADDITIONAL CONTROL MEASURES ARE REQUIRED, CAN THEY BE IMPLEMENTED IMMEDIATELY | | | YES / NO |
| IF NO, SUMMARISE ACTION PLAN BELOW | | | |
| Action required: | Target Date | Action by: | Completed by (Name & Date) |
| | | | |
| Date for full implementation of control measures: | | | |
| Assessment accepted by: (relevant manager): | | | |
| Title: | | | |
| Date: | | | |

## RISK ASSESSMENT

| Hazards/Risks | Severity | Probability | Risk Rating | Additional control measures required | Residual Risk Rating | | |
|---|---|---|---|---|---|---|---|
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* Including existing physical preventative measures (e.g. interlocks, guards, mechanical controls etc.)

## Occurrence and Hazard Reporting

All occurrences and hazards identified by an employee shall be reported to the safety officer using the HAI web based reporting system called the Event Reporting System, found at www.eventreporting.org. If employees are unable to report through that web site, they may report all occurrences and hazards identified on the below Occurrence and Hazard Report.

# Occurrence and Hazard Identification Report

The purpose is to assure that intervention prevents reoccurrence.

____Occurrence Report ____Hazard Identification Report

1. Date:_____ 2. Time:_____ 3. Location:_____

4. Employee name: _____

5. Event or unsafe act(s) observed:_____

_____

_____

6. Injuries/Illnesses experienced: _____

_____

_____

7. Corrective action(s) taken: _____

_____

_____

8. Occurrence: ☐ First ☐ Second ☐ Third

9. Distribution: ☐ Employee ☐ Base Manager ☐ VP Safety ☐ B.S.C.

10. Comments/recommendations

11. Comments/Recommendations:

Safety Officer's Signature: _____ Date: _____

## Occurrence - Definition

An occurrence is defined as: Any unplanned safety related event, including accidents and incidents that could impact the safety of guests, passengers, organization personnel, equipment, property or the environment.

## Hazard - Definition

A hazard is defined as: Something that has the potential to cause harm to a persons, loss of or damage to equipment, property or the environment.

## Occurrences

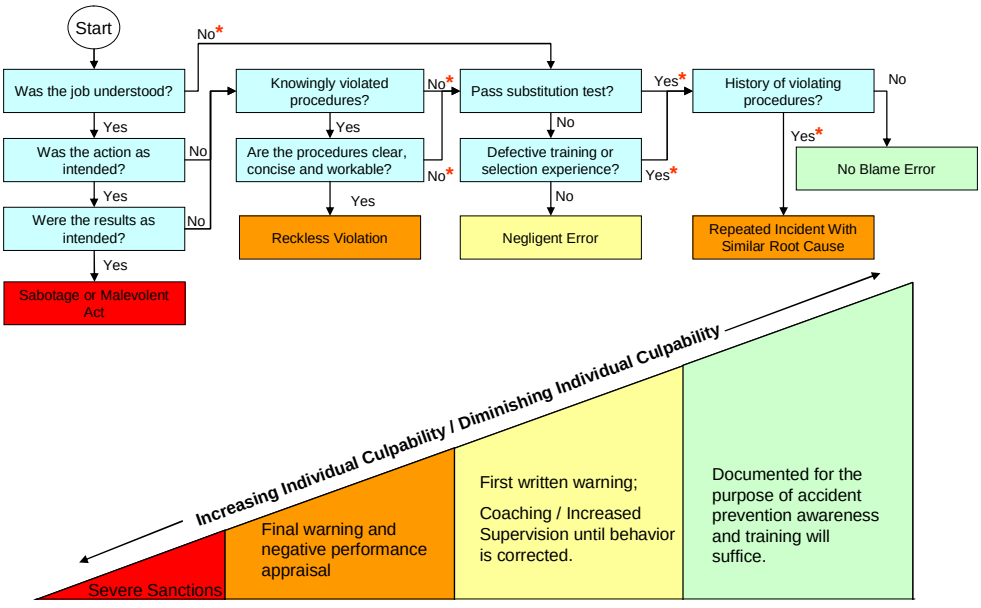
The chief pilot is responsible to ensure all relevant comments from other managers and agreed actions are recorded in the report. Reports are closed when all actions have been taken. Occurrences shall be reviewed in the monthly meeting.

Personnel may anonymously report hazards using the same report.

Personnel who report shall be treated fairly and justly, without punitive action from management except in the case of known reckless disregard for regulations and standards, or repeated substandard performance.

The "Just Culture" Process shown below is used when deciding if disciplinary action is appropriate. (For guidance in using this procedure see the IHST "SMS Toolkit" web page: www.ihst.org/SMStoolkit/).

### Just Culture Process




* Indicates a 'System' induced error. Manager/supervisor must evaluate what part of the system failed and what corrective and preventative action is required. Corrective and preventative action shall be documented for management review.

## Occurrence Investigation and Analysis

Significant occurrences are investigated by the safety officer or his designee, and shall be reviewed by the owner/CEO.

The safety officer reviews the database for previous occurrences in order to identify trends.

For human error in maintenance operations, the MEDA checklist shall be used. For human error in flight operations, the HFACS checklist shall be used. These checklists are posted on the IHST "SMS Toolkit" web page www.ihst.org/SMStoolkit/.

## Safety Assurance Oversight Programs

The organization conducts monthly base inspections. Records of base inspections and the resolution of actions are maintained by the safety officer. Issues identified in inspections are included in the agenda of the Safety Meeting. The safety officer is responsible for storing these documents.

The safety officer directs annual audits of the SMS. A sample checklist for audits can be found on the IHST website. Findings and associated corrective actions shall be recorded in the audit.

The safety officer should manage and store audit reports, which include findings and recommended corrective actions. Positive findings should also be recorded. Findings and recommended actions should be communicated to all personnel. A sample audit checklist can be found on the IHST website.

## Safety Management Training Requirements

Employees shall receive SMS training, including:

- Organization commitment to safety
- Organization's Safety Policy
- Employee's role in the SMS
- Process for reporting occurrences
- Applicable emergency procedures

## Minimum Safety Training Requirements

| Type of Safety Training | Affected Personnel | Validity |
|---|---|---|
| Introduction SMS training | All employees | N/A |
| First Aid | One attendant per location | 2 years |
| WHMIS | Engineers, stores | 2 years |
| Job Specific Safety Training | Affected Personnel | N/A |

## Optional Safety Training Requirements

| | |
|---|---|
| Fire Fighting (basics) | All personnel |
| WHMIS | Pilots/crewmembers |
| Periodic SMS Refresher Training | All employees |

Employee training files shall include the below form to record training, the date that training is next due, and the means of demonstrating competency, verbal or written as determined by the chief pilot. Training records shall be kept in the personal file of all personnel. The chief pilot is responsible for reviewing training files in order to ensure recurrent training is conducted on a timely basis.

# Safety and SMS Training Form

**EMPLOYEE NAME: _____ BASE: _____**

**INSTRUCTION DONE BY:_____DATE: _____**

1) Course taught:_____

2) Date recurrent training due:_____

3) Method of confirming competency and score:_____

4) Comments and areas for improvement: _____

_____

In signing below, I agree that I have taken _____training

EMPLOYEE SIGNATURE: _____ DATE: _____

## Management of Change (MOC)

Procedures are established and maintained to manage changes associated with safety.

The systematic approach to managing and monitoring organizational change is part of the risk management process. Safety issues associated with change are identified and standards associated with change are maintained during the change process.

Procedures for managing change include:

- Risk assessment
- Identification of the goals and objectives and nature of the proposed change
- Operational procedures are identified
- Changes in location, equipment or operating conditions are analyzed
- Maintenance and operator manuals are posted with current changes
- All personnel are made aware of and understand changes
- Level of management with authority to approve changes identified
- The responsibility for reviewing, evaluating and recording the potential safety hazards from the change or its implementation
- Approval of the agreed change and the implementation procedure(s)

The MOC process has 4 basic phases: screening, review, approval and implementation. Both the effect of change and the effect of implementing change are considered.

There are methods for managing the introduction of new technology. All personnel should be consulted when changes to the work environment, process or practices could have health or safety implications. Changes to resource levels and competencies associated risks are assessed as part of the change control procedure.

Figure 1-3 describes the MOC process used by this organization.

## MOC Process

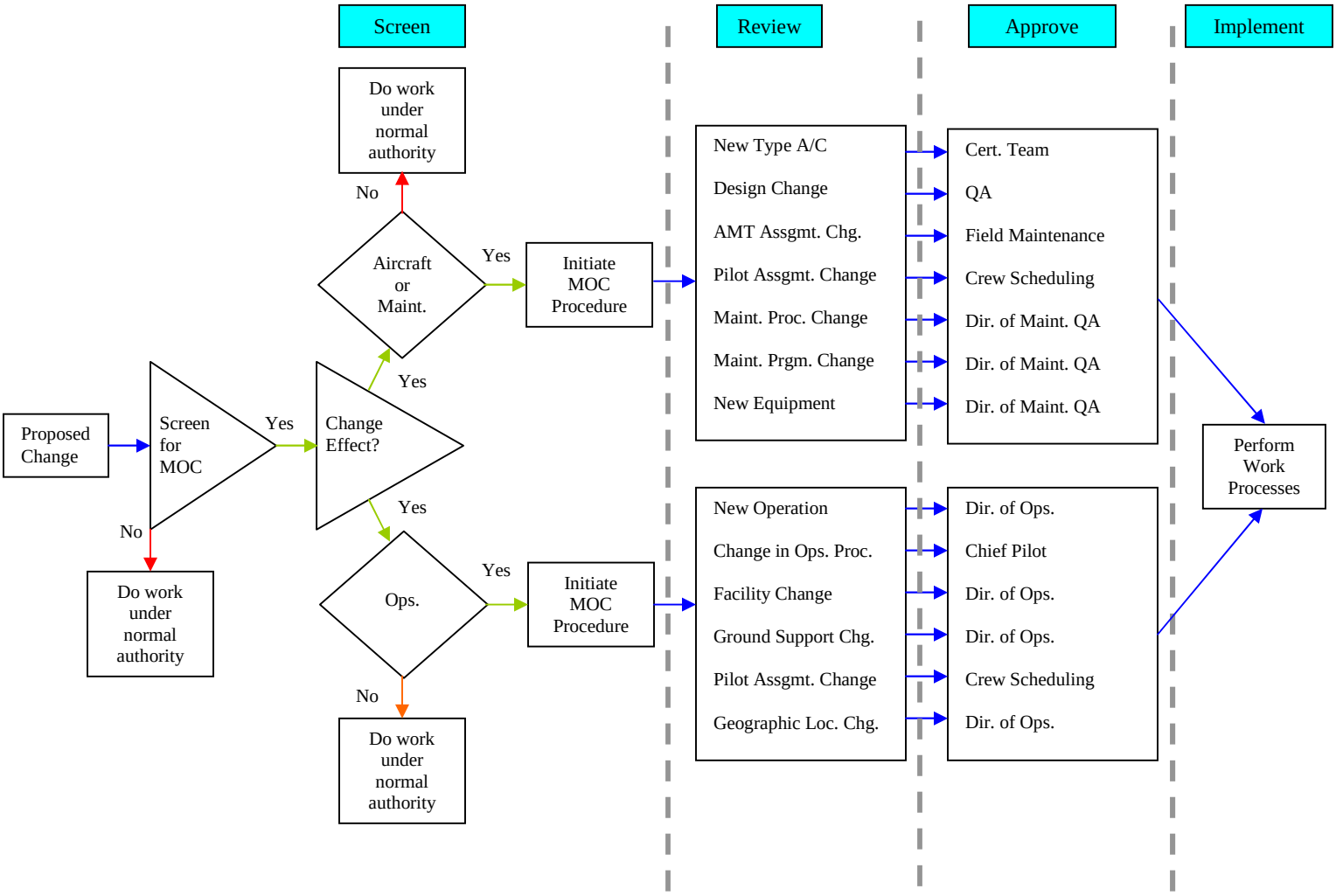



Figure 1 - 3

## Emergency Preparedness and Response

The detail of the emergency response plan is contained in the Operations Manual.

The chief pilot is responsible for assuring that all personnel are trained to handle organization emergencies based on their role in the organization.

Emergency drills shall be conducted at least annually to ensure employees are competent.

Emergency contact numbers shall be posted and kept current at every organization telephone.

## Performance Management

Continual improvement and exemplary service to our customers is a “core value.” Safety performance is measured by the following performance measures:

- Reduce the number incidents that cause damage and the amount of damage
- Reduce the number of Incidents per 1,000 hours flown
- Reduce the number of Injuries to organization personnel, guests and passengers
- Increase the number of actions raised from safety meetings
- Reduce the number of “near-miss” events
- Reduce the number of non-compliances with standard flight operations procedures as measured by observation or flight data monitoring.
- Increase compliance with the safety incident management process (reporting, classification, root cause investigation, and implementation of corrective actions).
- Reduce the number of non-compliances with standard flight operations procedures as measured by observation or flight data monitoring.
- Reduce the number of non-compliances with standard flight operations procedures as measured by observation or flight data monitoring.

The chief pilot is responsible for ensuring organization performance is annually reviewed and employees are adequately informed of the results of the review.

# APPENDIX RESOURCE GUIDE

## SMS MANAGEMENT PLAN

- Policy Statements
- Objectives
- Duties and Responsibilities
- Competency Requirements
- SMS Manual
- “Just Culture”
- Core Values
- Resource Material

## SAFETY PROMOTION

- Safety Communications (memos, newsletters, posters)
- Safety Performance Reports
- Employee Feedback System
- Safety Training
- Resource Material

## DOCUMENT and DATA MANAGEMENT

- Safety Promotion in SMS Manual
- Document Control
- Data Management
- Resource Material

## HAZARD IDENTIFICATION and RISK MANAGEMENT

- Change Management
- Hazard Tracking and Resolution

## RISK ASSESSMENT TOOLS

- Safety Case

**OCCURRENCE and HAZARD REPORTING**

- "Just Culture" Process
- Reporting Systems, Forms, Feedback
- Resource Material

**OCCURRENCE INVESTIGATION and ANALYSIS**

- Investigative Tools
- Resource Material

**SAFETY ASSURANCE OVERSIGHT PROGRAMS**

- Audit Checklists
- Audit Report Forms
- Communication of Major Findings
- Resource Material

**SAFETY MEETING TRAINING REQUIREMENTS**

- Orientation Checklists
- Training Tracking System
- Safety Meeting Agendas
- Resource Material

**MANAGEMENT of CHANGES**

- MOC Flowchart and Form
- Resource Material

**EMERGENCY PREPAREDNESS and RESPONSE**

- ERP Checklist
- Drill Checklist
- Resource Material

## PERFORMANCE MEASURES

- Key Performance Indicators
- Resource Materials

## SMS RESOURCE MATERIALS

- Resource Materials