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## SAFETY MANAGEMENT SYSTEM (SMS)

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LEGAL CAUTION
The material contained in this training program is based on the information obtained from current national, international and company regulations and it is to be used for training purposes only. At the time of designing this program contained then current information. In the event of conflict between data provided herein and that in publications issued by the authority, the authority shall take precedence.

INTRODUCTION
A Safety Management System (SMS) is a formal safety process that can be recognized throughout the organization and consists of many parts. The purpose of this program is to introduce the basic concepts of how the SMS process works with an aviation organization.

We will discuss;
(Reference ICAO SMM 9859 3rd. Edition.)

SAFETY MANAGEMENT SYSTEM (GENERAL)

SAFETY POLICY & OBJECTIVES
- Management Commitment & Responsibility
- Safety Policy Statement
- Safety Accountabilities
- Appointment of key personnel
- SMS Documentation

SAFETY RISK MANAGEMENT
- Hazard Identification
- Risk Assessment Mitigation
- System Safety
- Serious Incident and Accident

SAFETY ASSURANCE
- Safety Performance Monitoring and Measurement
- The Management of Change
- Continuous Improvement of the Sms
- Report and Data
- Safety Culture

SAFETY PROMOTION
- Training & Education
- Safety Communication

In the US, the FAA has a requirement for FAR Part 121 and 135 operators to have an SMS program in place in order to operate both domestically and internationally. FAR Part 91 operators have no requirement at this time for an SMS program for domestic operations. Beginning 18 November 2010, Part 91 operators must have an SMS program in place in order to operate in ICAO States; under the provision of Annex 6, Section II. The International Business Aircraft Council (IBAC) provides certification of an SMS program.
that meets Annex 6, Section II standards under the provision of the International Standard of Business Aircraft Operators (IS-BAO) implementation and audit program. Operators without IS-BAO certification will have to provide some proof of an SMS program during Safety Audit Foreign Aircraft (SAFA) ramp checks. At present, an SMS program is required for aircraft registered in Canada and Bermuda. Prior to 18 November 2010, non-Canadian and Bermuda registered Part 91 aircraft can operate into all other countries without an SMS program. After that date, aircraft operating into international destinations without proof of an SMS program can be fined, detained, have their aircraft seized and be subject to other civil and criminal penalties for the crew, passengers and owners of the aircraft or corporations.

SAFETY MANAGEMENT SYSTEM

Safety is the state in which the risk of harm to person or property damage is reduced to and maintained at or below an acceptable level through a continuing process of hazard identification and risk management.

Policy Clear Management Commitment to improve ‘SAFETY’ performance and adopt an effective SMS.

WHAT IS SAFETY MANAGEMENT SYSTEM (SMS)

Safety Management System is a process in the company organization that we can make an effective decision in the event of daily flow of operating activities including entertain a risk.

SMS Combines SAFETY & EFFICIENCY;
SMS is a formal program starting at the top with the “Accountable Manager”;
SMS is fully integrated into the normal management channels;
SMS is PROACTIVE in its Risk management;
Actively involves all personnel in a Safety Process.

SMS IS FOCUSED ON

To catch up with the highest level opportunities, SMS’s focus point is to improve the aviation safety system continuously.

WHAT IS THE KEY /MAIN PHASE OF SMS

Hazard Identification. (Establishing Reporting Methods &Collection of Safety issues.)
Event Reporting System &Acquire Safety Data

SAFETY GOALS & SAFETY MANUAL

Safety Management Manual (SMM): is certainly desirable, they are unachievable goals in open and dynamic operational contexts. Hazards are integral components of aviation operational contexts.
Failures and operational errors will occur in aviation, in spite of the best and most accomplished efforts to prevent them.
No human activity or human-made system can be guaranteed to be absolutely free from hazards and operational errors.
Safety Goals are:
Zero Accident or serious Incident,
Freedom from Danger,
Error Avoidance,
Regulatory Compliance,
Controlled Risk an Error is Acceptable in an inherently Safe System,
To Reduce Safety Risk Resulting from Flight, Ground and Technical Operations activities, to a level As Low As reasonably achievable.

WHAT ARE THE BENEFITS OF SMS
Provides correct & knowledgeably decisions;
Provides mitigation of Accident Risk so increase to safety issues;
Provides better planning of sources for increasing production & low cost;
Reinforce the company Safety Culture (Just Culture) & comprehensive situation assessment.

WHAT’S THE DIFFERENCE BETWEEN” SMS AND QMS
SMS focuses on safety matters of organization,
QMS focuses on production and services of organization,
While QMS evaluates compliance, SMS interested in the hazard. Findings and hazard may affect safety,
Both two system boost the safety and they are out of cost and basic managements,
If QMS principle doesn’t exist, SMS won’t be effective.

WHAT’S THE DIFFERENCE BETWEEN FLIGHT SAFETY AND
Flight Safety Management is proactive and it includes the hazards, risks and risk controls which affects the whole organization.
Safety Management System is reactive and generally it focuses on one part of the system.

SAFETY MANAGEMENT STRATEGIES
SAFETY POLICY & OBJECTIVES

MANAGEMENT COMMITMENT AND RESPONSIBILITY
In any organization, management controls the activities of personnel and the use of resources for the delivery of a product or service. The organization’s exposure to safety hazards is a consequence of these activities. Management mitigates the related safety risks by:

a. Setting the organizational priorities and tasking;
b. Implement the SMS phases
c. Prescribing procedures on how to perform activities or processes;
d. Improvement SMS and Just Culture continuously & adhere to SMS;
e. Hiring, training and supervising employees;
f. Procuring equipment to support the service-delivery activities.
g. Using the skills of its personnel; and
h. Allocating the necessary resources.

SAFETY POLICY STATEMENT
Safety is one of core business functions. We are committed to developing, implementing, maintaining and constantly improving strategies and processes to ensure that all our aviation activities take place under a balanced allocation of organizational resources, aimed at achieving the highest level of safety performance and meeting national and international standards while delivering our services. All levels of management and all employees are accountable for the delivery of this highest level of safety performance, starting with the Executive Director.

Our commitment is to:

- **Support** the management of safety through the provision of all appropriate resources and just culture system that will result in an organizational culture that fosters safe practices, encourages effective safety reporting and communication, and actively manages safety with the same attention to results as the attention to the results of the other management systems of the organization;

- **Enforce** the management of safety as a primary responsibility of all managers and employees;

- **Clearly** define for all staff, managers and employees alike, their accountabilities and responsibilities for the delivery of the organization’s safety performance and the performance of our safety management system;

- **Establish and operate** hazard identification and risk management processes, including a hazard reporting system, in order to eliminate or mitigate the safety risks of the consequences of hazards resulting from our operations or activities to a point which is as low as reasonably practicable (**ALARP**).
• **Ensure** that no action will be taken against any employee who discloses a safety concern through the hazard reporting system, unless such disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or willful disregard of regulations or procedures;

• **Comply** with and, wherever possible, exceed, legislative and regulatory requirements and standards;

• **Ensure** that sufficient skilled and trained human resources are available to implement safety strategies and processes;

• **Ensure** that all staff are provided with adequate and appropriate aviation safety information and training, are competent in safety matters and are allocated only tasks commensurate with their skills;

• **Establish and measure** our safety performance against realistic safety performance indicators and safety performance targets;

• **Continually improve** our safety performance through management processes that ensure that relevant safety action is taken and is effective;

• **Ensure** externally supplied systems and services to support our operations are delivered meeting our safety performance standards.

SAFETY ACCOUNTABILITIES

In the Safety Management System accountability responsible for taking corrective actions, either due to the reporting of hazards and errors, as well as in response to accidents and incidents. The Accountable Executive is also responsible for the organization’s ability to learn from the analysis of data collected through its safety reporting system.

SMS, including responsibility to provide the resources essential to its implementation and maintenance. The accountable executive’s authorities and responsibilities include but are not limited to:

*Full authority for human resources issues,*

*Authority for major financial issues,*

*Direct responsibility for the conduct of the organizations affairs,*

*Final authority over operational under its certificate and/or approval,*

*Establishment and promotion of the safety policy,*

*Establishment of the organizations safety objectives and safety targets,*

*Acting as the organizations safety champion,* and

*Having final responsibility for the resolution of all safety issues.*

**LETS REVIEW THE TABLE**
APPOINTMENT OF KEY SAFETY PERSONNEL

The safety manager, in most organizations, will be the person to whom the Accountable Executive has assigned the day-to-day management functions of the SMS. The safety manager is the responsible individual and focal point for the development and maintenance of an effective SMS.

The safety manager functions include, but are not necessarily limited to:
- Managing the SMS implementation plan on behalf of the Accountable Executive;
- Performing/facilitating hazard identification and safety risk analysis;
- Monitoring corrective actions and evaluating their results;
- Providing periodic reports on the organization’s safety performance;
- Maintaining records and safety documentation;
- Planning and organizing staff safety training;
- Providing independent advice on safety matters;
- Monitoring safety concerns in the aviation industry and their perceived impact on the organization’s operations aimed at service delivery;
- Coordinating and communicating (on behalf of the Accountable Executive) with the State’s oversight authority and other State agencies as necessary on issues relating to safety; and
- Coordinating and communicating (on behalf of the Accountable Executive) with international agencies on issues relating to safety.

THE EMPLOYEE ROLE

a) Know and understand the requirement of SMS particularly, to access non-punitive provisions;

b) Be knowledgeable in operations and report deviance or concerns;

c) Demand feedback and an explanation for action or inaction;
d) Be a part of the safety team and work with other employees and managers to continually improve the SMS; All Personnel have the responsibility to identify and report hazards promptly.

WHAT DOES IT TAKE FOR SMS Commitment;
In the face of operational and commercial pressures company leaders must have the will to make safety management tools work effectively.
*Cognizance (knowledge)
The leaders must understand the nature and principles of managing safety.
*Competence
Safety manager policy and procedures must be appropriate, understood and properly applied at all levels in the organization.

EMERGENCY RESPONSE PLAN (ERP) & FAMILY ASSISTANCE

EMERGENCY RESPONSE PLAN (ERP)
An emergency response plan (ERP) documents actions to be taken by all responsible personnel during aviation related emergencies. The purpose of an ERP is to ensure that there is an orderly and efficient transition from normal to emergency operations, including assignment of emergency responsibilities and delegation of authority. Authorization for action by key personnel is also contained in the plan, as well as the means to coordinate efforts necessary to cope with the emergency. The overall objective is to save lives, the safe continuation of operations and the return to normal operations as soon as possible.

FAMILY ASSISTANCE
The ERP should also include guidance on the organizations approach to assisting crisis victims or customer organizations. This guidance may include such things as:
1) State requirements for the provision of assistance services;
2) Travel and accommodation arrangements to visit the crisis site;
3) Programme coordinator and point’s of contact for victims/customers;
4) Provision of up to date information;
5) Temporary assistance to victims or customers;

SMS DOCUMENTATION
SMS is that all safety management activities are required to be documented and visible. The SMSM is a key instrument for communicating the organization’s approach to safety to the whole organization. It documents all aspects of the SMS, including the safety policy, objectives, procedures and individual safety accountabilities.

SAFETY RISK MANAGEMENT

HAZARD IDENTIFICATION
Consist of recognizing the HAZARD and defining its characteristic.
HAZARD IDENTIFICATION METHODS
*Observe, Interview, Investigate, brainstorm, group discussion (expert panels), review relevant data, Employee reports, complaints, company policies & SOP’s, practices, injury reports, operational engineering & maintenance data, internal - external survey audits, safety reporting systems, data searches, accident/incidents reports.

**DURING IDENTIFICATION**

**Examples of Sources for Identifying Hazards:**
* Flight Operations Data Analysis / Flight Data Monitoring,  
* Flight Reports,  
* Cabin Reports,  
* Maintenance Reports,  
* Confidential Safety Reports,  
* Operations Control Reports,  
* SANA/SAFA (safety audit national/foreign A/C),  
* Crew Surveys,  
* Crew Observation (LOSA) ,  
* Investigation and hearings,  
* Quality Assurance Programme ,  
* Training records,  
* Safety Reporting,  
* Safety (& Quality) Audits / Assessments,  
* Safety Culture monitoring through surveys,  
* Company voluntary reporting system,  
* Audits and surveys,  
* IOSA reports.

**DOCUMENTATION OF HAZARDS**

Appropriate documentation management regarding hazard identification is important as a formal procedure to translate raw operational safety information into hazard related knowledge. Continuous compilation and formal management of this hazard related knowledge becomes the "safety library" of an organization.
RISK ASSESSMENT MITIGATION
Safety risk management is a generic term that encompasses the assessment and mitigation of the safety risks of the consequences of hazards that threaten the capabilities of an organization, to a level as low as reasonably practicable (ALARP). The systematic allocation of resources to acceptable levels RISK MANAGEMENT comes from the financial area while SYSTEM SAFETY came from the engineering area.

SYSTEM SAFETY
System Safety is:
The application of special, technical and managerial skills to the systematic, forward-looking identification and control of hazards throughout the life cycle of project, program or activity calls for safety analyses and hazard control actions, beginning with the conceptual phase of a system continuing through the design, production, testing, use and disposal phases until the activity is retired.

System Safety Process:
*Analyses hazard (cause, effect, and consequence analysis),
*Asses associated risk (severity probability),
*Asses current or planned mitigation (system defenses) and make recommendations where necessary or appropriate,
*Perform continual, real-time, system monitoring and evaluation to verify that planned actions are in place,
*Do ‘loss’ investigation when necessary.

RISK ASSESSMENT STEPS
‘RISK’ means that we have added the aspect of assessing severity and probability of the possible consequence of a hazard assess the probability or likelihood of the loss occurring(some call this exposure) develop risk statement which outline the consequence in terms of probability and severity compare and rank the RISKS.

RISK QUESTIONS?
*How can it happen here?
*If it does, how often and how severe?
*How will it be prevented?
*Will it create more problems if I fix it?
The Process Of Safety Risk Management

Equipment, procedures, organization, etc. → Hazard identification

Analyze the likelihood of the consequence occurring → Risk analysis probability

Evaluate the seriousness of the consequence if it does occur → Risk analysis severity

Is the assessed risk(s) acceptable and within the organization’s safety performance criteria? → Risk assessment and tolerability

Yes, accept the risk(s). → Risk control/mitigation

No, take action to reduce the risk(s) to an acceptable level.

Safety Risk Probability Table

<table>
<thead>
<tr>
<th></th>
<th>Meaning</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Frequent</td>
<td>Likely to occur many times (has occurred frequently)</td>
<td>5</td>
</tr>
<tr>
<td>Occasional</td>
<td>Likely to occur sometimes (has occurred infrequently)</td>
<td>4</td>
</tr>
<tr>
<td>Remote</td>
<td>Unlikely to occur, but possible (has occurred rarely)</td>
<td>3</td>
</tr>
<tr>
<td>Improbable</td>
<td>Very unlikely to occur (not known to have occurred)</td>
<td>2</td>
</tr>
<tr>
<td>Extremely improbable</td>
<td>Almost inconceivable that the event will occur</td>
<td>1</td>
</tr>
</tbody>
</table>
Let's review the safety risk assessment matrix

<table>
<thead>
<tr>
<th>Risk probability</th>
<th>Risk severity</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Catastrophic A</td>
</tr>
<tr>
<td>Frequent</td>
<td>5A</td>
</tr>
<tr>
<td>Occasional</td>
<td>4A</td>
</tr>
<tr>
<td>Remote</td>
<td>3A</td>
</tr>
<tr>
<td>Improbable</td>
<td>2A</td>
</tr>
<tr>
<td>Extremely improbable</td>
<td>1A</td>
</tr>
</tbody>
</table>

**Safety Risk Management**

- **Intolerable region**: The risk is unacceptable at any level.
- **Tolerable region**: The risk is acceptable based on mitigation. Cost-benefit analysis is required.
- **Acceptable region**: The risk is acceptable as it currently stands.
Let's review the Safety Risk Mitigation Process

RISK VALUE JUDGEMENTS
At same stage, organizational values and subjective judgments enter the decision-making process and one must consider the:
* Importance of the estimated risk against shared values,
* Associated social, environmental and economic considerations,
* The potential cost of acting not acting.

RISK CONTROL ACTIONS
* Accept the RISK,
* Accept the RISK with operational changes,
* Reduce the severity of the RISK should it be realized,
* Reduce the probability of the RISK occurring,
* Remove hazard that lead to RISK,
* Refer the system safety order of control actions,
* Verify implementation of control actions.
* COMMUNICATE * COMMUNICATE * COMMUNICATE

SERIOUS INCIDENT & ACCIDENT
ACCIDENT CAUSATION (THE-REASON –MODEL)
Industry-wide acceptance of the concept of the organizational accident was made possible by a simple, yet graphically powerful, model developed by Professor James Reason, which provided a means for understanding how aviation (or any other production system) operates successfully or drifts into failure. According to this model,
accidents require the coming together of a number of enabling factors — each one necessary, but in itself not sufficient to breach system defenses. Because complex systems such as aviation are extremely well-defended by layers of defensesin-depth, single-point failures are rarely consequential in the aviation system Equipment failures or operational errors are never the cause of breaches in safety defenses, but rather the triggers. Breaches in safety defenses are a delayed consequence of decisions made at the highest levels of the system, which remain dormant until their effects or damaging potential are activated by specific sets of operational circumstances. Under such specific circumstances, human failures or active failures at the operational level act as triggers of latent conditions conducive to facilitating a breach of the system’s inherent safety defenses. In the concept advanced by the Reason model, all accidents include a combination of both active and latent conditions

LATENT CONDITIONS
Decisions or action-who’s damaging consequences may lie dormant for a long time and only become evident when they combine with triggering mechanism to breach the system’s defenses.
INFLUENCING / CREATING LATENT CONDITION
Latent Conditions are affected by:
* How corporate decisions are made,
* Corporate climate and values,
* Corporate priorities,
* Who influence the decision-making chain?
They may be hidden if:
* The decision-making process is not recorded,
* Results are not measuring against expectations.

ERROR & VIOLATION
A person who willingly deviates from rules, procedures or training received while accomplishing a task commits a violation. Thus, the basic difference between errors and violation is intent.

EVALUATION OF SAFETY

THE SAFETY ERAS

1 The Machine (Technical) Period (1910-1960's)
   - Fly – fix- fly.
   - Quick development of safety fixes- hardware based.
   - Improvements to engines, airframe, system, design and airworthiness standards.
   - Responded to high incidence of mechanical-based accidents.
   - For people, the “Blame and Train "philosophy.

2 The Human Period (1960's-1970's)
   - Focus on man/machine interface.
   - Ergonomics, crew resource management, pilot decision making.
   - Improved selection, training.
   - Emphasis on inter-relationships.
   - Response to the 70-80% "human factor "accidents.

The Organizational Period (1970's-1990's)
   - Focus on organization and management.
   - Response to underlying factors which "set up" accident potential.
• The Reason model of organization failure.
• Attempt to explain why accidents continue to occur and identify organization influences.

SAFETY ASSURANCE

SAFETY PERFORMANCE MONITORING AND MEASUREMENT

The primary task of safety assurance is control. This is achieved through safety performance monitoring and measurement, the process by which the safety performance of the organization is verified in comparison with the safety policy and approved safety objectives.

The following provides a list of generic aspects or areas to be considered to “assure safety” through safety performance monitoring and measurement:

Responsibility, Authority, Procedures, Controls, Interfaces, Process measures.

a) Responsibility: Who is accountable for management of the operational activities (planning, organizing, directing, controlling) and its ultimate accomplishment.

b) Authority: Who can direct, control or change the procedures and who cannot as well as who can make key decisions such as safety risk acceptance decisions.

c) Procedures: Specified ways to carry out operational activities and that translate the “what” (objectives) into “how” (practical activities).

d) Controls: Elements of the system, including, hardware, software, special procedures or procedural steps, and supervisory practices designed to keep operational activities on track.

e) Interfaces. An examination of such things as lines of authority between departments, lines of communication between employees, consistency of procedures, and clear delineation of responsibility between organizations, work units and employees.

f) Process measures. Means of providing feedback to responsible parties that required actions are taking place, required outputs are being produced and expected outcomes are being achieved.

THE MANAGEMENT OF CHANGE

Aviation organizations, including regulatory authorities, experience change due to expansion and contraction as well as changes to existing systems, equipment, policies, programmes, services and regulations.

The management of safety risks resulting from change should take into account the following three considerations:

Criticality of systems and activities,
Stability of systems and operational environment,
Past performance.
CONTINUOUS IMPROVEMENT OF THE SMS
Continuous improvement is measured through the monitoring of an organization’s safety performance indicators and is related to the maturity and effectiveness of an SMS. Safety assurance processes support improvements of the SMS through continual verification and follow up actions. These objectives are achieved through the application of internal evaluations and independent audits of the SMS.

a. **Internal evaluations** involve assessment of the aviation activities that can provide information useful to the organization’s decision making processes. The internal evaluation function includes evaluation of safety management functions, policymaking, safety risk management, safety assurance and safety promotion throughout the organization.

b. **Internal audits** involve the systematic & scheduled examination of the aviation activities, including those specific to implementation of the SMS. To be most effective, internal audits are conducted by persons or departments that are independent of the functions being evaluated.

c. **External audits** of the SMS may be conducted by relevant authorities responsible for acceptance of the SMS. These external audits enhance the internal audit system as well as provide independent oversight.

Continuous improvement is achieved through internal evaluations, internal and external audits and applies to:
a) Proactive evaluation of facilities, equipment, documentation and procedures, for example, through internal evaluations;
b) Reactive evaluations in order to verify the effectiveness of the system for control and mitigation of safety risks, for example, through internal and external audits and
c) Proactive evaluation of an individual’s performance, to verify the fulfillment of that individual’s safety responsibilities, for example, through periodic competency checks (form of evaluation/audit).

REPORT & DATA
THE OBJECTIVE
*To contribute to the promotion of air safety by ensuring that relevant information on safety is reported, collected, stored, protected and disseminated.
*The prevention of accident and incident and not apportion blame or liability.

REPORTING AND DATA COLLECTION
* Mandatory Reports (safety board’s/regulatory authorities/corporate)
* Voluntary Reports (national & corporate)
* Corporate Reporting Programs (what participates, what is communicated)
* Feedback requirements (evaluation of performance against expectations)
MANDATORY REPORTING
*Who must report?
*What should be reported?
*Is there any protection afforded for the person reporting?

VOLUNTARY REPORTING
*Should there be separate VOLUNTARY reporting system?
*What protection afforded to the reporter?

FLIGHT DATA MONITORING (FDM)
*Routine collection and analysis of digital data from the flight recorder.
*Company and regulator must offer impunity from punishment under certain conditions.
*Program must be approved by the regulator.
*Monitored by regular, who should only have access to de-identified data.

LINE OPERATION SAFETY AUDIT (LOSA)
*Non-jeopardy in-flight observation and assessment of flight operations,
*Threat and error management model;
-Threats are events or errors that originate outside the flight crew’s influence but require management;
-Errors are events that originate with the flight crew.

SAFETY PERFORMANCE
Performance Needs To Be Measured To;
-Validate effectiveness of system changes;
-Identify and reject ‘band aid’ solutions to respond to root causes;
-Identify new actions that need to be taken;
-Identify emerging hazards.

SAFETY CULTURE
A set of beliefs, norms, attitudes roles and social and technical practices concerned with minimizing exposure of employees, managers, customers and members of the general public to conditions considered dangerous or hazardous.
The basis of ‘culture’
*Organizational culture comes from shared values and practices,
*Shared values are ‘what is important’?
*Shared practices are ‘how things work’?

The Organizational Aim
To establish a safety culture within which constructive criticism and safety observations are encouraged and acted upon in a positive way.

A Positive ‘Safety Culture’
*an informed where;
-People understood hazard risks.
-Staff works continuously to identify and overcome threats.
*a just culture where;*
- Errors are understood but willful violations not be tolerated.
- The workforce knows and agrees on what is acceptable and unacceptable (shared values) a reporting culture where people are encouraged to voice safety concerns those concerns are analyzed and appropriate action is taken.

*a learning culture where;*
- People are encouraged to develop and apply their skills and knowledge to enhance organizational safety.
- Management updates staff issues.
- Safety reports are feedback to staff so everyone learns.

**Comparing Of Reactive Approach To A Proactive Approach**
*Accident investigations are REACTIVE*
*Incident investigations are REACTIVE*
*Error management is REACTIVE*
*Deviation analysis is REACTIVE*

- Safety reporting can be PROACTIVE
- System risk assessment is PROACTIVE
- Risk assessment of proposed operations is PROACTIVE
- Risk assessment of current operations are PROACTIVE (not triggered by incident or concern) are PROACTIVE

The SHELL Model is a conceptual tool used to analyze the interaction of multiple system components. This picture provides a basic depiction of the relationship between humans and other workplace components. The SHELL Model contains the following four components.

a) **Software (S)** (Procedures, training, support)

b) **Hardware (H)** (Machines and Equipment)

c) **Environment (E)** (the working environment in which the rest of the L-H-S system must function); and

d) **Liveware (L)** (Humans in the workplace)
THE SAFETY PROMOTION
Safety promotion involves the establishment of internal as well as external processes to provide or facilitate safety training, communication and dissemination of safety information.
Safety promotion encourages a positive safety culture, and creates an environment that is conducive to achievement of the service provider's safety objectives.

Safety promotion includes:
a) Training and education, including safety competency; and
b) Safety communication.

TRAINING AND EDUCATION
**Training requirements and activities should be documented for each area of activity within the organization,**
**Safety training within an organization must ensure that personnel are trained and competent to perform their safety management duties,**
**Safety training for operational personnel should address safety responsibilities, including following all operating and safety procedures, and recognizing and reporting hazards.**

**In addition to the training objectives established for operational personnel, training objectives for managers and supervisors should include a detailed knowledge of the safety process, hazard identification, safety risk assessment & mitigation and change management**
**Safety training for senior managers should include safety responsibilities including compliance with national and organizational safety requirements, allocation of resources, ensuring effective inter-departmental safety communication and active promotion of the SMS.**

SAFETY COMMUNICATION
The organization should communicate SMS objectives and procedures to all operational personnel, and the SMS should be visible in all aspects of the organization’s operations supporting the delivery of services. Safety performance will be more efficient if operational personnel are actively encouraged to identify and report hazards.

Safety communication therefore aims to:
a. Ensure that staff are fully aware of the SMS;
b. Convey safety-critical information;
c. Raise awareness of corrective actions and
d. Provide information regarding new or amended safety procedures;
e. Examples of organizational communication initiatives include;
f. Safety management systems manual dissemination;
g. Safety processes and procedures;
h. Safety newsletters, notice sand bulletins; and web sites or email.
SUMMARY
This program has attempted to explain what a Safety Management Program is and how it functions within an organization. We discussed: Safety Management System (General), Safety Policy & Objectives, Safety Risk Management, Safety Assurance and Safety Promotion.

End of the course.