STATE SAFETY PROGRAMME

INDIA

NOVEMBER 2010

State Safety Programme - India

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This Edition November 2010

Directorate General of Civil Aviation
Ministry of Civil Aviation, New Delhi,
India

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Foreword

International Civil Aviation Organization (ICAO) place responsibility on Contracting States to formulate a State Safety Programme (SSP). The Programme is an integrated set of Regulations and activities aimed at improving safety. Directorate General of Civil Aviation (DGCA) has regulatory responsibility for aviation safety.

The SSP is based on comprehensive analysis of the State's aviation system, safety policies and risk management, safety assurance and promotion. Safety oversight of DGCA is now focused on areas of significant safety concerns or higher safety risks. Thus, SSP provides the means to combine prescriptive and performance-based approaches to safety rulemaking, policy development and oversight by DGCA India.

In order to manage the SSP and ensure implementation of requirements of Safety Management Systems (SMS) by stakeholders, a State Safety Programme and Safety Management Systems (SSP/SMS) Division has been established in DGCA. A regulatory framework after introduction of SSP in DGCA and SMS amongst stakeholders has been established.

Most of the essential elements of the safety framework are well established. However, a number of items have been identified for improvement which need further concentrated efforts to work upon in related areas. Various tasks outlined in the Programme need to be completed by concerned officials to make SSP a wholesome subject under DGCA. It is for this reason that it is planned to keep this document up-to-date on DGCA website. DGCA will work with service providers in cooperative and collaborative manner to help them develop and establish their SMS.

I would like to thank and appreciate the members of India SSP for undertaking and accomplishing this task in time.

Dr. Nasim Zaidi
Director General of Civil Aviation
Directorate General of Civil Aviation India

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Glossary

Acronym	Definition
AAI	Airports Authority of India
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
Acs	Advisory Circulars
ADREP	Accident Data Reporting
ALoS	Acceptable Level of Safety
AIRPROX	Airproximity incident
AIRS	Accident Incident Reporting System
ARAP	Aviation Regulatory Advisory Panel
BFAS	Board for Aviation Safety
CARs	Civil Aviation Requirements
CASAC	Civil Aviation Safety Advisory Council
CSIS	Comprehensive Safety Information System
DGCA	Directorate General of Civil Aviation
ECCAIRS	European Coordination Centre on Aviation Incident Reporting System
FAA	Federal Aviation Administration
FDM	Flight Data Monitoring
FIR	Flight Information Region
FOQA	Flight Operations Quality Assurance
FUA	Flexible Use of Airspace
IASA	International Aviation Safety Assessments
ICAO	International Civil Aviation Organisation
MOCA	Ministry of Civil Aviation

MORS	Mandatory Occurrence Reporting System
NBCC	National Bird Control Committee
NOTAM	Notice to Airmen
RQMS	Regulatory and Quality Management System
SAR	Search and Rescue
SARP's	ICAO Standards and Recommended Practices and Procedures
SMS	Safety Management System
SSP	State Safety Programme
QMS	Quality Management System
VRS	Voluntary Reporting System

1. INTRODUCTION

International Civil Aviation Organization (ICAO) defines safety as 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.

ICAO's Standards and Recommended Practices (SARPs) (Annexes to the Convention on International Civil Aviation: Annex 1 (Personnel Licensing), 6 (Operation of Aircraft, Part I - International Commercial Air Transport - Aeroplanes and Part III - International Operations - Helicopters), 8 (Airworthiness of Aircraft), 11 (Air Traffic Services), 13 (Aircraft Accident and Incident Investigation), and 14 (Aerodromes) require that States establish a State Safety Programme (SSP) to achieve an Acceptable Level of Safety (ALoS) in civil aviation operations.

ICAO Standards explicitly require that States establish an ALoS as a means to verify satisfactory performance of the SSP and service providers' Safety Management Systems (SMS). ICAO describes an SSP as "an integrated set of regulations and activities aimed at improving safety."

The requirement for an SSP recognises that States as well as service providers have safety responsibilities and provides a framework within which service providers are required to establish SMS.

The ICAO SARPs contained in Annexes 1, 6, 8, 11 and 14 address the activities related to service providers such as:

- approved training organizations that are exposed to safety risks during the provision of their services,

- aircraft operators,

- approved maintenance organizations,

- organizations responsible for type design and/or manufacture of aircraft,

- air traffic services providers, and

- Certified aerodromes.

India SSP is broad in scope, including many safety activities aimed at fulfilling the programme's objectives of civil aviation.

The SSP document has been developed using the ICAO framework and guidance material, including the ICAO SSP gap analysis document and international best practice.

1.1   Purpose

The purpose of this document is to communicate the SSP for civil aviation in India to all stakeholders. This focuses on roles and responsibilities, as well as actions taken by the Directorate General of Civil Aviation (DGCA), as the responsible organisation for the State safety in civil aviation.

1.2 Definitions

For the purposes of this document:

A **hazard** is any situation or condition that has the potential to cause damage or injury.

Risks are the potential adverse consequences of a hazard, and are assessed in terms of their severity and likelihood.

Mitigation - measures or controls put in place to either eradicate the hazard, or to reduce the severity or likelihood of the assessed risks.

State Safety Programme means an integrated set of regulations and activities aimed at improving safety.

Safety indicators: "the parameters that characterize and/or typify the level of safety of a system".

Safety performance indicator is a measure (or metric) used to express the safety performance in a system.

Safety targets: "the concrete objectives of the level of safety".

Safety performance target comprises one or more safety performance indicators, together with desired outcomes expressed in terms of those indicators. (ICAO Doc.9859 Safety Management Manual describes safety performance indicators and safety performance targets within the concept of an "acceptable level of safety".)

Safety requirements are the steps that need to be taken to chieve the 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.

Acceptable level of safety: "the minimum degree of safety that must be assured by a system in actual practice".

Safety Measurement: is generally associated with the SSP and refers to the "quantification of the outcomes of selected high-level, high consequence events, such as accident and serious incident

continuous process. It is considered a "spot check" conducted at periodic intervals.

Safety Performance Measurement: is generally associated with an SMS and refers to the "quantification of the outcomes of selected low-level, low consequence processes" such as the number of unauthorized ground vehicle events on taxiways per a specific number of airport operations. Safety performance measurement is tactical in nature and is a "non-stop activity, involving continuous monitoring and measurement".

1.3 Document control

The SSP document will be made available to all regulatory staff having safety oversight responsibilities by the Information and Regulation Directorate. The document shall also be placed on DGCA website (http://dgca.nic.in/).

Changes to this document will be achieved by a re-issue of the entire document rather than by the amendment of individual pages.

The SSP document will be reviewed periodically by Director-General at least annually to ensure the relevance and currency of all legislation, regulations, DGCA requirements etc.

2. STATE SAFETY OVERSIGHT SYSTEM

2.1 Introduction

The purpose of this section is to describe the safety oversight arrangements in place in India as an ICAO Contracting State. It explains the relationships between DGCA, as the body responsible for SSP, and the Government of India and ultimately ICAO. This section also references the different aviation regulatory framework in place in India.

2.2 General India as ICAO Contracting State

India ratified the Convention on International Civil Aviation (the Chicago Convention) on 1st March 1947.

The Ministry of Civil Aviation (MOCA), Government of India, is responsible for civil aviation in India and for upholding India's compliance with the Chicago Convention. The MOCA establishes the overall aviation policy for civil aviation in India.

The DGCA is the overall safety regulator of the civil aviation.

2.3 Responsibilities of the MOCA

The Ministry of Civil Aviation (MOCA) is the nodal Ministry responsible for policy formulation and regulation of civil aviation in India. The Ministry also overlooks the planning and implementation of schemes for the growth and expansion of civil air transport, airport facilities, air traffic services and carriage of passengers and goods by air.

The Ministry of Civil Aviation (MOCA) is responsible for the overall policy direction in the field of civil aviation and is the executive head

of the MOCA and responsible to the Parliament for all civil aviation matters.

The MOCA is responsible for developing and amending primary aviation legislation (The Aircraft Act, 1934). MOCA after consultation with the other concerned Ministries and Ministry of Law, puts up the proposal to the Cabinet for approval. After a Cabinet approval, a Bill is moved in Parliament and is passed in both Houses. The Bill becomes an Act after the President gives his assent to it. In the event of Parliament not being in session and the amendment is considered urgent, the Government can get an Ordinance issued by the President, which has the same force of law as an Act.

Provisions contained in sections 4, 5, and 7 of the Aircraft Act, 1934 empower Central Government to make Rules to implement the Chicago Convention, 1944 (including any annex thereto relating to international standards and recommended practices and amended from time to time) by notification in the Official Gazette.

2.4 Responsibilities of the DGCA

The DGCA is responsible for the safety regulation of the civil aviation industry and is recognised in the Aircraft Act and the Aircraft Rules as regulatory authority for civil aviation.

The Director-General has special powers vested under Section 5A of the Act to issue directions. Section 4A of the Aircraft Act empowers the Director-General or any other officer specially empowered in this behalf by the Central Government to perform the safety oversight functions in respect of matters specified in the Act or the rules made thereunder.

The Aircraft Rules, 1937, provide a number of functions to DGCA relating to the issue of licenses, certificates, approvals and permits. The standards that applicants are expected to meet in order to be granted a license, certificate, approval or permission are contained in regulations termed as the Civil Aviation Requirements (CARs) issued

by DGCA under Rule 133A. Rule 29C of the Aircraft Rules, 1937, provides the power to the Director-General to lay down standards and procedures to carry out the Convention and any Annex thereto.

The Aircraft Rules also empowers persons authorised by DGCA to enter, inspect and search any aircraft or any aviation facility, including air navigation services, and also inspect any personnel, document and records for the purpose of securing compliance with any of the rules or the provisions of the Aircraft Act, 1934.

The DGCA is also responsible for the safety oversight of foreign aircraft while operating in India.

2.5 Accident Investigation

Part X and X-A of the Aircraft Rules, 1937, provide for investigation of accidents and incidents respectively. The accidents are investigated by Inspector of Accidents, Committee of Inquiry or 'Court'. While the Director-General appoints the Inspector of Accident, the Committee or the Court is appointed by the Central Government. Director-General, when due to seriousness of the incident considers it expedient, may appoint an Inquiry Officer to investigate an incident.

The Accident Report is submitted to the Director-General in case of investigation by an Inspector of Accident or an Inquiry Officer. The aircraft rules require that the report of Inspector of Accident or Inquiry Officer shall be forwarded to the Central Government by the Director-General with such comments as he may think fit to make. The Committee of Inquiry/ Court submit the report to the Central Government.

In all cases of accident and incident investigations, the aircraft rules provides that only the Central Government may, at its discretion, make the whole or part of any such report public in such manner as it may consider fit, thereby ensuring the process of accident and

incident investigation independent from the other aviation organisations including the regulatory authority (DGCA).

The aircraft rules further provide that where it appears to the Central Government that any new and material evidence has become available after the completion of the investigation, it may by order, direct the reopening of the same, which further ensures that the process of accident and incident investigation is independent from other aviation organisation of India.

2.6 Search and Rescue

The responsibility for co-ordination of search and rescue (SAR) with other agencies is vested with the Airports Authority of India (AAI) under the Airports Authority of India Act, 1994 (as amended by AAI (Amendment) Act 2003).

2.7 Civil Military Cooperation

In India, the model of side-by-side operations is being used as the airspace is demarcated between the civil and military authorities and the Air Traffic Services are provided separately by the civil and military authorities in their respective airspaces. The military authorities have been exclusively using the airspace specially allocated to them for carrying out their own flying activities.

In the flexible use of airspace, the airspace available with both military and civil users is effectively utilized on sharing basis to gain optimum usage thereby enhancing its capacity and derive economic benefits to flights operating within a nation's airspace. In this model a co-ordination procedure between the civil and the military authorities is required for sharing of the airspace for meeting the operational requirement of the military as well as demand of the civil aircraft operation.

3. STATE SAFETY POLICY AND OBJECTIVES

The vision of DGCA is to 'Endeavour to promote safe and efficient air transportation through regulation and proactive safety oversight system'. To meet this vision, the DGCA has laid down its Safety Policy, attached as Appendix 2.

In addition, this Policy has been placed on DGCA's website (http://dgca.nic.in/)

3.1 India's aviation safety legislative framework

The appropriate legislative framework for safety management has been implemented in India in accordance with ICAO SARPs. This legal structure assigns responsibilities and gives the appropriate authority to the DGCA to implement the applicable standards and recommended practices. The Director-General is accountable for the effective implementation of these responsibilities and authority.

The management of aviation safety is carried out through a comprehensive regulatory framework with the Aircraft Act, 1934, as the primary aviation legislation, the Aircraft Rules, 1937, and the Aircraft (Carriage of Dangerous Goods) Rules, 2003. Also, in form of the operating regulations, through the CARs, Aeronautical Information Circular (AIC) and Aeronautical Information Publication (AIP).

For carrying out the ICAO Convention, 1944 (including any Annex thereto relating to international standards and recommended practices), India has three layers of legislation, this is shown on Figure 1.

The Aircraft Act, 1934 is the Primary Legislation that empowers and provides authority to implement other statutes as stipulated in the extent and scope of the Act. Section 4 of the Act provides power of

Central Government to make rules to implement the Convention of 1944.

The Central Government has also promulgated Rule 29C of the Aircraft Rules, 1937, regarding "Adoption of the Convention and Annexes" and states that the Director-General may lay down standards and procedures not inconsistent with the Aircraft Act, 1934, and the rules made thereunder to carry out the Convention and any Annex thereto. The Aircraft Rules, 1937 and CARs are the operating regulations in the field of civil aviation in India. Notwithstanding the above, the Rules provide DGCA powers to grant certificates, licences, and approvals for operations in civil aviation.

The CARs provide the detailed requirements to be met that form a means of compliance with ICAO SARPs that is consistent with the legislation in force. Although CARs provide the comprehensive requirements, there is a need to promulgate adequate information which may not be appropriate for inclusion in the CARs. Such information and guidance material for compliance with Rules and regulations is included in Advisory Circulars (Acs).

The Aircraft Act, 1934 ← Section 4, empowers Central Government (MOCA) to make Rules to carry out the ICAO Convention

The Aircraft Rules, 1937 ← Rule 29C, empowers DGCA to make CARs to adopt SARPs

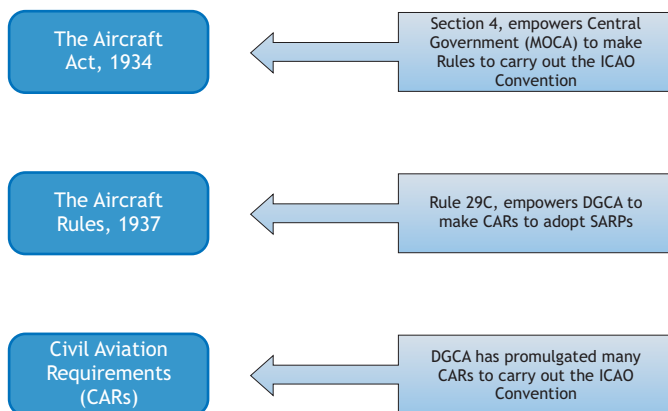Civil Aviation Requirements (CARs) ← DGCA has promulgated many CARs to carry out the ICAO Convention

Figure 1. The regulatory framework in India

The regulatory framework enables the fulfilment of the obligations of India under the Chicago Convention, 1944, within the State. More detailed information about the legal framework may be found at DGCA Website: http://dgca.gov.in.

The regulatory framework provides consistency and compliance with the Annexes to the Convention, 1944, wherever practicable. Differences, if any, to standards and recommended practices of the Annexes, are filed to ICAO as per Article 38 of the Convention.

3.1.1 Monitoring and review of legislative framework and specific regulations

India continues to review, develop and promulgate a national safety legislative framework and specific regulations in compliance with international standards. Changes required in legislation to ensure the effectiveness of the oversight system are determined through ongoing safety analysis:

a) **The Oversight of the regulatory framework:** The regulatory framework is monitored continuously by DGCA in the course of its usual regulatory business.

b) **Maintenance of the regulatory framework:** The DGCA is responsible for the administration necessary to maintain the regulatory framework. The DGCA has suitable procedures and is adequately resourced (staffed, funded etc), for the longer term, to fulfil this task.

c) The system of monitoring release of amendments to ICAO Annexes has been institutionalized wherein these are monitored on a continuous basis for timely inclusion in the regulations.

d) The DGCA has set up standing Aviation Regulatory Advisory Panel (ARAP) for the review of current regulations in light of

best international practices and globally harmonized standards to keep the regulations current and dynamic.

e) **Regulatory and Quality Management System (RQMS)**: The DGCA intends to set up Quality Management System (QMS) under RQMS which would combine regulatory and quality management policies and processes.

3.2 SSP responsibilities and accountabilities

India has identified, defined and documented the requirements, responsibilities and accountabilities regarding the establishment and maintenance of the SSP. This includes the directives to plan, organize, develop, maintain, control and continuously improve the SSP including a clear statement about the provision of the necessary resources for the implementation of the SSP.

Primary responsibility for the India SSP rests with DGCA. The Director-General is responsible for overseeing the implementation of SSP and coordinates as appropriate, the activities of the various State aviation organizations encompassed under SSP.

The DGCA shall make the endeavour to ensure that DGCA financial and human resources are adequate for implementation, establishment and maintenance of SSP.

The DGCA has developed and is responsible for implementation of a State safety policy.

India has set up the SSP Steering Committee with the composition as per Appendix 3 and with the purpose of:

1. Monitoring of SSP and Safety Policy, and review or feedback/advice as required,

1. Responsibility for promotion of SSP in applicable service providers,

2. Supporting resolution of issues related to SSP.

In order to manage the SSP and ensure implementation of requirements of SMS by stakeholders, India has established a SSP/SMS Division which is attached to the Air Safety Directorate. The SSP/SMS Division is under overall Chairmanship of the Director-General and for carrying out its functions/responsibilities is headed by Joint Director-General in-charge of Air Safety.

The SSP/SMS Division has the following functions and responsibilities:

i. To assist Steering Committee in the preparation and implementation of SSP,

ii. Coordination, monitoring and review of implementation of SSP,

iii. Coordination, monitoring and review of implementation of SMS,

iv. Any other work relating to SSP/SMS as assigned by Director-General and Steering Committee.

3.3 Accident and incident investigation

India has established an independent accident and incident investigation process, the sole objective of which is the prevention of accidents and incidents, and not the apportioning of blame or liability.

In the operation of the SSP, the State maintains the independence of the accident and incident investigation process from other State aviation organizations.

The investigation of accidents and serious incidents is subject to the regulations in Parts X and X-A of the Aircraft Rules, 1937. The accidents are investigated by Inspector of Accidents, Committee of Inquiry or "Court".

3.4 Enforcement Policy

The India enforcement policy outlines the obligations of the stakeholders, the enforcement actions to be used, the impartiality of enforcement actions, proportionality of responses, natural justice and accountability. The Aircraft Rules confers on the DGCA and its officers the power of enforcement. Breach of the regulations is an offence carrying a maximum penalty which depends on the nature and circumstances of the breach.

DGCA is vested with the powers to take administrative action under rules 19, 39A, 61, 83, 133B, 155A etc. of the Aircraft Rules, 1937. Nevertheless, judicial action may be required in cases where the violations are not covered by the provisions relating to administrative action or the violations are of such a serious nature as to warrant judicial action.

The Enforcement Policy and Procedures Manual provides details and guidance to DGCA Officers/Inspectors about the statutory provisions to be complied with by the industry and the procedure to be followed for their enforcement. In this connection, it is vital to keep in mind the difference between compliance and enforcement. Compliance consists of all regulations and safety standards being met. When compliance exists, there is no need for enforcement. Enforcement is the action necessary when compliance is not present. Enforcement requires legal or administrative action.

The DGCA promulgates an enforcement policy that establishes the conditions that:

1. allow DGCA to define the conditions (events involving gross negligence and wilful deviations) under which it can deal with safety deviations through established enforcement procedures;

2. allow service providers to deal with and resolve, events involving certain safety deviations internally, within the context of the service provider SMS and to the satisfaction of the DGCA.

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4. STATE SAFETY RISK MANAGEMENT

4.1 Introduction

This section sets out the proactive measures to be implemented in the Indian aviation environment, intended to identify and mitigate risks prior to their effects.

Specifically, it includes the elements of rulemaking and policy of hazard identification and risk mitigation contained within the CAR on SMS.

It aims to move to a performance-based safety management process in India, with each applicable service provider taking proactive responsibility for the management of safety, with the DGCA providing oversight and regulatory control.

DGCA is in compliance with the ICAO SARPs, specifically in Annexes 1, 6, 8, 11, 13 and 14.

The relationships between the State SSP and the service providers SMS and ongoing operations are shown in the figure below. Both compliance and performance measurement are foreseen.
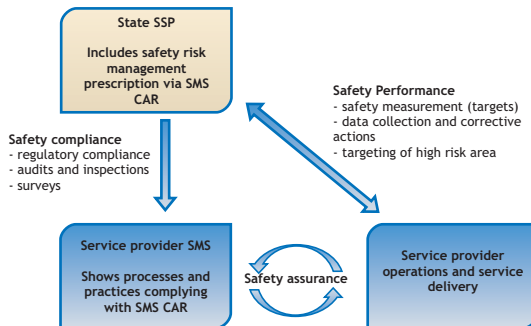

Figure 2. The relationships between the State SSP and the service providers SMS

DGCA is using the Safety Risk Management process to determine what action shall be taken to help mitigate those risks. The process results in a set of actions provided by the DGCA. Safety improvements cannot be delivered without DGCA continuing engagement with all sectors of aviation industry.

DGCA is currently working on further improvements to the Safety Risk Management process.

4.2 Safety requirements for the service provider's SMS

The DGCA has released a series of SMS CARs, setting out operational regulations and implementation policies for the applicable service providers to implement their SMS as part of their certification process.

The applicable regulations are as follows:

Purpose	Reference
To require **commercial air transport (aeroplanes) operators including maintenance organisations** to implement a safety management system acceptable to the DGCA	CAR Section 2 Series 'O' Part II - Operational of Commercial Air Transport - Aeroplanes
To require **commercial air transport (helicopters) operators including maintenance organisations** to implement a safety management system acceptable to the DGCA	CAR Section 2 Series 'O' Part IV - Operational of Commercial Air Transport - Helicopters
To require **air traffic service providers** to implement a safety management system acceptable to the DGCA	CAR Section 9 Series 'E' Part I - Air Traffic Services

To lay down the **minimum acceptable requirements for the establishment of an SMS** in an applicable service provider, with detailed requirements including the hazard identification process and safety risk management	CAR Section 1 Series 'C' Part I Establishment of a Safety Management System (known as CAR SMS)

The CAR SMS lays down the safety-related processes, procedures and activities for the establishment of an SMS acceptable to the DGCA, and should be consulted by the applicable service providers as the key reference in understanding the requirements of the DGCA. Specifically, it lays out the following phased approach for the development and acceptance of service providers' SMS.

Implementation date (reference to date of issuance of SMS CAR)			
+ 120 days	+ 1 year	+ 2 year	+ 3 year
PHASE 1	**PHASE 2**	**PHASE 3**	**PHASE 4**
1. the name of the accountable executive; 2. the name of the person responsible for implementing the SMS; 3. a statement of commitment to the implementation of SMS (signed by the accountable executive); 4. documentation of a gap analysis between the organization's existing system and the SMS regulatory requirements; and 5. the organisation's implementation project plan based on an internal gap	1. a documented safety management plan; 2. documented policies and procedures relating to the required SMS components; and 3. a process for occurrence reporting with the associated supportive elements such as training, a method of collecting, storing and distributing data, and a risk management	A process for the proactive identification of hazards and associated methods of collecting, storing and distributing data and a risk management process. The required components are: 1. documented safety management plan; 2. documented policies and procedures; 3. process for reactive	1. training; 2. quality assurance; and 3. emergency preparedness

analysis.	process.	Occurrence reporting and training; and 4. Process for proactive identification of hazards are in place.	

4.3 Performance-based safety

One of the key objectives of the Indian SSP is to reinforce and oversee a move to performance-based safety in India. This will entail two elements:

I) establishment of an ALoS for aviation in India;

ii) agreement of safety performance of individual service providers, designed to meet the overall ALoS.

This approach aims to ensure continuous safety performance improvements in all aspects of aviation in India. It moves away from administrative compliance (check-list) to a proactive risk control, implemented by the service providers and overseen by the DGCA.

4.3.1 State Acceptable Level of Safety (ALoS)

The State ALoS represents the State's expressed target for the level of aviation safety in India. It takes into account the existing level of safety risk and the public expectations in setting realistic and measurable goals for safety risk management. The State ALoS will be established by the DGCA, and is the responsibility of the Director-General.

It will include as a minimum a series of safety indicators and targets focusing on high level outcomes such as accidents and serious

incidents. The indicators used and their quantitative target are known as the "safety measurement".

More detail on the expected timeline and process for the establishment of the State ALoS is given in Appendix 4.

4.3.2 Agreement on service providers' safety performance

Once the ALoS is established, this will then be used to drive a top-down safety performance target setting for all aviation organisations in India. This will be a reference by which the service providers and DGCA can assess the ongoing safety performance, and initiate corrective actions as required. The quantitative targets (applied to safety indicators) will be agreed between the DGCA and the applicable service provider.

The targeted safety performance will be scaled as appropriate dependent on the complexity of operations and availability of resource at the applicable service provider.

The safety indicators (i.e. parameters that characterise the level of safety in the system) will be developed to be measurable and reviewable on an ongoing basis. Collected data from occurrence reporting and safety maturity surveys will be used to determine quantitative measurement against the indicators.

The DGCA will identify key risks from the data to focus corrective actions.

With the development of the safety target processes and values (see Section 5), it is expected that lower level safety indicators will be introduced over time. These lower level safety indicators and their quantitative targets will be measurable on an operational level (i.e. they will relate directly to the daily operations of the relevant service provider).

4.3.3 Derivation of Safety Plan to deliver the safety targets

The DGCA Safety Plan will be developed to ensure that the ALoS, as specified by specific safety targets, is delivered in a reasonable timeframe. The SSP/SMS Division of the DGCA will be responsible for the production of the Safety Plan, and oversight of its implementation.

The Safety Plan takes account of the identified risks, available resource and cost-benefit of any change to determine a pragmatic series of actions to be taken by stakeholders in India.

The actions which can be included in the Safety Plan could use operational procedures, technology or training to help achieve the ALoS.

The Safety Plan will be subject to regular reviews by the SSP/SMS Division of the DGCA, in particular by:

   i)   continuous hazard identification and proposal of appropriate risk mitigations;

   ii) assessment of occurrence data, audits, inspections and safety reporting to update and prioritise action upon individual risk areas.

4.4 India implementation of SSP

India shall follow ICAO guidance for implementation of SSP. ICAO has outlined the four steps that a State should take to implement an SSP. These are considered in turn.

   ▪   Step 1 - Conduct a gap analysis of the SSP and develop a national legislation governing the functioning of the SSP.

The DGCA carried out a gap analysis based on the ICAO Doc 9859 when developing this SSP document. The gap analysis was used as a basis to develop the SSP Implementation Plan and to set out which components/elements are identified as missing or deficient, together with those already existing and effective.

- Step 2 - Develop a training programme for civil aviation oversight authority personnel.

An appropriate programme developed by ICAO was used to provide general SSP/SMS training for DGCA staff. The DGCA will also develop a new programme that aims to provide general, specialised, refresher and continuing SSP training for all DGCA staff.

- Step 3 - Develop SMS regulations for service providers and prepare guidance material for the implementation of SMS.

The DGCA has developed regulations and is currently preparing guidance material for service provider SMS. Much of this material will be based on the ICAO Safety Management Manual and ICAO courses.

- Step 4 - Revise the civil aviation oversight authority's enforcement policy.

DGCA as the authority responsible for matters relating to aviation safety, especially certification, oversight and inspection shall analyse and revise, if necessary, its enforcement policy. DGCA's enforcement policy is defined in Enforcement Policy and Procedures Manual. This policy has been established to ensure the continuing flow and exchange of safety information with service providers. Establishing and maintaining trust with the reporting community is an essential part of this process.

DGCA has prepared a detailed SSP Implementation Plan which describes the current state of the implementation status of the SSP

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in India, and provides framework and timescales for additional necessary steps required to achieve full compliance with ICAO standards.

5. STATE SAFETY ASSURANCE

5.1 Safety oversight

DGCA safety oversight function is a fundamental component of safety assurance in aviation in India.

DGCA's safety oversight has two primary elements:

i)   Ensuring compliance with regulations, namely: compliance with national and international standards and regulations; ensuring appropriate qualification and training; ongoing inspections, audits and surveillance; and resolving safety concerns effectively.

The structure of the DGCA has been updated to provide effective oversight in all required areas, including a new Airspace and Air Traffic Management Directorate. Regional offices have been expanded, and now include Operations, Airworthiness and Air Safety Divisions. Consistent guidance is applied by safety inspectors in the areas of operations, airworthiness and enforcement.

Surveillance is reinforced by the presence of a Surveillance Procedures Manual and updated Enforcement Policy and Procedures Manual, together with a new Surveillance and Enforcement Division. This Division will maintain a database of all findings detected, and monitor the same until closure of the observation.

Separately a Board for Aviation Safety (BFAS) has been set up to resolve Level I surveillance findings and their monitoring. Level I findings in the de-identified form are displayed on the DGCA website to promote safety exchange.

The Civil Aviation Safety Advisory Council (CASAC) ensures ongoing best practice in safety oversight including areas for future strengthening.

i)   <u>Efficient oversight of service providers' SMS</u>, including resource allocation and performance monitoring.

The DGCA will ensure that regulatory safety risk controls are appropriately integrated into individual service providers' SMS. In addition, the practice of the safety risk controls will also be audited, including checking for appropriate resource allocation.

The DGCA will also monitor safety measurement for all applicable service providers, with a continuous process of improving the safety indicators and updating safety targets in line with the ALoS. This performance monitoring aims to ensure best practice throughout the Indian civil aviation industry.

DGCA would set up an Internal Audit and Quality Assurance Division to audit aviation safety regulations in relation to the ICAO's eight Critical Elements of a safety oversight system. The division would carry out regular internal quality assurance audits and internal technical audits to provide assurance on corporate governance to the DGCA.

Independent audits by the FAA IASA programme confirm that India is to be considered as a "role model" in the Asia region in the civil aviation sector.

5.2 Safety data collection, analysis and exchange

Appropriate systems including the voluntary reporting system exist for reporting of aircraft accident and incidents, bird strikes and air

proximity incidents. All stakeholders are required to provide the information of any occurrence.

5.2.1 Mandatory Occurrence Reporting System (MORS)

The main objective of MORS is to contribute to the improvement of air safety by ensuring that relevant information on safety is reported, investigated if required and findings and recommendations disseminated to the concerned stakeholders, with the sole objective of prevention of similar occurrences.

All occurrences (accidents and incidents) under Part X and Part X-A of the Aircraft Rules, 1937 are required to be notified to DGCA. Investigation of the serious incidents is independently carried out by an Inquiry Officer while investigation of accidents is carried out either by an Inspector of Accidents, Committee of Inquiry or 'Court'. The investigation of incidents other than serious incidents and accidents is carried out either by the Regional Air Safety Offices or the Permanent Investigation Board of the Operator in association with the Regional Air Safety Office as per laid down procedures.

The online Accident Incident Reporting System (AIRS) of DGCA which requires operators/ individuals to report any occurrence through this programme. The programme allows Regional Air Safety Offices to process and segregate the data, qualifying the occurrences as incidents for investigation purposes. The system provides analysis and generation of reports at DGCA headquarters using any combination of the available fields.

The information obtained through MORS is analysed in the BFAS meeting. As part of the DGCA's Safety Risk Management process, BFAS takes decisions for further action and immediate preventive action.

5.2.2   Voluntary Reporting System (VRS)

In order to encourage voluntary reporting of occurrences by the personnel engaged in aviation related activities, Voluntary Reporting System has been established. Under this system, anyone who witnesses or is involved or has knowledge of an occurrence, hazard or situation which he or she believes poses potential threat to flight safety may report the same. It encompasses basic principles of provision of confidentiality & possibility of feedback by providing how reports should be submitted to the DGCA office. The system provides assurance that no punitive action will be taken on such voluntary reporting made unless infringement relates to unlawful/ criminal/ deliberate gross negligent unsafe actions.

5.2.3   Mandatory Bird Strike Reports

Under mandatory bird strike reporting system, a pilot flying in Indian airspace who believes his aircraft has collided with bird(s) are required to inform DGCA. The bird strike reports received are processed, analysed and evaluated to assess the severity of bird activity at Indian Airports. In order to tackle the bird menace and control incidents of bird hits, Government of India has also set up a high level "National Bird Control Committee" (NBCC) under the Chairmanship of Secretary (Civil Aviation), with an objective to reduce frequency and risk of bird strikes to aircraft.

5.2.4   Reporting and investigation of aircraft proximity incidents

An aircraft proximity incident report is required to be made to DGCA whenever a pilot or Air Traffic Controller considers that the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved was or may have been compromised.

In the interest of enhancing flight safety, AIRPROX reports are assessed and investigated based on the degree of risk involved (Risk

of Collision, Safety not assured, No risk of collision or Risk not determined). The data is used to take preventive actions to avoid recurrence such as improving the procedures and updating the facilities.

5.2.5 Reporting and investigation of defects in aircraft and aircraft components

All major defects to aircraft and aircraft components are required to be reported to DGCA. The reported defects are investigated and analyzed for the purpose of taking timely corrective/preventive action.

5.2.6 Using safety data to target oversight on areas of greater concern or need

The availability of safety data to the State is a determinant factor in the decision regarding the detail of representation, as well as the selection of quantitative or qualitative safety indicators. The two safety indicators i.e. primary aviation legislation and operating regulations are in conformance with the international requirements.

At present DGCA receives information through MORS, VRS and surveillance. In addition information on the operational exceedences is also available from the Flight Operations Quality Assurance (FOQA) programme/ Flight Data Monitoring (FDM).

The DGCA has achieved major progress in the development and initial implementation of an extensive surveillance programme in the conduct of its safety oversight responsibilities. The programme is well supported with associated procedures, guidance material and checklists. The programme has generated sufficient data to enable the conduct of safety driven analysis, identification of major safety concern and associated safety risks in order to set DGCA safety priorities and focus of attention.

State Safety Programme - India

The Surveillance and Enforcement Division is responsible for establishing quantitative statistical type reports and records in respect of all DGCA generated findings and provide monthly reports on Directorates and Regional offices tracking of corrective actions. This type of quantitative statistics provide the DGCA with a full qualitative analysis on the identified safety concerns and associated safety risks in order to assist DGCA in setting program safety priorities.

As part of the SSP implementation DGCA is developing Comprehensive Safety Information System (CSIS) to consolidate all the safety information received. The ability (software and hardware) to analyse the data will be improved to identify key safety risks and to develop mitigating action, including targeted inspections, audits and surveillance for individual approved organisations. Data collected regarding specific safety indicators at an operational level, will be used to prioritise actions and resources on areas of higher risk. The Accident Incident Reporting System (AIRS) will be further improved and the incident data collected (regarding specific safety indicators at an operational level), will be used to prioritise actions and resources in areas of higher risk. The system would also provide for generation and online transmission of reports to ICAO and other contracting States in ADREP/ECCAIRs taxonomy.

The directorates of DGCA will establish mechanisms that guarantee that the identification of hazards and the management of safety risks by service providers follow established regulatory controls and safety risk controls are integrated into the service provider's SMS.

The SSP/SMS Division will be responsible for ongoing monitoring of the appropriate data, and feeding any key conclusions to BFAS for appropriate action to be taken using risk-based resource allocation.

6. STATE SAFETY PROMOTION

For effective performance of a SSP, all personnel within national safety system should understand how that system works and their roles and responsibilities within it. Similarly, for a safety culture to be inherent amongst personnel and organisations, the principles and policy for safety must be installed and well understood.

Safety Management training is therefore a pre-requisite to support this. The exact content of the training should be tailored according to the role of the individual concerned.

6.1   Internal training, communication and dissemination of safety information

As required by ICAO, the DGCA would provide training, awareness, and two-way communication of safety relevant information to support, within the DGCA, the development of a positive organizational culture that fosters the development of an effective and efficient State' safety programme. The DGCA as a body responsible for the SSP would develop and maintain a safety training programme which ensures that personnel are trained and competent to perform the SSP duties.

The DGCA is establishing at the moment appropriate Training Programme for its staff. Each individual's development and training needs on SSP would be assessed on induction at DGCA by Training Directorate and thereafter during the annual performance review.

DGCA's annual budget has adequate allocation under training. Both initial and recurrent training is provided to officials/ inspectors. Time should be provided to train every individual involved in safety management and safety oversight appropriate to each individual's involvement in the SSP and for short safety briefing for the remainder of the employees.

The DGCA communicates and disseminates safety-relevant information within the DGCA using the following methods:

1) For critical safety-relevant information:

   - Circulars;

   - Confidential Letters;

   - Email system.

2) For non-critical safety-relevant information:

   - DGCA Website.

Other means of communication currently in implementation are:

   - DGCA Intranet;

   - Safety Notice Boards;

   - Safety Alerts;

   - Safety Newsletters (quarterly);

   - Safety Journal (annual).

The schedule of the courses will be published in Annual Training Plan. The basic principle is to train the trainers in respectable appropriate institutions and than carry out in-house training. The records of safety training are kept in accordance with internal procedures within DGCA Training Directorate.

Concerning the internal communication of safety-relevant information, a key element of this is the process used to handle Mandatory Occurrence Reports (MORs) received by DGCA. These are communicated to DGCA Departments for investigation or information and, in many cases, are required to provide feedback on action taken so that the MOR can be officially 'closed'. This process is an important part of the DGCA Safety Risk Management process.

6.2   External training, communication and dissemination of safety information

As required by ICAO the State must develop and maintain formal means for safety communication that ensure that:

- service providers´ personnel are fully aware of the SSP and its relationship with the SMS,

- safety critical information is conveyed to service providers, and

- service providers understand why particular safety actions are taken.

DGCA communicates with Stakeholders in many different ways. At a high level, safety is addressed in the MOCA's Annual Report. DGCA will develop a Safety Plan which will describe in more detail the high-level safety objectives and outline the DGCA's programme of work to achieve continuous safety improvement. DGCA also publishes guidance to support regulatory action.

Under Annex 15 of the Chcago Convention, India publishes the AIP. In addition, AIC and Notice to Airmen (NOTAM) are also issued. For meteorological information, Indian Meteorological Department under the Ministry of Science and Technology provides the Meteorological forecasting and climatological services civil aviation in India.

In addition, DGCA publishes on its websites documents such as Public Notices, Circulars, Air Safety Circulars. The DGCA also publishes safety related information on enforcement actions in de-identified form, aircraft accident summaries and reports and passenger related data such as market share, on-time performance data, flight cancellation data.

DGCA will publish each month a listing of MORs received by DGCA. This monthly listing would provide a valuable feedback to the service providers on recent MORs to inform them and their SMS.

The DGCA supports the implementation of SMS by running seminars/ workshops for the industry to promote confidence among operational staff in encouraging and assessing SMS development and performance. The cultivation of an active safety culture at all levels and in all functional areas in the aviation industry is seen as a key area of development.

The DGCA holds regular meetings with operators and service providers, in order to keep them advised of likely regulatory developments, and develop the required safety culture.

The DGCA has established the following methods of communication and dissemination of safety-relevant information nationally and internationally:

1) For critical safety-relevant information:

- Circulars;

- NOTAMs;

- AIC;

- Confidential Letters;

- Email system.

1) For non-critical safety-relevant information:

- DGCA Website.

Other means of communication currently in implementation are:
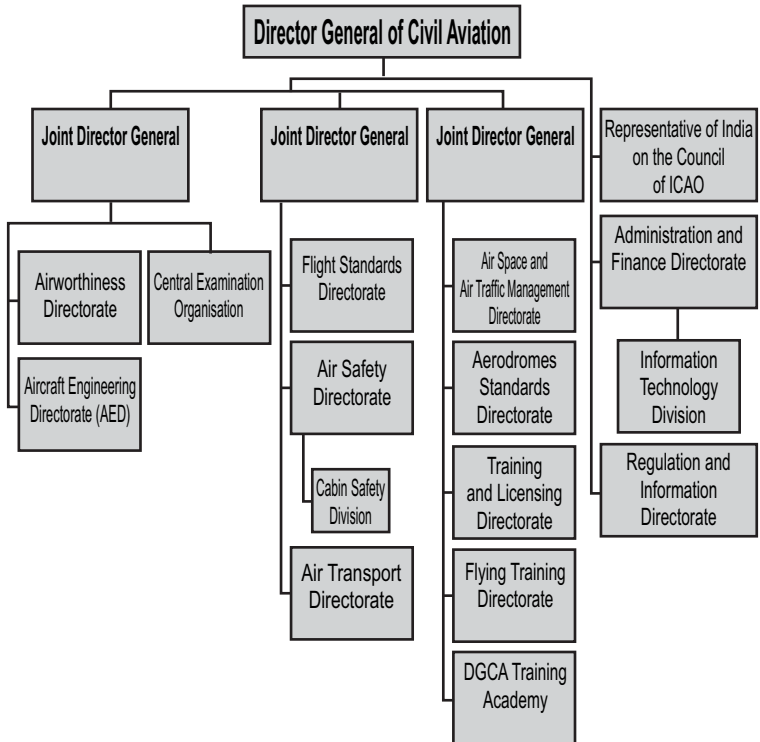
- Safety Alerts;

- Safety Newsletters (quarterly);

- Safety Journal (annual).

To oversee implementation of the SSP, the SSP/SMS Division has been established. This Division has responsibility for preparation of periodical state aviation safety reports that will be disseminated in order to contribute to the improvement of air safety system.

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Appendix 1 - The DGCA Organizational Structure

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                Director General of Civil Aviation

Joint Director    Joint Director    Joint Director    Representative of India
  General           General           General          on the Council
                                                        of ICAO

Airworthiness   Central Examination   Flight Standards   Air Space and          Administration and
Directorate     Organisation          Directorate        Air Traffic Management Finance Directorate
                                                          Directorate

Aircraft Engineering                  Air Safety          Aerodromes           Information
Directorate (AED)                     Directorate         Standards            Technology
                                                          Directorate          Division

                                      Cabin Safety        Training             Regulation and
                                      Division            and Licensing        Information
                                                          Directorate          Directorate

                                      Air Transport       Flying Training
                                      Directorate         Directorate

                                                          DGCA Training
                                                          Academy
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Appendix 2 - India Safety Policy

Employing ICAO standards and recommended practices, as minimum international standards and recommended practices, Directorate General of Civil Aviation (DGCA) will ensure the highest level of safety in the Indian aviation system. Mindful of India's State Safety Programme (SSP), DGCA will maintain an integrated set of regulations and activities aimed at enhancing aviation safety.

DGCA will implement proactive and as far as possible predictive strategies encouraging all stakeholders/ service providers to understand the benefits of a safety culture, which should be based on an inclusive reporting culture. DGCA will foster and assist stakeholders in developing comprehensive Safety Management Systems (SMS) and will develop preventive safety strategies for the aviation system in an environment of a "just culture".

DGCA commits to:

] Develop and embed a safety culture across all aviation industries that recognizes the importance and value of effective aviation safety management and acknowledges at all times that safety is paramount;

] Support the management of safety in India through an effective safety reporting and communication system;

] Develop general rulemaking and specific operational policies that build upon safety management principles;

] Ensure that the DGCA financial and human resources are sufficient for implementation, establishment and maintenance of SSP and that personnel have the proper skills and are trained for discharging their responsibilities, both safety related and otherwise. That these personnel are specialists in their functional areas and competent in safety regulation of operators and service providers;

] Clearly define for all regulatory staff, their responsibilities and accountabilities for the implementation, establishment and maintenance of SSP and its performance;

ļ   Conduct both performance-based and compliance-oriented activities, supported by analyses and prioritized resource allocation based on safety risks levels (proactively targeting regulatory attention on known areas of high risk);

ļ   Ensure that acceptable levels of safety for aviation operations within the State are being set, measured and achieved, and expressed in terms of safety performance indicators and safety performance targets;

ļ   Continually improve the SSP and safety performance;

ļ   Interact effectively with service providers in the resolution of safety concerns;

ļ   Ensure that operators and service providers establish and maintain the Safety Management System (SMS) in their operation;

ļ   Establish provisions for the protection of safety data, collection and processing systems, so that people are encouraged to provide essential safety-related information on hazards, and there is a continuous flow and exchange of safety management data between DGCA and service providers; and

ļ   Promulgate an enforcement policy that ensures that no information derived from any safety data, collection and processing systems, established under the SMS will be used as the basis for enforcement action, except in the case of gross negligence or wilful deviation; and

ļ   Achieve the highest levels of safety standards and performance in aviation operations.

This policy must be understood, implemented and observed by all staff involved in activities related to the State Safety Programme.

_____
Director General
Directorate General of Civil Aviation

Appendix 3 SSP Steering Committee

Purpose:

1. Monitoring of SSP and Safety Policy, and review or feedback/advice as required,

2. Responsibility for promotion of SSP in applicable service providers,

3. Supporting resolution of issues related to SSP.

Composition:

Chairman: Secretary, Ministry of Civil Aviation

Members:

       i)   Director General of Civil Aviation, India.
      ii)   Joint Secretary, Ministry of Civil Aviation (Looking after DGCA)
     iii)   Chairman, Airport Authority of India
     iv)   Chairman, Pawan Hans Helicopters Ltd.
      v)   Director General, Department of Meteorology
     vi)   All Joint Director Generals of DGCA
    vii)   Member (Air Navigation Services), AAI
   viii)   Representatives of all scheduled airlines
     ix)   Representatives of Indian Air Force and Navy
      x)   Representatives of Private Aerodrome Operators
     xi)   Representatives of Maintenance and Repair Organisations
    xii)   Representatives of Design and Production Organisations
   xiii)   Director, IGRUA - Fursatgunj
   xiv)   Director, RGRUA Gondia
    xv)   Representative of Business Aviation Group
   xvi)   Representative of RWSI

The Joint Director General looking after Air Safety Directorate will act as Secretary to the Steering Committee.

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Appendix 4 - An Acceptable Level of Safety

The ALoS for the India SSP will be finalised by 2012, in conjunction with global and regional harmonisation efforts. Nonetheless, in the meantime, the DGCA will continue to develop measures of safety performance of service providers' SMS, through periodic reviews of the agreed safety performance of the SMS to ensure that safety performance indicators and safety performance targets remain relevant and appropriate to the service provider.

In addition, the DGCA shall develop the means to assess lower level outcomes and most frequent processes among different service providers and determine measurable performance outcomes within different SMS systems.

A.1 Background

ICAO Standards set out the requirement for States to establish a SSP in order to achieve an ALoS in the operation and maintenance of aircraft, the provision of air traffic services and the operation of aerodromes. The Standards explicitly call for States to establish an ALoS to be achieved by the State concerned and also call for the adoption of SMS by service providers.

A.2 Defining ALoS

The DGCA's view is that the current levels of safety of the Indian service providers achieved by all sectors of India civil aviation should be measured by the various safety performance indicators in order to reveal any potential major areas of safety concern. There is a public expectation that safety should progressively improve, within reasonable economic constraints and within a reasonable timescale. This is reflected in the DGCA's commitment to the continuous improvement of safety.

ALoS consists of safety indicators and quantitative targets, and action plans to achieve the targets in defined timeframes. Service providers need to establish their own ALoS in cooperation and agreement with the DGCA. The ALoS needs to be defined such that the satisfactory performance of the service providers and Indian government can be verified.

A.3 Strategy for defining Safety Indicators

In addition to examples of traditional safety performance indicators (for example, the number of runway incursions per 100,000 movements) it will be necessary to develop safety performance indicators in relation to proactive and predictive safety management processes. This will allow the DGCA to identify eroding safety margins in the Indian aviation system at an early stage, before a serious incident or accident occurs.

DGCA have supported international initiatives on safety data reporting process for a number of years. Therefore a number of quantitative safety indicators with historical data are available. It is recognised that over time the selection of indicators is likely to evolve as the level of maturity in determining ALoS improves both in India and internationally.

The initial strategy employed involves selecting a small number of indicators of critical value for "safety measurement". The safety indicators selected are included at the end of this Appendix, and are consistent with international best practice.

A.4 Strategy for defining Safety Targets

For the safety indicators identified by the DGCA, associated safety targets will be set in order to provide quantifiable measures for the maintenance and/or improvement of the level of safety in India. ICAO Doc 9859 asserts that "strictly speaking it is the safety target values that are the true expression of ALoS". In defining the safety

targets identified at the end of this Appendix, consideration has been given to:

- the level of safety risk that applies,

- the safety risk tolerance,

- the cost/benefits of improvements to the aviation system,

- public expectations that the India civil aviation system will continue to provide safe air traffic services to the high standards expected.

The DGCA will remain responsible for the definition of the safety targets for the Acceptable Level of Safety of the Indian aviation system. These safety targets will be set based on the DGCA's expertise, the current Indian situation and the goals of being a mature safe aviation environment and a role model for the region.

A.5 Establishment of ALoS

The establishment of an ALoS is a continuous process. Once the safety critical areas are defined, indicators to be used to describe these areas will be defined in more detail. This will be followed by a definition of a baseline on which safety targets will be based. Furthermore action plans will be defined in cooperation with stakeholders to ensure the safety targets are met in a reasonable timeframe. All these actions will be finished by 2012 (i.e. Definition and Implementation Phase). Following this period, the ALoS will be closely monitored by the DGCA, and the new indicators and targets may be included to cover new or underexposed areas (Figure 3).
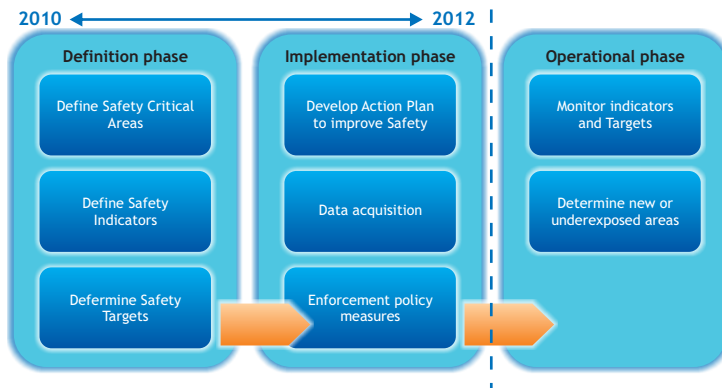
Figure 3. ALoS development process

Examples of safety indicators that DGCA is currently considering are:

1. Number of aircraft accidents per year.

2. Number of serious incidents per 100,000 flights.

3. Number or runway incursions per year.

4. Number of ground incidents per year.

5. Number of air misses per 100,000 hours.

6. Number of breaches of separation per 100,000 hours.

7. Number of bird strike per number of aircraft movements.

8. Number of Level 1 - major findings.

9. Number of In-flight Shutdown per 10000 flights.

10. Air Turn Back (Engineering/Operational) per 1000 flights.

State Safety Programme - India
This Edition November 2010

Directorate General of Civil Aviation
Ministry of Civil Aviation, New Delhi,
India