SAFETY MANAGEMENT SYSTEM

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PREFACE

In order to achieve its production objectives, the management of any aviation organization requires to manage many business processes. Safety is one such business process. Safety Management is a core business function just as financial management, HR management, etc. The Safety Management System is a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures. Three core aspects of a SMS are:

- **Systematic** – Safety management activities are in accordance with a pre-determined plan, and applied in a consistent manner throughout the organization.
- **Pro-active** – An approach that emphasizes hazard identification and risk control and mitigation, before events that affect safety occur.
- **Explicit** – All safety management activities are documented and visible.

This manual outlines the Safety Management System at The New Bangalore International Airport. Information on Aerodrome Emergency Plan including removal of disabled aircraft and handling of hazardous material is contained in a separate manual, the "BIAL Emergency Manual". Information on rescue and fire fighting is contained in the Aerodrome Manual.

This is not a stand alone manual and must be read in conjunction with ICAO Doc 9859, ICAO Annexes 6, 11 & 14, ICAO Doc. 9774, DGCA Civil Aviation Requirements Section-4 (Aerodrome Standards & Air Traffic Services), Series 'B', Part I dated 31st July, 2006, DGCA AD AC No.1. of 2006 (Guidelines for the preparation and maintenance of the aerodrome manual), DGCA AIC No. 08 of 2004 (Licensing of Aerodromes and Safety Management System) and other relevant guidance as well as regulatory material published by ICAO and DGCA.

Nothing contained in this manual is meant to supersede any standard, order, instruction or recommendation issued by DGCA. In the event any discrepancy is noticed in the material contained in this manual and that published by the regulators, the reader is advised to bring the same to the notice of the Document Controller, Head – Aviation Safety, BIAL so that a suitable amendment can be issued.

RECORD OF AMENDMENTS

Revision Numbers	Revision Date	Initials	Name of the person	Date of Insertion	Inserted by

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Serial Numbers	Title	Department	Copy Number

SECTION 1

SAFETY OBJECTIVES AND POLICY

CHAPTER – 1
OVERVIEW

1.1 Concept of Safety

1.1.1 In order to understand safety management, it is necessary to consider what is meant by “safety”. Depending on one’s perspective, the concept of aviation safety may have different connotations.

1.1.2 While the elimination of accidents (and serious incidents) would be desirable, a one hundred per cent safety rate is an unachievable goal. Failures and errors will occur, in spite of the best efforts to avoid them. No human activity or human-made system can be guaranteed to be absolutely safe, i.e. free from risk. Safety is a relative notion whereby inherent risks are acceptable in a “safe” system.

1.1.3 Safety is increasingly viewed as a management of risks. This primary purpose of this manual is to develop a system at Bangalore International Airport for managing the core business process of Safety and to ensure compliance with all ICAO and DGCA guidelines on Safety Management. ICAO has defined the term “Safety” in Doc 9859 as follows:

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

1.2 Statutory Requirements

1.2.1 Safety has always been the overriding consideration in all aviation activities. This is reflected in the aims and objectives of ICAO as stated in Article 44 of the *Convention on International Civil Aviation* (Doc 7300), commonly known as the Chicago Convention, which charges ICAO with ensuring the safe and orderly growth of international civil aviation throughout the world.

1.2.2 In establishing States’ requirements for the management of safety, ICAO differentiates between safety programmes and safety management systems (SMS) as follows:

- A **safety programme** is an integrated set of regulations and activities aimed at improving safety. ICAO’s Standards and Recommended Practices (SARPs) (Annexes 6, 11 and 14) require that States establish a safety programme to achieve an acceptable level of safety in aviation operations. A safety programme will be broad in

scope, including many safety activities aimed at fulfilling the programme's objectives. A State's safety programme embraces those regulations and directives for the conduct of safe operations from the perspective of aircraft operators and those providing air traffic services (ATS), aerodromes and aircraft maintenance. The safety programme may include provisions for such diverse activities as incident reporting, safety investigations, safety audits and safety promotion. To implement such safety activities in an integrated manner requires a coherent SMS.

- A **safety management system (SMS)** is an organized approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures. In accordance with the provisions of Annexes 6, 11 and 14, States shall require that individual operators, maintenance organisations, ATS providers, and certified aerodrome operators implement the SMS acceptable by the state. As a minimum, such SMS shall:

  a) Identify safety hazards;

  b) Ensure that remedial actions necessary to mitigate the risks/hazards are implemented; and

  c) Provide for continuous monitoring and regular assessment of the safety level achieved.

1.2.3 An organization's SMS shall also clearly define lines of safety accountability, including a direct accountability for safety on the part of senior management.

1.2.4 DGCA, in compliance with ICAO regulations and intentions outlined above, has issued Civil Aviation requirements on 31 Jul 2006, requiring all airport operators to implement an SMS as conceived by ICAO and to comply with all provisions of ICAO Annexes 6, 11 and 14. The Airport's SMS shall also be audited by the DGCA as a part of Licensing Audits for award and renewal of the Aerodrome Operating License.

1.3 Introduction to Safety Performance indicators, Targets and Requirements

1.3.1 In any system, it is necessary to set and measure performance outcomes in order to determine whether the system is operating in accordance with expectations, and to identify where action may be required to enhance performance levels to meet these expectations.

1.3.2 The acceptable level of safety expresses the safety goals (or expectations) of an oversight authority (DGCA), an operator or a service provider. It provides an objective in terms of the safety performance operators/service providers should achieve while

conducting their core business functions, as a minimum acceptable to DGCA. It is a reference against which DGCA can measure safety performance. In determining an acceptable level of safety, it is necessary to consider such factors as the level of risk that applies, the cost/benefits of improvements to the system, and public expectations on the safety of the aviation industry.

1.3.3 In practice, the concept of acceptable level of safety is expressed by two measures/metrics i.e. safety performance indicators and safety performance targets and implemented through various safety requirements. The following explains the use of these terms:

- ***Safety performance indicators*** are a measure of the safety performance of a department. Safety indicators should be easy to measure and be linked to the major components of a company's SMS. Safety indicators will therefore differ between departments, aircraft operators, aerodrome concessionaires or ATS providers.

- ***Safety performance targets*** (sometimes referred to as goals or objectives) are determined by considering what safety performance levels are desirable and realistic for individual departments, operators, concessionaires or service providers. Safety targets should be measurable, acceptable to stakeholders, and consistent with SMS.

- ***Safety requirements*** are needed to achieve the safety performance indicators and safety performance targets. They include the operational procedures, technology, systems and programmes to which measures of reliability, availability, performance and/or accuracy can be specified.

1.3.4 The relationship between acceptable level of safety, safety performance indicators, safety performance targets and safety requirements is as follows: *acceptable level of safety* is the overarching concept; *safety performance indicators* are the measures/metrics used to determine if the acceptable level of safety has been achieved; *safety performance targets* are the quantified objectives pertinent to the acceptable level of safety; and *safety requirements* are the tools or means required to achieve the safety targets.

1.3.5 Safety indicators and safety targets may be different (for example, the safety indicator is *0.5 fatal accidents per 100 000 hours for airline operators*, and the safety target is *a 40 per cent reduction in fatal accident rate for airline operations*), or they may be the same (for example, the safety indicator is *0.5 fatal accidents per 100 000 hours for airline operators*, and the safety target is *not more than 0.5 fatal accidents per 100000 hours for airline operators*).

1.3.6 There will seldom be a national acceptable level of safety. For each airport there will be different acceptable levels of safety that will be agreed upon by the DGCA and individual operators/service providers. Each agreed acceptable level of safety should be commensurate with the complexity of the individual operator's/service provider's operational context.

1.3.7 At BIAL, the Head – Aviation Safety will closely interact with the DGCA and the management of each tenant as well as each departmental head to define their Safety Performance Indicators. He will set Annual Safety Targets, appraise them regarding the Safety Requirements and periodic progress review towards achieving the agreed upon targets. Regular reports to this effect would be submitted to the DGCA and BIAL management board. Additionally, all managers at Level 3 and above will be required to set at least one "personal safety target" in addition to their annual performance planning. These Personal Safety Targets must flow out of Departmental Safety Targets, which in turn, must flow out of Safety targets agreed between BIAL and DGCA. The achievement of this target shall be evaluated by the Head – Aviation Safety in consultation with the concerned Manager and his Supervisor as a part of the Employees Annual Performance Review Programme. This assessment shall be taken into consideration for evaluating an employee's suitability for promotion and internal placements.

1.3.8 Establishing acceptable level(s) of safety for the safety programme does not replace legal, regulatory, or other established requirements, nor does it relieve departments, operators and concessionaires from their obligations regarding the *Convention on International Civil Aviation* (Doc 7300) and its related provisions.

1.4 Stakeholders in Safety

1.4.1 Given the total costs of aviation accidents, many diverse groups have a stake in improving the management of safety. The principal stakeholders in safety at BIAL are listed below:

a) BIAL Management;
b) Aviation regulatory authority (DGCA);
c) Regional ATS provider (AAI);
d) Aircraft owners and operators (Airlines, Airside Concessionaires / SRP holders);
e) International Civil Aviation Organization (ICAO); and
f) The flying public.

1.5 Using this manual

Purpose

1.5.1 The purpose of this manual is to assist all those who work at, work with or visit Bangalore International Airport in fulfilling the requirements of ICAO Annexes 6, 11 and 14 with respect to the implementation of SMS.

Target audience

1.5.2 Application of the guidance material herein is not limited to operational personnel. Rather, it is relevant to the full spectrum of stakeholders in safety, including senior management.

1.5.3 In particular, this manual is aimed at the personnel who are responsible for designing, implementing and managing effective safety activities, namely:

a) BIAL officials with responsibilities for regulating the aviation system;

b) Management of operational organizations, such as operators, ATS providers, concessionaires and maintenance organizations; and

c) Safety practitioners, such as safety managers and advisers.

1.5.4 Users should find sufficient information herein for operation of a viable SMS.

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CHAPTER – 2

BIAL SAFETY POLICIES

2.1 BIAL Safety Policy.

SAFETY POLICY

(Safety Fundamentals and Safety Objectives)

1. **Preamble.**

Safety is the first priority in all our activities. We are committed to implementing, developing and improving strategies, management systems and processes to ensure that all our activities (aviation and non aviation) uphold a high level of Safety Performance and meet national and international standards.

2. **Our commitment is to**:

a) **Safety Management System.** Setup an Aviation Safety Department to oversee the development and implementation of a Safety Management System and ensure that the application of effective Safety Management System is integral to all our activities;

b) **Safety Culture.** Develop and embed a Safety Culture in all our activities that recognizes the importance and value of effective Safety Management and acknowledges at all times that Safety is paramount;

c) **Safety Accountabilities.** Clearly define for all staff their accountabilities and responsibilities for the development and delivery of Safety Strategy and Performance. Ensure that all staff are provided with adequate and appropriate safety information and training, are competent in safety matters and are only allocated tasks commensurate with their skills;

d) **Risk Management.** Minimize the risks associated with aircraft operations to a point that is as low as reasonably practicable and establish and measure our Safety Performance against realistic objectives and/or targets;

e) **Applicability.** Ensure that every one who works for us, works with us or visits us meets appropriate Safety Standards;

f) **Resource Allocation.** Ensure that sufficient skilled and trained resources are available to implement this safety policy and continually improve our Safety Performance;

g) **Safety Oversight.** Conduct internal as well as external Safety Audits and Management Reviews and ensure that relevant action is taken.

3. **Principles of the Safety Management at BIAL:** The following principles will apply to all active businesses on the premises owned by Bangalore International Airport Ltd.

- The guarantee of a safe operating environment is the key success factor at the airport;
- In the daily operations, the principle "Safety First" will apply. All safety-relevant decisions will be taken impersonally and keeping in mind all exogenous business factors;
- The COO carries the uppermost responsibility for Safety Management;
- The implementation of Safety Management is an executive function of the line;
- The Head Aviation Safety supports and supervises the responsible lines in terms of operational planning and implementation in accordance with specifications of the Safety Management System. He is responsible also for further development of the Safety Management System;
- Through training and continued education, the cooperating airport partners will be enlightened to perceive and discharge their Safety Responsibilities in daily work;
- An open and transparent Safety culture will be created and promoted so that we can learn from events and/or near-events.

(Albert Brunner)
Chief Executive Officer

(Patrick Tschirky)
Chief Operation Officer

Bangalore, 22 Nov 2006

2.2 Safety Responsibilities and Accountabilities:

Responsibility and accountability are interlinked. While individual staff members are responsible for their actions, they are also accountable to their supervisor or manager for the safe performance of their functions and may be called on to justify their actions. Although individuals must be accountable for their own actions, managers and supervisors are accountable for the overall performance of the group that reports to them. Accountability is a two-way street. Managers are also accountable for ensuring that their subordinates have the resources, training, experience, etc. needed for the safe completion of their assigned duties.

2.3 Safety Accountabilities and Responsibilities of BIAL Executives

Chief Executive Officer (CEO)

Safety Accountability: The CEO is accountable to BIAL Management Board for safe management of Airport and the services provided by BIAL.

Safety Responsibility: In discharging this accountability, the CEO is responsible for:

- Authorising a Safety Policy that indicates BIAL's safety objectives and its commitment to safety.
- Ensuring a Safety Management System is implemented at BIAL.
- Assuming the leadership role to ensure commitment throughout the organisation, particularly at senior management level, to the safety management policy intent and safety management system requirements.
- Ensuring that BIAL executives and staff are aware and held accountable for their safety performance and,
- Ensuring that BIAL's safety management system and operational performance are evaluated for effectiveness on a regular basis.

Chief Operations Officer (COO)

Safety Accountability: The COO is accountable to the CEO for safe and efficient operational management of the airport.

Safety Responsibility: In discharging this accountability, the COO is responsible for:

- Uppermost responsibility for safety management at BIAL.
- Ensuring adequate resource allocation for design, implementation and administration of a safety management system.
- Assuming the leadership role to ensure commitment throughout the operations department to the safety management policy intent and safety management system requirements.
- Ensuring that operations department executives and staff are aware of safety guidelines and are held accountable for their safety performance.
- Ensuring provision of adequate level of Fire and Rescue services at BIAL.
- Ensuring provision of adequately trained and competent manpower to permit safe and operational management of the airport and,
- Ensuring adequate liaison is conducted between various partners and other stake holders including the Central, State and Defence Authorities for safe and efficient aircraft operations from Bangalore International Airport.

Head Aviation Safety

Safety Accountability: The Head – Aviation Safety is accountable to the COO for:

- Providing advice and assurance relating to safety issues and performance; internal, external and international safety initiatives and requirements;
- Maintenance of the safety policy and Safety Management System;
- Establishing safety standards;
- Establishing a system for safety management education and safety awareness;
- Establishing a safety audit and surveillance system;
- Effective interface with the Director General of Civil Aviation regarding safety matters;
- Establishing industry liaison on safety matters; and
- Establishing safety relations with international bodies including ICAO;

Safety Responsibility: In discharging these accountabilities, the Head – Aviation Safety is responsible for:

- Developing and maintaining a safety management policy;
- Establishing and maintaining a safety management system including arrangements for identifying, reporting, tracking and correcting safety issues and for the initiation of preventive action where necessary;

- Establishing adequate Safety Guidelines and publishing them to all the airport users;
- Undertaking safety audits of all operational and maintenance units and corporate aspects of safety management;
- Undertaking ongoing review of the safety management system to evaluate its effectiveness and ensuring that improvements are made where required;
- overseeing the performance of BIAL's safety management activities and providing advice on potential improvements to safety performance;
- Reviewing and reporting on compliance with safety management policies, plans, systems and procedures and regulatory arrangements and standards; ensuring safety issues are reported in a timely manner to the COO;
- Designing, developing and managing an effective audit program directed toward the highest risk exposures to the safe operation of the Airport;
- Designing, developing and managing an effective safety surveillance program;
- Ensuring that Department of Aviation Safety managers and staff are aware of and held accountable for their safety performance;
- Ensuring that Department of Aviation Safety staff members are trained, qualified and competent to discharge their safety related obligations;
- Developing and promoting safety management training across BIAL; and
- Ongoing review of the interface between BIAL, AAI, the DGCA, and other aviation organisations and ensuring improvements are made where required.

Head Daily Operations

Safety Accountability: The Head – Daily Operations is accountable to the COO to provide services and facilities, for customers and stakeholders, for the purpose of safety, regularity and efficiency of airside operations at Bangalore International Airport.

Safety Responsibility: In discharging these accountabilities, the Head – Daily Operations is responsible for:

- Ensuring that safety considerations are given the foremost priority;
- Ensuring the application of the explicit safety management policy and procedures in accordance with BIAL's Safety Management System;
- Ensuring acceptance and overview of any residual risks or hazards, and their associated controls, that are identified within the Airports system, in accordance with the procedures contained in BIAL's Safety Management Manual;

- Overseeing the safety and operational performance of Daily Operations at BIAL;
- Ensuring that safety issues are reported in a timely manner to the Department of Aviation Safety;
- Ensuring that all Daily Operation departments executives and staff are aware of, and held accountable for, their safety performance;
- Ensuring that all executives and staff reporting to him are trained, qualified and competent to discharge their safety related obligations;
- Ensuring that fitness for service, including any necessary safety assessments, has been declared and accepted by the responsible authority, in relation to the development of all plans, policies, procedures, processes and systems at BIAL; and
- Ensuring that management of human resources is appropriate to facilitate safe operations.

Chief Infrastructure Officer (CIO)

Safety Accountability: The CIO is accountable to the CEO to support the activities for the safe operation of Airport, including:

- Maintenance of airfield pavements, Airports Terminals and other airports services including landscaping and wildlife hazard mitigation;
- Provision of Electrical, Engineering and Maintenance services at Airport such as aerobridges, escalators, elevators, baggage conveyors, air conditioning systems etc; and
- Provision of power supply to all airport installations including Communications & Navigational Aids.

Safety Responsibility: In discharging these accountabilities, the CIO is responsible for:

- Ensuring that safety considerations are given the foremost priority;
- Ensuring the application of the explicit safety management policy and procedures in accordance with BIAL's Safety Management System within the area of responsibility;
- Acceptance and overview of any residual risks or hazards, and their associated controls, that are identified within the system, in accordance with the procedures contained in BIAL's Safety Management Manual;
- Ensuring that safety issues are reported in a timely manner to the Department of Aviation Safety;
- Ensuring that all Civil/Electrical engineering executives and staff are aware of, and held accountable for, their safety performance;

- Ensuring that all Civil/Electrical engineering executives and staff are trained, qualified and competent to discharge their safety related obligations;
- Ensuring that fitness for service, including any necessary safety assessments, has been declared and accepted by the responsible authority, in relation to the development of all plans, policies, procedures, processes and systems; and
- Ensuring that management of human resources is appropriate to facilitate safe operations.

Chief Commercial Officer (CCO)

Safety Accountability: The CCO is accountable to the CEO for effective management of the financial resources and timely availability of funds to meet all requirements essential for ensuring operational safety.

Safety Responsibility: In discharging this accountability, the CCO is responsible for:

- Ensuring that in exercising its powers and performing its functions, the Finance and commercial Divisions of BIAL regards aviation safety as an important consideration;
- Assuming a leadership role to ensure commitment throughout the Finance and Commercial Department to the safety management policy intent and safety management system requirements;
- Ensuring that all managers and staff reporting to him are aware of and held accountable for their safety performance;
- Ensuring the provision of Airport financial and commercial functions are conducted in accordance with the relevant government, industry and international standards and regulations;
- Establishing the appropriate controls over financial activities to ensure the safety of airport is not compromised by changes to the financial system;
- Ensuring the provision of adequately trained and competent manpower within the Finance and Commercial Divisions to ensure that financial and commercial activities do not compromise the delivery of a safe Airport service by the service delivery units; and
- Ensuring effective liaison is conducted between the Finance and Commercial Divisions and other BIAL Departments, and relevant external organisations, to ensure that the safety aspects for any change involving the Finance and Commercial Division are fully considered before the change is implemented.

Head – Human Resources (HR)

Safety Accountability: The Head - HR is accountable to the CEO for supporting operational Safety Management through:

- Developing personnel policies, personnel management and placement of personnel most suited for the task and having the correct attitude towards operational safety;
- Career planning and management of performance appraisal records taking into consideration each employees safety track record;
- Creation and review of manpower requirements (recruitment, training and counseling) in keeping with BIAL's overall Safety Performance Goals; and
- Implementation of aviation safety related government policies with respect to general administration matters like restrictions on duty hours etc.

Safety Responsibilities: In discharging these accountabilities, the Head - HR is responsible for:

- Ensuring that safety considerations are given the foremost priority in decisions involving personnel management;
- Ensuring the application of the explicit safety management policy and procedures in accordance with BIAL's Safety Management System within the HR department;
- Overseeing the safety and operational performance of the HR department;
- Ensuring that any safety issues are reported in a timely manner to the Department of Aviation Safety;
- Ensuring that all HR department executives and staff are aware of, and held accountable for, their safety performance;
- Ensuring that all HR department executives and staff are trained, qualified and competent to discharge their safety related obligations; and
- Ensuring that management of human resources is appropriate to facilitate safe operations.

Head Legal and Company Secretary

Safety Accountability: The Head – Legal and Company Secretary is accountable to the CEO for supporting safe airport operations through advice regarding:

- Strategic guidance to the legal function in the organization as concerns legal safety obligations;

- Ensure that safety accountabilities have been incorporated in all commercial contracts with BIAL's selected business partners while vetting the legal documentation;
- Provide value added advisory to service internal clients by research and analysis on safety related legal matters; and
- Responsible for developing a good corporate governance and non-punitive culture at BIAL;

Safety Responsibilities: In discharging these accountabilities, the Head – Legal and Company Secretary is responsible for:

- Ensuring that aviation safety considerations are given the foremost consideration in decisions involving legal issues;
- Ensuring the application of the explicit safety management policy and procedures in accordance with BIAL's Safety Management System within the area of responsibility;
- Ensuring that any safety issues are reported in a timely manner to the Department of Aviation Safety;
- Ensuring that all legal executives and staff are aware of, and held accountable for, their safety performance; and
- Ensuring that all legal executives and staff are trained, qualified and competent to discharge their safety related obligations.

All BIAL personnel

All BIAL personnel have the following safety responsibilities:

- To comply with the relevant safety requirements and procedures outlined in:
    - BIAL's Safety Management Manual (SMM) and any Supplementary Manuals;
    - Aerodrome Manual; and
    - Other duly authorised Corporate Manuals, Instructions and Notices;

- To apply system safety measures as required by safety management procedures and instructions;

- To advise the Head – Aviation Safety of any safety occurrence or system failure and to identify and report any situation of potential risk or concern affecting system safety via one of the following means:

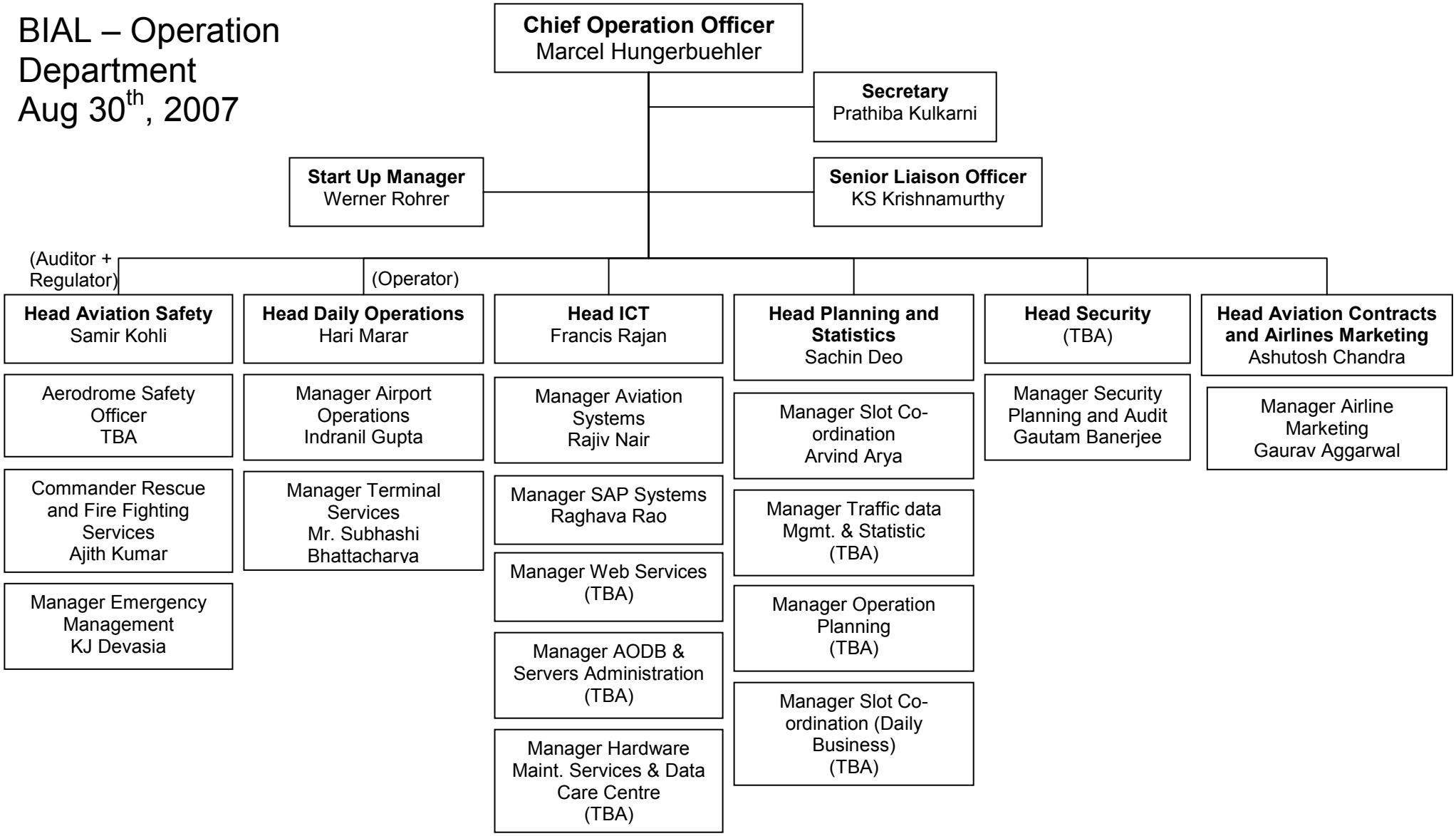
    - Report directly to Aerodrome Safety Office or their supervisor;
    - Via team meetings;
    - Submitting either an Incident report, an Event report, or a Confidential Report;

- Supporting safety audits as and when they occur; and
- Supporting safety investigations as and when they occur.

2.4 Organisation Chart:

The organization chart of the new Bangalore International Airport Operations department is placed below.

BIAL – Operation Department Aug 30th, 2007



TBA = To be appointed

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SECTION 2

SAFETY RISK MANAGEMENT

CHAPTER – 3

HAZARD IDENTIFICATION AND RISK MANAGEMENT

3.1 General

3.1.1 Safety is a condition in which the risk of harm or damage is limited to an acceptable level. The safety hazards creating risk may become evident after an obvious breach of safety, such as an accident or incident, or they may be proactively identified through formal safety management programmes before an actual safety event occurs. Having identified a safety hazard, the associated risks must be assessed. With a clear understanding of the nature of the risks, a determination can be made as to the "acceptability" of the risks. Those found to be unacceptable must be acted upon.

3.1.2 Safety management is centered on such a systematic approach to hazard identification and risk management — in the interests of minimizing the loss of human life, property damage, and financial, environmental and societal losses.

3.1.3 The process of hazard Identification and risk management would be mandatorily completed and documented for each safety relevant activity to be undertaken airside and a copy of the same provided to the safety department for reference and record. A representative of the BIAL Safety Team must be included as a member for the group conducting this assessment. The Safety Department would maintain a log of each Hazard Identified, its associated Risks and mitigation measures, if any, proposed to be implemented. Whenever mitigation measures are proposed, their implementation would be audited and a periodic review of their effectiveness as well as possibility of better mitigation strategies will be undertaken.

3.2 Implementation Procedure

The Seven Step Assessment process

3.2.1 The risk assessment is to be carried out as per the following seven step process

Step 1: Development of a complete description of the system to be evaluated and of the environment, in which the system is to be operated;

Step 2: Identification of hazards;

Step 3: Estimation of the severity of the consequences of a hazard occurring;

Step 4: Estimation of the likelihood of a hazard occurring;

Step 5: Evaluation of risk;

Step 6: Mitigation of risk; and

Step 7: Development of safety assessment documentation.

Calculation of Risk index.

3.2.2 For each hazard identified, the risk index is to be calculated based its severity and frequency as follows:

Probability of occurrences		
Qualitative definition	**Meaning**	**Value**
Frequent	Likely to occur many times (Has occurred frequently)	**5**
Occasional	Likely to occur some times (Has occurred infrequently)	**4**
Remote	Unlikely, but possible to occur (Has occurred rarely)	**3**
Improbable	Very unlikely to occur (Not known has occurred)	**2**
Extremely improbable	Almost inconceivable that the event will occur	**1**

Severity of occurrences		
Aviation definition	**Meaning**	**Value**
Catastrophic	• Equipment destroyed • Multiple deaths	**A**
Hazardous	• A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely. • Serious injury or death to a number of people. • Major equipment damage	**B**
Major	• A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of increase in workload, or as a result of conditions impairing their efficiency. • Serious incident. • Injury to persons.	**C**
Minor	• Nuisance. • Operating limitations. • Use of emergency procedures. • Minor incident.	**D**
Negligible	• Little consequences	**E**

Risk probability	Risk severity				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
5 – Frequent	5A	5B	5C	5D	5E
4 – Occasional	4A	4B	4C	4D	4E
3 – Remote	3A	3B	3C	3D	3E
2 – Improbable	2A	2B	2C	2D	2E
1 – Extremely improbable	1A	1B	1C	1D	1E

Assessment risk index	Management Criteria
5A, 5B, 5C, 4A, 4B, 3A	Unacceptable under the existing circumstances
5D, 5E, 4C, 3B, 3C, 2A, 2B	Risk control/mitigation requires management decision
4D, 4E, 3D, 2C, 1A, 1B	Acceptable after review of the operation
3E, 2D, 2E, 1C, 1D, 1E	Acceptable

Example 3.1 Hazard Identification and Risk index calculation. (Note: This is merely an illustration and does not take into account all the possible hazards, risks and control/ mitigation measures at BIAL).

Hazard id	Type of operation or activity	State Generic Hazard	Identify specific components of the hazard	Identify associated Risk(s)	Current measures to reduce risk(s) and risk index	Further action to reduce risk and resulting risk index	Responsibility
01/2007	Airside operations	Working in proximity to aircraft	Hit by aircraft / vehicle FOD High Noise level	Loss of life / injury Damage to aircraft engine / airframe High frequency noise induced deafness Risk index : 4B Risk tolerability : Unacceptable under the existing circumstances	1. Use of high visibility jackets by all staff Risk index : 3B Risk tolerability : Risk control/ mitigation requires management decision	A. FOD check of Ramp area by designated crew members prior to aircraft movement B. Use of ear plugs / Defenders by all workers Risk index : 1B Risk tolerability : Acceptable after review of the operation	1. Duty Manager A. Shift Supervisor B. Duty Manager
02/2007							

3.3 Change Management

3.3.1 Hazard identification and risk assessment are not static processes. They need to be performed whenever:

- A major organizational change is being planned;
- The Organisation is undergoing rapid expansion or contraction;
- Introduction of new equipment or facilities is being considered;
- Existing equipment is being decommissioned;
- Introduction of new procedures is being planned;
- Existing procedures are being revised;
- Changes to key personnel are taking place;
- There are changes to the legislation that the Organisation operates under.

3.3.2 Whenever any of the above events is contemplated at the new Bangalore International Airport, the Management Team would intimate the concerned departmental head to conduct hazard identification and risk assessment keeping the Head – Aviation Safety informed and involved in the process at each stage. The entire process, including the mitigation measures proposed to be implemented, is to be documented and signed off by at least the concerned Departmental Head and Head – Aviation Safety before being submitted for approval to the Chief Operations Officer.

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CHAPTER – 4

AIRSIDE SAFETY REPORTING AND INVESTIGATIONS

4.1 Introduction to Reporting Systems

4.1.1 Safety management systems involve the reactive and proactive identification of safety hazards. Accident investigations reveal a great deal about safety hazards; but fortunately, aviation accidents are rare events. They are, however, generally investigated more thoroughly than incidents. Research leading to the 1:600 Rule showed that the number of incidents is significantly greater than the number of accidents for comparable types of occurrences. The causal and contributory factors associated with incidents may also culminate in accidents. Often, only good fortune prevents an incident from becoming an accident. Unfortunately, these incidents are not always known to those responsible for reducing or eliminating the associated risks. This may be due to the unavailability of reporting systems, or people not being sufficiently motivated to report incidents.

4.1.2 Need for safety reports

Knowledge derived from incidents can provide significant insights into safety hazards. Some safety databases contain a large quantity of detailed information. Safety reports systems should not just be restricted to incidents but should include hazards, i.e. unsafe conditions that have not yet caused an incident. Data from such reports facilitates an understanding of the causes of hazards, helps to define intervention strategies and helps to verify the effectiveness of interventions. Depending on the depth to which they are investigated, incidents can provide a unique means of obtaining first-hand evidence on the factors associated with mishaps from the participants. Incident data can also be used to improve operating procedures, and display and control design, as well as to provide a better understanding of human performance associated with the operation of aircraft, ATC and aerodromes.

4.1.3 Statutory requirements

ICAO and DGCA require each airport to establish an incident reporting system to facilitate the collection of information on actual or potential safety deficiencies. In addition, personnel are encouraged to submit voluntary incident reports which:

a) Facilitate collection of information that may not be captured by a mandatory incident reporting system;

b) Is non-punitive; and

c) Affords protection to the sources of the information.

DGCA civil aviation requirements for aerodromes require an aerodrome operator to comply with the provisions of Doc 9774 which states in Chapter 3.D.4.3

3D.4.3 The aerodrome operator shall require all users of the aerodrome, including fixed-base operators, ground handling agencies and other organizations referred to in regulation 3D.4.2, to cooperate in the programme to promote safety at, and the safe use of, the aerodrome by immediately informing it of any accidents, incidents, defects and faults which have a bearing on safety.

4.2 Incident Reporting at Bangalore International Airport

Mandatory incident reporting

4.2.3 At BLR, it is mandatory to report any incident involving an unsafe, or potentially unsafe, occurrence or condition, irrespective of whether it involves injury or property damage or not. The report is to be submitted to the Head – Aviation Safety or his designated representative (Aerodrome Safety Officer/Duty Safety Auditor) as soon as possible after the occurrence/incident but in any case not later than 24 hours after the incident. The accident/incident reports may be submitted in the format placed at Appendix 'A'. The format placed at Appendix 'B' to this manual, or in any other format the user finds more suitable, may be used to submit other reports. The person reporting, at own discretion, may or may not disclose his/her identity.

It is mandatory to report the following occurrences:

- Bird strike of an aircraft;
- Abnormal bird concentrations;
- Failure of Navigational/Landing Aids;
- Failure of Communication Services;
- Failure of Aerodrome lighting systems;
- Failure of any facility and procedure used in airside operations;
- Incorrect transmission, receipt or interception of radio telephone message (ground to air, ground to ground);
- Runway obstructed by foreign object;
- Presence of any wild animal in the operational area and likely to affect safe operations;
- Going round of an aircraft on final approach due runway not being available;
- Major deterioration of services in aerodrome maneuvering area;
- Collision between moving aircraft and vehicles or any other ground equipment;
- Collision between vehicles or vehicles and GSE
- Fuel spillage

- Apron jet blast incident;
- Breaches of airside driving rules resulting in hazards to aircraft;
- Failure to detect an unserviceable condition of airside facilities;
- Any incident of fire which either necessitates use of fire extinguishers or causes failure of any equipment or facility or disturbs smooth flow of air traffic or passengers or visitors;
- Any incident that has jeopardized safety of passengers / public and was avoided being an accident only by exceptional handling or by good fortune;
- Any incident that causes trauma to passengers/visitors or third party;
- Any safety incident that could be of interest to the press and news media.

Confidentiality of reporting system

4.2.4 At BIAL, confidentiality of the report is guaranteed. This will be achieved by de-identification i.e. by not recording any identifying information of the occurrence. The identity of the reporter will never be disclosed, even if known to the Safety Auditor/inspector or any other Manager/Executive.

4.3 Safety Incident Recall Meetings

4.3.1 Each Departmental Head at BIAL is expected to hold monthly departmental "Safety Incident Recall" meetings, if appropriate. The purpose of these meetings is to ensure that even minor incidents which have an implication on safe Working Environment, and which may otherwise go unreported, are recalled, reported and acted upon. This system helps to promote a positive and non-punitive safety culture. The minutes of these meetings are to be forwarded to the Head- Aviation Safety, who would screen the reported incidents for those required to be brought to the notice of Management. In any case, a feed back would be provided to each department on the action taken (or the reason for not taking any action) on the incidents reported. The Departmental heads may, at their discretion or on request, choose not to report the names of the personnel reporting safety incidents.

4.4 Handling Safety Reports

4.4.1 The safety reports received will be handled with absolute confidentiality as far as the names and identities are concerned. The reports which are mandatory to be transmitted to DGCA would be transmitted and followed up with a brief investigation report, where applicable.

4.4.2 In any case, each report would be investigated, analysed and entered in a database. A trend projection and cause-effect analysis would be carried out and feed back provided to the management concerned and relevant authorities. Based on the above

analysis, the need to review or reassess any safety measure will be evaluated, documented and acted upon accordingly.

4.4.3 In order to ensure buildup of user confidence in the system, it is important to provide a feed back to the reporting agency or employee on what action, if any, was taken on the report. It is important to remember that this feedback is even more important when no action was taken since in the absence of any visible action, the users may loose confidence in the system and stop reporting matters altogether.

4.4.4 In the event the report received was anonymous, this feed back may be circulated in the form of a notice board entry/e-mail containing a brief statement of the problem and action taken to resolve the same without referring to the fact that the same was consequential to an anonymous report.

4.5 INVESTIGATIONS

4.5.1 The guidance on investigating any occurrence airside is contained in DGCA Civil Aviation Requirements, Section 5 – Air Safety Series 'C' part I dated 13th October 2006.

4.5.2 The sole objective of the investigation of an occurrence shall be the prevention. It is not the purpose of this activity to apportion blame or liability. For the investigation of Accident and/or Serious Incidents in India the Procedures Manual of Aircraft Accident/ Incident investigation may be referred. For accidents, the Director-General may order the investigation under Rule 71, by general or special order & appoint any person for the purpose of carrying out such investigation. Depending on the size & complexity of the investigation, nature of accident and investigation skills available, DGCA (Hqrs.) may constitute appropriate groups as contained in guidelines on ICAO Doc 9756 Vol I after obtaining information from site and analyzing the preliminary information and evidences on the accident. In addition the Director-General may order the investigation of any serious incident involving an aircraft or a person associated with the maintenance and operation of aircraft, or both. Incidents other than the serious incidents shall be investigated by the Permanent Investigation Board of the Airlines under supervision of Officer of the Regional Air Safety Offices.

4.5.3 The Aerodrome closest to the site of accident/ Serious Incident is responsible to take immediately all reasonable measures to protect the evidence and to maintain safe custody of the aircraft including parts thereof and its contents until the arrival of the Inspector of Accidents/ Inquiry Officer at the scene whenever accident/serious incident occurs at a place under their jurisdiction. Action must be taken for arranging for guarding of the wreckage include the preservation, by photographic or other means of any evidence which might be removed, effaced, lost or destroyed. This issue is more completely handled in BLR Aerodrome Emergency Plan.

4.5.4 All the documents relating to the aircraft and its personnel (including ATC/CNS documents) also fire services are required to be segregated and sealed by the Airport Operator and handed over to DGCA Officers who shall determine the adequacy of action as deemed appropriate and may seal any other documents etc. pertinent to the investigation of the accident as any of the material could be of use to the investigating authority.

4.5.5 While rescuing the injured crew members, their identification and location in or around the aircraft must be carefully observed and recorded. In case the pilot and/or copilot being found dead, the necessary photographs must be taken insitu prior to the removal. The removal action should be such as to cause minimum of disturbance to the aircraft wreckage/parts and any such disturbance should be fully recorded. The location of the passengers should also be recorded immediately during rescue operation. However, removal of the injured to the nearest hospital must not be delayed for want of formalities with regard to the recording as stated above. All the parts of the aircraft or relevant material picked up from the wreckage should be preserved and recorded on a sketch. The positions at which the flight data and voice recorders are found if installed on the aircraft should be recorded on a sketch. After preliminary observations at the accident/ incident site, the wreckage should be shifted to a safer site for further examination. **It is the responsibility of the Owner / Operator of the aircraft to make all the arrangements to get the wreckage shifted under supervision of the Inspector of Accident/ Inquiry Officer.**

4.5.6 At BIAL, Aerodrome Safety Office (ASO) shall be responsible for investigation of all minor occurrences with the aim to do a root cause analysis, develop a database and project trends. The ASO shall also be responsible for collection and preservation of evidence, witness names, initial statements, photographs etc for all major occurrences requiring detailed investigation by the DGCA.

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Appendix - A

Accident and Incident Report Form

(Use separate sheet if the space provided is insufficient.)

To be completed by BIAL Duty Safety Auditor/Inspector or senior representative of the Airside Operator/ Safety Stakeholder for all accidents and incidents which are likely to seriously endanger people, aircraft, vehicles or equipment.

Name of person that completed this report:_____

Organization and Position:_____

Telephone number:_____

Date of Accident/Incident:_____

Time:_____

Location:_____

Date of Reporting:_____

Names of Witnesses

Witness
Name:_____

Address:_____

Telephone:_____

Witness
Name:_____

Address:_____

Telephone:_____

Witness
Name:_____

Address:_____

Telephone:_____

Any Other Details:

Details of the accident/incident: (Include details of people involved, aircraft, vehicles, and equipment. Include details of what took place that contributed to the accident /incident). Use separate sheet if the space provided is insufficient.

Details of any injuries:

Details of damage to aircraft/vehicles/equipment/facilities:

Suggestions for corrective actions:

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Appendix – B

Voluntary Safety Report

The information supplied in this form will only be used to enhance safety. You may choose to not provide your name. If you do provide your name, upon receipt of this form your name and position will be removed and discarded. Under no circumstances will your identity be disclosed to any person in the airport or to any other organization, agency or person without your express permission.

When you have completed your part of the form, it should be given to the Airport Safety Officer or any member of the Airport Safety Committee. It may also be dropped in the drop boxes provided for the purpose at various locations.

Name (Optional): _____

Organization/ Position (Optional): _____

[Name and position, if provided, to be discarded by the Head – Aviation Safety before processing this form further]

PART A
TO BE COMPLETED BY THE PERSON IDENTIFYING THE HAZARD

Please fully describe the Hazard.

.

Date of occurrence: _____ Time: _____

Location of hazard: _____

Description:_____

_____

_____

_____

_____

_____

_____

_____

Suggestions for corrective actions:

In your opinion, what is the likelihood of a similar occurrence happening again?

Likely				Rare
1	2	3	4	5

What do you consider could be the worse possible consequence if this occurrence did happen again?

Catastrophic				Minor damage
1	2	3	4	5

PART B
To Be Completed By the Head – Aviation Safety

The report has been de-identified and entered into the company database

Signature: _____ Date: _____

Name_____

Rate the likelihood of the hazard recurring

Very Likely				Rare
1	2	3	4	5

Rate the worst-case consequences

Catastrophic				Minor Damage
1	2	3	4	5

What action is required to ELIMINATE or CONTROL the hazard and PREVENT injury?

_____

_____

_____

_____

_____

Resources Required: _____

_____

Responsibility for action: _____

_____

Referred to _____ for further action.

Signature: _____ Date: _____

Forwarded to the Airport Safety Committee for review.

Signed: _____ Date: _____

Appropriate Feedback given to staff.

Signed _____ Date_____

Suggestions for corrective actions:

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SECTION 3

SAFETY ASSURANCE

CHAPTER – 5

SAFETY AUDITING

5.1 Introduction

5.1.1 Audits are one of the principal methods for fulfilling the safety and quality performance monitoring functions. They are core activities of the safety management system (SMS) as well as Aviation Quality Management System (QMS). Audits may be performed by an external audit authority, such as the State regulatory authority, or they may be carried out internally.

5.1.2 ICAO Doc 9774 Manual on Certification of Aerodromes states that:

3D.4.2 *The aerodrome operator shall oblige all users of the aerodrome, including fixed-base operators, ground handling agencies and other organizations that perform activities independently at the aerodrome in relation to flight or aircraft handling, to comply with the requirements laid down by the aerodrome operator with regard to safety at the aerodrome. The aerodrome operator shall monitor such compliance.*

3D.5.1 *The aerodrome operator shall arrange for an audit of the safety management system, including an inspection of the aerodrome facilities and equipment. The audit shall cover the aerodrome operator's own functions. The aerodrome operator shall also arrange for an external audit and inspection programme for evaluating other users, including fixed-base operators, ground handling agencies and other organizations working at the aerodrome as referred to in regulation* ***3D.4.2*****.**

5.1.3 This chapter focuses on the requirements, planning, conduct and follow-up of such audits, whether conducted internally or by external auditors employed for the purpose. A compendium of audit checklists is published as a separate document and may be referred to by the concerned department for preparation. The checklists contained in the compendium are for reference only and are not exhaustive. They may be modified appropriately by the auditors to adapt to the variables/ special requirements of the situation or organisation being audited.

5.2 Safety Audits

5.2.1 Safety audits will be conducted to ensure that:

a) The structure of the SMS is sound in terms of appropriate levels of staff; compliance with approved procedures and instructions; and a satisfactory level of competency and training to operate equipment and facilities and to maintain their levels of performance;

b) Equipment performance is adequate for the safety levels of the service provided;
c) Effective arrangements exist for promoting safety, monitoring safety performance and processing safety issues; and
d) Adequate arrangements exist to handle foreseeable emergencies.
e) The audit will cover all airport tenants who work airside in accordance with ICAO Doc 9774, Chapter 3D.4.2.

5.2.2 Safety audits will be conducted regularly, following a cycle that ensures each functional area is audited as a part of BIAL's plan for evaluating overall safety performance. Safety audits will entail a periodic detailed review of the safety performance, procedures and practices of each department or tenant with safety responsibilities. Thus, in addition to an organization-wide audit plan, a detailed audit plan will be prepared for each individual department/tenant.

5.2.3 Safety audits go beyond just checking compliance with regulatory requirements and conformity with the organization's standards. The audit team will assess whether the procedures in use are appropriate and whether there are any work practices that could have unforeseen safety consequences.

5.2.4 The criteria against which the audit will be conducted will be specified in advance. Checklists will be used to identify what is to be reviewed during the audit in sufficient detail in order to ensure that all intended tasks and functions are covered. The extent and elaboration of the checklists will depend on the size and complexity of the organization being audited.

5.2.5 For an audit to be successful, the cooperation of the personnel of the unit or section concerned is essential. The safety audit programme will be based on the following principles:

a) The objective is to gain knowledge. Suggestions of blame or punishment will be counter-productive.
b) The auditee should make all relevant documentation available to the auditors and arrange for staff to be available for interview as required.
c) Facts will be examined in an objective manner.
d) A written audit report describing the findings and recommendations will be presented to the unit or section within a specified period.
e) The staff of the unit or section, as well as the management, will be provided with feedback concerning the findings of the audit.
f) Positive feedback will be provided by highlighting in the report the good points observed during the audit.

g) While deficiencies must be identified, negative criticism is to be avoided as much as possible.

h) A plan to resolve deficiencies from the auditee is required.

5.2.6 Following an audit, a monitoring mechanism will be implemented to verify the effectiveness of any necessary corrective actions. Follow-up audits would concentrate on aspects of the operations where the need for corrective action was identified. Audits to follow up previous safety audits, where corrective action was proposed or because an undesirable trend in safety performance was identified cannot always be scheduled in advance. The overall annual audit programme would make allowance for such unscheduled audits.

5.2.7 Figure 6-1 illustrates the safety audit process diagrammatically. The procedures involved in each step of the safety audit process are discussed in more detail later in this chapter.

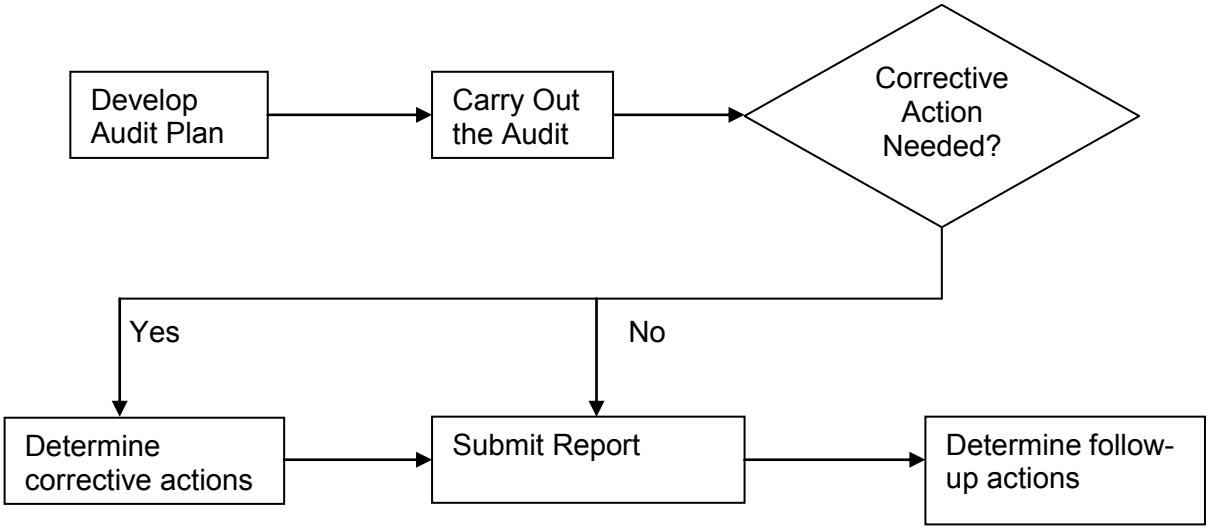

Figure 6-1. The safety audit process

5.3 Safety Audit Process (Source ICAO Doc 9859).

5.3.1 A formal notification of intention to perform the audit is forwarded to the unit or section to be audited in adequate time for any necessary preparations to be made. As part of the audit preparation process, the Head-Aviation Safety at BIAL may contact the management of the organization to be audited. The organization may be requested to provide preparatory material in advance of the actual audit, for example, selected records, a completed pre-audit questionnaire, and manuals. It is essential for the organization being audited to have a clear understanding of the purpose, scope and resource requirements for the audit and follow-up processes, etc. before the auditors arrive. To achieve this aim, an audit plan, as outlined below will be prepared and shared with the auditee before the audit.

The Audit Plan (Source ICAO Doc 9859)

AUDIT PLAN INTRODUCTION [This section would introduce the audit plan and the background for the audit.]

PURPOSE [The purpose, objectives, scope and the criteria against which the audit will be conducted would be specified.]

UNIT/SECTION TO BE AUDITED [This section would clearly specify which area is to be audited.]

PLANNED ACTIVITIES [This section would identify and describe the activities to be performed, the areas of interest, and how the different subjects will be addressed. It would also specify the documents that should be available for the audit team. If the audit is to involve interviews, the areas to be addressed during the interviews would be listed.]

SCHEDULE [This section would include a detailed schedule for each of the activities planned.]

AUDIT TEAM [This section would introduce the audit team members.]

Pre-audit activity

5.3.2 Among the initial steps in planning an audit will be to verify the feasibility of the proposed schedule and to identify the information that will be needed before commencement of the audit. It will also be necessary to specify the criteria against which the audit will be conducted and to develop a detailed audit plan together with checklists to be used during the audit.

5.3.3 The checklists consist of a comprehensive series of questions grouped under topic headings, which are used to ensure that all relevant topics are covered. For the purpose of a safety audit, the checklists would address the following areas in an organization:

a) DGCA safety requirements;
b) Organizational safety policies and standards;
c) Structure of safety accountabilities;
d) Documentation, such as:
   - Safety management manual; and
   - Operational documentation (including its local instructions);
e) Safety culture (reactive or proactive);
f) Hazard identification and risk management processes;
g) Safety oversight capabilities (monitoring, inspections, internal audits, etc.);
h) Provisions for assuring safety performance of contractors.

Conduct of the Audit

5.3.4 The conduct of the actual audit is essentially a process of inspection or fact-finding. Information from almost any source will be reviewed as part of the audit.

5.3.5 In conducting a safety audit, there is often a tendency to limit observations to items of regulatory non-compliance. Such inspections have limited value for the following reasons:

a) The organization may rely exclusively upon the audit authority to ensure that it is meeting the standards.
b) The standards may only be met while the auditor is undertaking the inspection.
c) An audit report will only highlight those areas of deficiency found at the time of the inspection.
d) The audit will not encourage the organization to be proactive, and often, only issues raised by the auditor will be verified.

Opening meeting

5.3.6 At the opening meeting, the audit team leader should briefly present the background for the audit, its purpose, and any specific issues that will be addressed by the audit team. The practical arrangements, including the availability of staff for interview, should be discussed and agreed upon with the manager of the unit or section being audited.

Audit procedures

5.3.7 The techniques for gathering the information on which the audit team's assessment will be made include:

a) Review of records;

b) Interviews with staff; and

c) Observations by the audit team.

5.3.8 The audit team would work systematically through the items on the relevant checklist. Observations would be noted on standardized observation sheets.

5.3.9 If a particular area of concern is identified during the audit, this would be the subject of a more thorough investigation. However, keeping in mind the need to complete the rest of the audit as planned; an excessive amount of time exploring a single issue (and so risk missing other problems) will be avoided, but another more detailed audit might become necessary.

Audit interviews

5.3.10 In general auditors obtain information by asking questions. This method provides additional information to that available in writing. It also gives the staff involved an opportunity to explain the system and work practices. Face-to-face discussions also permit the auditors to make an assessment of the level of understanding as well as the degree of commitment of the staff of the unit or section to safety management. The persons to be interviewed would be drawn from a range of management, supervisory and operational positions. The purpose of audit interviews is to elicit information, not to enter into discussions.

Audit observations

5.3.11 Once the audit activities are completed, the audit team would review all audit observations and compare them against the relevant regulations and procedures in order to confirm the correctness of observations noted as nonconformities, deficiencies or safety shortcomings.

5.3.12 An assessment would be made of the seriousness with respect to all items noted as nonconformities, deficiencies or safety shortcomings.

5.3.13 The audit would not focus only on negative findings. An important objective of the safety audit is also to highlight good practices within the area being audited.

Closing meeting

5.3.14 A closing meeting would be held with the management of the unit or section at the conclusion of the audit activities to brief them on the audit observations and any resulting recommendations. Factual accuracy can be confirmed and significant findings highlighted.

5.3.15 Prior to this meeting, the audit team would:

a) Agree on the audit conclusions;

b) Prepare recommendations, such as proposing appropriate corrective action, if required; and

c) Discuss whether there is a need for follow-up actions.

5.3.16 The audit findings may fall into three categories:

a) Serious discrepancies of non-compliance warranting action to suspend a license, certificate or approval;

b) Any discrepancy or non-compliance that must be rectified within an agreed time limit; and
c) Observations on issues that are likely to impact on safety or become a regulatory issue before the next audit.

5.3.17 At the closing meeting, the audit team leader would present the observations made during the audit and give the representatives of the unit or section being audited the opportunity to correct any misunderstandings. Dates for issuing an interim audit report and for receiving comments on it would be mutually agreed upon. A draft copy of the final report would be left with management.

Corrective action plan

5.3.18 At the completion of an audit, planned remedial actions would be documented for all identified areas of safety concern. The management of the unit or section has the responsibility for developing a corrective action plan setting out the action(s) to be taken to resolve identified deficiencies or safety shortcomings within the agreed time period.

5.3.19 When completed, the corrective action plan should be forwarded to the Head – Aviation Safety. The final audit report will include this corrective action plan and detail any follow-up audit action proposed. The manager of the area being audited is responsible for ensuring the timely implementation of the appropriate corrective actions.

5.4 Audit Report

5.4.1 The audit report would be an objective presentation of the results of the safety audit. As soon as possible after completion of the audit, an interim audit report would be forwarded to the manager of the unit or section for review and comments. Any comments received would be taken into consideration in the preparation of the final report, which constitutes the official report of the audit.

5.4.2 The key principles which will be observed in the development of the audit report are:

a) Consistency of observations and recommendations in the closing meeting, interim audit report and final audit report;
b) Conclusions substantiated with references, apply common yardsticks and give preference to measurable units;
c) Observations and recommendations stated clearly and concisely;
d) Avoidance of generalities and vague observations;
e) Objective presentation of the observations;

f) Use of widely accepted aviation terminology, avoiding acronyms and jargon; and

g) Avoidance of criticism of individuals or positions.

5.5 Audit Follow-up

5.5.1 An audit follow-up involves management of change. Upon receipt of the final audit report, management needs to ensure that progress is made to reduce or eliminate the attendant risks. The primary purpose of an audit follow-up is to verify the effective implementation of the corrective action plan. Follow-up is also required to ensure that any action taken pursuant to the audit does not in any way degrade safety. In other words, new hazards with potentially higher risks must not be allowed to enter the system as a consequence of the audit.

5.5.2 Failure to follow up on lapses in implementing necessary (and agreed) safety actions will compromise the validity of the entire safety audit process. Follow-up action will be effected through monitoring the status of implementation of accepted corrective action plans or through follow-up audit visits. Where a follow-up visit has been made, a further report of this visit will be prepared. This report will clearly indicate the current status of the implementation of the agreed corrective actions. If any non-compliance, deficiency or safety short-coming remains unresolved, the audit team leader will highlight this in the follow-up report.

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Chapter 6

Aerodrome Safety Committees

6.1 Introduction.

BIAL Safety Management Team recognizes the need and strength of participative management. Toward this end, a number of Aerodrome Advisory Committees would be constituted. The purpose of theses committees are:

- To enable BIAL, local authorities, local business representatives, aerodrome users and other interested parties to exchange information and ideas;
- To allow the concerns of interested parties to be raised and taken into account by BIAL, with a genuine desire on all sides to resolve any issues that may emerge through agreed voluntary action;
- To complement the legal framework within which the aerodrome operates;

However, consultation is *not* intended

- To detract from or constrain the responsibility of BIAL to manage the aerodrome;
- To prevent interested parties from raising concerns directly with the aerodrome operator, or through other channels.

The committees provide:

- An opportunity for information exchange between BIAL and interested parties;
- A structured forum for discussions and to make recommendations to BIAL and other bodies, if appropriate;
- The opportunity to reach common understanding between interested groups about the nature of aerodrome operation, thereby increasing the scope for issues to be resolved amicably.
- To promote understanding about aerodrome operations more widely, through dissemination of relevant information by committee members;
- To promote understanding by BIAL of the nature of its impacts on local communities and businesses.

However,

- Advisory committees are not dispute resolution forums; nevertheless, they will be interested in the complaints that the Airport may receive and take an active interest in problems that may affect the traveling public. They will also be interested in compliments that are due to the Airport and their staffs who will often work very hard to ensure Airport users are satisfied.
- **Committees do not have any executive or decision making power over the aerodrome.**

6.2 Aerodrome Safety Committee

An Aerodrome Safety Committee meeting would be hosted by BIAL once every quarter to review safety in the airside areas. The Committee would consist of different aerodrome divisions, airlines, handling agents, aircraft catering companies, aircraft cleaning companies, refueling companies, ATC, government agencies and any other large organisation that operate in airside areas. The meetings would be chaired by BIAL's COO with the Head – Aviation Safety as the member secretary and all concerned agencies would be required to nominate a VP/GM (Operations/Safety) or equivalent level executive.

The Terms of Reference for the Aerodrome Safety Committee include, but will not be limited to:

- Promotion of safety awareness through training, licensing and the publication of safety bulletins
- Establishment and discussion of local safety procedures and guidelines
- Accident, incident and near-miss reporting and investigation, subsequent data analysis and dissemination of trends, common causes etc
- Generation and evaluation of safety suggestions
- Preparation of regular joint safety campaigns
- Discussion of forthcoming airside works programme

The purpose of the meeting would be discussion and sharing of safety relevant information in a relaxed and open atmosphere so as to maximize the learning and development of ideas to improve safety. The committee would also review the minutes and recommendations of Runway Incursion Prevention Committee and the Ramp Safety Committee.

6.3 Runway Safety Team.

The primary role of the Runway Safety Team, is to develop an action plan for runway safety, advice the management on the potential runway incursion issues and to recommend strategies for hazard removal and mitigation of the residual risk. These strategies may be developed as a result of local occurrences or combined with information collected elsewhere.

The team would comprise representatives from aerodrome operations, air traffic service providers and airlines or aircraft operators who have a direct involvement in runway operations. The team would meet on a regular basis on a frequency not greater than once in three months.

The terms of reference for the team would include, but not be limited to:

a) Improve runway safety data collection, analysis, and dissemination;

b) Check that signage and marking are ICAO compliant and visible for pilots and drivers;

c) Develop initiatives for improving the standard of communications;

d) Identify potential new technologies that may reduce the possibility of a runway incursion;

e) Ensure procedures are compliant with ICAO Standards and Recommended Practices (SARPs); and

f) Initiate local awareness by developing and distributing runway safety education and training material to controllers, pilots and personnel driving vehicles on the aerodromes.

Based on the above analysis, a plan containing action items would be developed specifically and linked to runway safety concerns, issues or problems identified at BLR. Action items may include suggested changes to the physical features/facilities of the aerodrome, air traffic control procedures, airfield access requirements, pilot and vehicle operator awareness and production of a hot spot map.

The team will be lead by the BIAL Head – Aviation Safety and all concerned airport tenants will be requested to depute AVP/AGM (operations/Safety)/ equivalent executives to attend.

6.4 Aerodrome Apron Safety Committee

An Apron Safety Committee meeting would be hosted by BIAL once every quarter to review safety on the apron. The Committee would consist of different aerodrome divisions, airlines, handling agents, aircraft catering companies, aircraft cleaning companies, refueling companies, ATC, government agencies and any other large organisation that operate on airside areas. The meetings would be chaired by BIAL Head – Aviation Safety and all concerned agencies would be required to nominate a AVP/AGM (Operations) or equivalent level executive.

The Terms of Reference for the Apron Safety Committee include, but will not be limited to:

- Investigations, discussions and publication of incidents and accidents occurring on the apron.
- Promote best working practices.
- Review driver training schemes.
- Presentation of offences (Comparisons of company performance).
- Improve collection analysis and dissemination of Apron safety relevant data.
- Discussion on local safety procedures and guidelines.
- Generation and evaluation of safety suggestions.
- Discussion on forthcoming works programme affecting apron operations.

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SECTION 4

SAFETY PROMOTION

CHAPTER – 7

SAFETY TRAINING AND EDUCATION

7.1 Introduction

7.1.1 An organization's safety culture is linked to the success of its safety management training programme. All personnel must understand the organization's safety philosophy, policies, procedures and practices, and they should understand their roles and responsibilities within that safety management framework. Safety training should begin with the initial familiarization of employees and continue throughout their employment. Specific safety management training should be provided for staff who occupies positions with particular safety responsibilities. The training programme should ensure that the safety policy and principles of the organization are understood and adhered to by all staff, and that all staff is aware of the safety responsibilities of their positions.

7.2 Training needs

7.2.1 The Head – Aviation safety would, in conjunction with the personnel department and the line management, review the job descriptions of all staff and identify those positions that have safety responsibilities. The details of the safety responsibilities would then be added to the job descriptions.

7.2.2 Once the job descriptions have been updated, the Head – Aviation Safety, in conjunction with the training manager, should conduct a training needs analysis to identify the training that will be required for each position.

7.2.3 Depending on the nature of the task, the level of safety management training required will vary from general safety familiarization to expert level for safety specialists, for example:

a) Corporate safety training for all staff according to training needs evaluation;
b) Training aimed at management's safety responsibilities;
c) Training for operational personnel; and
d) Training for aviation safety specialists (such as the Safety Audit Team).

7.2.4 During the initial implementation of an SMS, specific training will be provided for existing staff. Once the SMS is fully implemented, the safety training needs of those other than the safety specialists should be met by incorporating the appropriate safety content into the general training programme for their positions.

7.2.5 One of the functions of safety management training is to create awareness of the objectives of the SMS of the organization and the importance of developing a safety culture. All staff would, therefore, receive a basic introductory course covering:

a) Basic principles of safety management;
b) Corporate safety philosophy, safety policies and safety standards (including corporate approach to disciplinary action versus safety issues, integrated nature of safety management, risk management decision-making, safety culture, etc.);
c) Importance of complying with the safety policy and with the procedures that form part of the SMS;
d) Organization, roles and responsibilities of staff in relation to safety;
e) Corporate safety record, including areas of systemic weakness;
f) Corporate safety goals and objectives;
g) Corporate safety management programmes (e.g. incident reporting systems, voluntary reporting scheme and incident recall meetings);
h) Requirement for ongoing internal assessment of organizational safety performance (e.g. employee surveys, safety audits and assessments);
i) Reporting accidents, incidents and perceived hazards;
j) Lines of communication for safety matters;
k) Feedback and communication methods for the dissemination of safety information;
l) Safety awards programmes (if applicable);
m) Safety audits; and
n) Safety promotion and information dissemination.

7.3 Safety Training for Management

7.3.1 It is essential that the management team understands the principles on which the SMS is based. Training would ensure that managers and supervisors are familiar with the principles of the SMS and their responsibilities and accountabilities for safety. It may also be of value to provide managers with training that addresses the legal issues involved, for example, their legal liabilities.

7.4 Specialist Safety Training

7.4.1 A number of safety-related tasks require specially trained personnel. These tasks include:

a) Investigating safety occurrences;
b) Monitoring safety performance;
c) Performing safety assessments;

d) Managing safety databases; and
e) Performing safety audits.

7.4.2 It is important that staff performing these tasks receive adequate training in the special methods and techniques involved. Depending on the depth of training required and the level of existing expertise in safety management within the organization, it will be necessary to obtain assistance from external specialists in order to provide this training and the same will be arranged for the Safety Audit team.

7.5 Safety Training for Operational Personnel

7.5.1 In addition to the corporate indoctrination outlined above, personnel engaged directly in flight operations will require more specific safety training with respect to:

a) Procedures for reporting accidents and incidents;
b) Unique hazards facing operational personnel;
c) Procedures for hazard reporting;
d) Specific safety initiatives, such as safety committee(s), seasonal safety hazards and procedures (winter/low visibility operations, etc.) and emergency procedures.

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CHAPTER – 8

SAFETY COMMUNICATIONS

8.1 Dissemination of Safety Information

8.1.1 The Head – Aviation Safety is the focal point for safety-related information, hazard reports, risk assessments, safety analyses, investigation reports, audit reports, meeting minutes, conference proceedings, etc. From all this information, the most relevant safety messages for dissemination will be identified. Messages will be classified as urgent (before the next flight), directive, for background understanding, or seasonal. Most staff do not have enough time to read all this information, and the salient points will be incorporated into easily understood safety messages. Several considerations would dictate the message classification and dissemination for example:

a) Criticality of the information;
b) The target audience;
c) Best means for disseminating the information (e.g. briefings, directed letters, newsletters, organization's intranet, videos and posters);
d) Timing strategy to maximize the impact of the message (e.g. winter briefings generate little interest during the summer);
e) Contents (e.g. how much background information should be given versus the core message); and
f) Wording (e.g. most appropriate vocabulary, style and tone).

8.2 Safety Critical Information

8.2.1 Urgent safety information may be disseminated using such means as:

a) Direct messages (oral or written) to responsible managers;
b) Direct briefings (e.g. for controllers in a specific unit);
c) Shift changeover briefings; and
d) Direct mail (post, facsimile or e-mail).

8.3 "Nice-To-Know" Information

8.3.1 The aviation industry produces a considerable amount of literature - some of it targeted at particular operations. This material includes State accident/incident reports, safety studies, aviation journals, proceedings of conferences and symposia, manufacturers' reports, training videos, etc. Increasingly, this information is available electronically.

Regardless of the format of the information, it will be made available to staff and management through:

a) An internal circulation system for critical/ important information;
b) A safety library;
c) Summaries notifying staff of the receipt of such information; and
d) Directed distribution to selected managers.

8.4 Reporting to Management

8.4.1 Management does not have the time to sift through large amounts of material, some of which is probably irrelevant. Management is interested in such basic questions as those listed below and all reports to the management should conform to the bullet points below unless unavoidable:

a) What is the problem?
b) How could it affect the organization?
c) How likely is it to happen?
d) What is the cost if it does happen?
e) How can the hazard be eliminated?
f) How can the risk be reduced?
g) How much will it cost to fix?
h) What are the downsides of such action?

8.5 Safety Promotion

8.5.1 An ongoing programme of safety promotion will ensure that employees benefit from safety lessons learned and continue to understand the organization's SMS. Safety promotion is linked closely with safety training and the dissemination of safety information. It refers to those activities which the organization carries out in order to ensure that the staff understand why safety management procedures are being introduced, what safety management means, why particular safety actions are being taken, etc. Safety promotion provides the mechanism through which lessons learned from safety occurrence investigations and other safety-related activities are made available to all affected personnel. It also provides a means of encouraging the development of a positive safety culture and ensuring that, once established, the safety culture will remain.

8.5.2 Publication of safety policies, procedures, newsletters and bulletins alone will not necessarily bring about the development of a positive safety culture. While it is important that staff is well informed, it is also important that they see evidence of the commitment of management to safety. The attitudes and actions of management will therefore be a significant factor in the promotion of safe work practices and the development of a positive safety culture.

8.5.3 Safety promotion activities are particularly important during the initial stages of the implementation of an SMS. However, safety promotion also plays an important role for the safety awareness, and it is the channel by which safety issues are communicated within the organization. These issues will be addressed through staff training programmes or less formal mechanisms.

8.5.4 In order to propose solutions to identified hazards, staff must be aware of the hazards that have already been identified and the corrective actions that have already been implemented. The safety promotion activities and training programmes would therefore address the rationale behind the introduction of new procedures. When the lessons learned would also be significant to other organisations, operators or service providers, consideration would be given to wider dissemination of the information.

8.6 Promotion Methods

8.6.1 If a safety message is to be learned and retained, the recipient first has to be positively motivated. Unless this is achieved, much well-intended effort will be wasted. Propaganda which merely exhorts people to avoid making errors, to take more care, etc. is ineffective as it does not provide anything substantial to which individuals can relate.

8.6.2 Safety topics would be selected for promotional campaigns based on their potential to control and reduce losses. Selection would therefore be based on the experience of past accidents or near misses, matters identified by hazard analysis, and observations from routine safety audits. In addition, employees would be encouraged to submit suggestions for promotional campaigns.

8.6.3 The safety promotion programme will be based on several modern communication methods.

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