



# **STATE SAFETY PROGRAMME OF BHUTAN**

Issue 02  
September 2022

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**Record of Revision**

<b>Issue</b>	<b>Remark</b>	<b>Entered by</b>
01	Initial issue	-
02	New issue	SSP Team

### Document Control

The SSP document will be made available to all aviation stakeholders, and the document shall be placed on the BCAA website: <https://www.bcaa.gov.bt/>

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

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

### Distribution List

The State Safety Programme document and any changes to it shall be distributed preferably by email to the following entities within 10 working days of approval.

<b>Entity</b>	<b>Type</b>
Ministry of Information and Communication	PDF
AIG Unit	PDF
Bhutan Civil Aviation Authority	Paper Copy / PDF
Aviation Stakeholders	PDF (BCAA website)

## Foreword

Aviation plays an essential part in the economic and social development of Bhutan. This sector has been growing in a constant and diversified manner in recent years, a trend that is expected to continue in the future. This opens significant opportunities for innovation in the industry, such as new technologies, new operations, and new types of aircraft that will contribute to the growth of our economy. However, these new opportunities entail major challenges for Bhutan in its efforts to ensure that aviation safety is maintained and continuously improved.

Bhutan is a signatory to the Convention on International Civil Aviation (Chicago Convention) and has been a member of the International Civil Aviation Organization (ICAO) since 17 May 1989.

There are no perfect safety systems. Even the most complex and efficient safety systems must pursue continuous improvement to ensure that they reflect the increasing diversity within the aviation industry due to the introduction of new aircraft types and the resulting new operations.

The Bhutan State Safety Programme (SSP) has the difficult task of identifying, controlling, and maintaining the effectiveness of the various safety performance elements at the national level, and continuously reviewing them to tailor them to the new threats and challenges arising in the ever-evolving world of aviation.

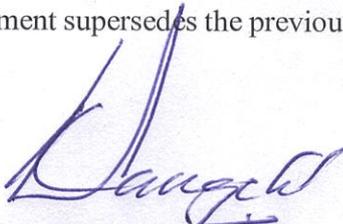
The Bhutan SSP sets forth key principles in support of national aviation safety plan and its objectives for 2025, 2028, and 2030. This approach is consistent with the ICAO APAC regional aviation safety plan (AP-RASP) and the Global aviation safety plan (GASP).

Aviation service providers of Bhutan play an important role in the delivery of safety and quality management information, which is required for the establishment of safety objectives, safety performance indicators (SPIs), and safety goals.

The Bhutan SSP recognizes the importance for all aviation stakeholders to work in a close, collaborative, and mature fashion to identify safety hazards and ensure the adoption of best practices and the most suitable technologies to address and reduce their inherent risks.

Bhutan needs to be flexible and adjust to quickly respond to the new threats and challenges resulting from the constant evolution of global aviation. Accordingly, our SSP will play an essential role in the identification and resolution of these threats and challenges.

This document supersedes the previous issue and becomes effective from **01 September 2022**.



(Kinley Wangchuk)  
**DIRECTOR**  
Bhutan Civil Aviation Authority  
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## Introduction

The SSP of Bhutan is a management system used for regulating and managing safety in our State. SSP implementation in Bhutan has been conducted in accordance with the size and complexity of our civil aviation system and has required intensive coordination among the authorities responsible for aviation functions.

SSP was implemented in Bhutan based on the provisions contained in Annex 19 to the Convention on International Civil Aviation and the procedures established in ICAO Doc 9859. The SSP of Bhutan defines the specific safety activities that we will continue to conduct to fulfill the State's responsibilities concerning the safe and efficient performance of aviation activities.

Bhutan has an SSP that provides the Bhutan Civil Aviation Authority with a regulatory Safety Management System, while its service providers have established and maintained their own Safety Management Systems (SMS).

The SSP describes the challenges facing the aviation safety system of Bhutan and the objectives for 2025, 2028, and 2030, to respond to these challenges and maintain a safety system that is recognized worldwide.

The implementation and subsequent operation of the SSP will be monitored by the Safety Committee which is chaired by the Head of Authority and a technical representative from the safety section. The SSP will be reviewed and updated every three years.

The SSP is supported by the implementation of the national aviation safety and air navigation plans, which establish the main safety management and air navigation objectives, indicators, and targets of Bhutan. It is also supported by the main policies, requirements, services, and investment initiatives for achieving 2025, 2028, and 2030 objectives, recognizing that emerging issues, technological change, and competing priorities may impact these objectives over time.

In addition to addressing the ICAO SSP framework, the SSP provides an overview of the commitments of Bhutan to the safety management and air navigation system at the national level.

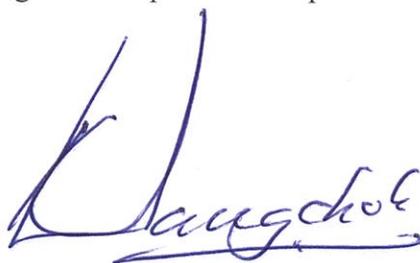
Finally, the SSP is consistent with the priorities, principles, policies, objectives, indicators, goals, and alert levels of the national aviation safety plan and air navigation implementation plan, which represent the safety axis of the strategic plan for the sustainability of air transport APAC region and emanate from the ICAO Global Aviation Safety Plan (GASP) and Global Air Navigation Plan (GANP).

## State Safety Policy

Bhutan Civil Aviation Authority promotes and regulates aviation safety in Bhutan. We are committed to developing and implementing strategies, regulatory frameworks, and effective processes to ensure that aviation activities, under our oversight, reach the highest possible level of safety.

To this end, we shall:

- 1) develop national regulations and requirements in line with the standards, recommended practices, and procedures of the International Civil Aviation Organization (ICAO);
- 2) adopt a data and performance-based approach to safety regulation and oversight activities, as applicable;
- 3) identify safety trends in the aviation industry and adopt a risk-based approach to address the areas of the greatest safety concern or need;
- 4) continuously control and measure safety performance in our aviation system through collective State indicators, and also through the safety performance indicators of service providers;
- 5) collaborate and consult with the industry to address safety issues, and continuously improve aviation safety;
- 6) encourage good safety practices and a positive institutional safety culture within the industry, based on sound safety management principles and 'just culture';
- 7) encourage the collection, analysis, and exchange of safety information among all relevant industry organizations and service providers, to use such information for safety management purposes only;
- 8) assign sufficient financial and human resources for safety management and oversight; and
- 9) provide the personnel with the skills and experience needed to fulfill their safety oversight and management responsibilities proficiently.



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## Enforcement Policy

This enforcement policy is promulgated under the statutory authority of the Civil Aviation Act of Bhutan, 2016.

### 1. Purpose

- 1.1 The enforcement policy of the BCAA is aimed at promoting compliance with aviation safety regulations and requirements through enforcement functions in an equitable manner.
- 1.2 The implementation of safety management systems (SMS) requires the BCAA to have an equitable and discretionary enforcement approach to support the SSP-SMS framework.
- 1.3 The enforcement policies and procedures of the BCAA allow service providers to deal with and resolve, certain events involving safety deviations, internally, within the context of the service provider's SMS, and to the satisfaction of the authority. Intentional contraventions of the Act and the BANRs will be investigated and will be subject to conventional enforcement action where appropriate. There must be clear provisions in the enforcement framework for due consideration to distinguish between premeditated violations and unintentional errors or deviations.
- 1.4 The enforcement policy statement and associated enforcement procedures apply to service providers operating in accordance with:
  - ✓ BCAR-66, BCAR-FCLs, BCAR-ORA and BCAR-ATCO PEL derived from ICAO Annex 1 — Personnel licensing;
  - ✓ BCAR-ORO derived from Annex 6 — Operation of Aircraft, Part I — International commercial air transport — Aeroplanes, and Part III — International operations, — Helicopters;
  - ✓ BCAR-21 derived from Annex 8 — Airworthiness;
  - ✓ BCAR-11 derived from Annex 11 — Air traffic services, and
  - ✓ Bhutan Aerodrome Standard derived from Annex 14 — Aerodromes, Volume I — Aerodrome design and operations.

### 2. Policy

- 2.1 All applicable service providers will establish, maintain, and adhere to an SMS that is commensurate with the size, nature, and complexity of the operations authorized to be conducted under their approval/certificate.
- 2.2 To maintain this enforcement policy that supports the implementation of SMS, the inspectors of the BCAA will maintain an open communication channel with service providers.
- 2.3 No information derived from safety data collection and processing systems (established under an SMS) relating to reports classified as confidential, voluntary, or equivalent category shall be used as the basis for enforcement action.
- 2.4 When a service provider operating under an SMS unintentionally contravenes the Act, specific

review procedures will be used. These procedures will allow the inspector of the BCAA responsible for the oversight of the service provider the opportunity to engage in dialogue with the SMS - approved organisation. The objective of this dialogue is to agree on proposed corrective measures and an action plan that adequately addresses the deficiencies that led to the contravention and to afford the service provider a reasonable time to implement them. This approach aims to nurture and sustain effective safety reporting, whereby service providers' employees can report safety deficiencies and hazards without fear of punitive action. A service provider can, therefore, without apportioning blame and without fear of enforcement action, analyze the event and the organizational or individual factors that may have led to it, to incorporate remedial measures that will best help prevent a recurrence.

2.5 BCAA, through the inspector responsible for the oversight of the service provider, will evaluate the corrective measures proposed by the service provider or the systems currently in place to address the event underlying the contravention. If the corrective measures proposed (including any internal disciplinary actions) are considered satisfactory and likely to prevent recurrence and foster future compliance, the review of the violation should be concluded with no further punitive enforcement action by the authority. In cases where either the corrective measures or the systems in place are considered inappropriate, BCAA will continue to interact with the service provider to find a satisfactory resolution that would prevent enforcement action. However, in cases where the service provider refuses to address the event and provide effective corrective measures, BCAA will consider taking enforcement action or other administrative action deemed appropriate.

2.6 Breaches of aviation regulations may occur for many different reasons, from a genuine misunderstanding of the regulations, to disregard for aviation safety. BCAA has a range of enforcement procedures to effectively address safety obligations under the Act, in light of different circumstances. These procedures may result in a variety of actions, such as:

- (a) counseling;
- (b) remedial training; or
- (c) variation, suspension, or cancellation of authorisation.

2.7 Enforcement decisions must not be influenced by:

- (a) personal conflict;
- (b) personal gain;
- (c) considerations such as gender, race, religion, political views or affiliation; or
- (d) personal, political, or financial power of those involved.

### **3. Proportionality of Responses**

Compliance decisions must be proportional to the identified breaches and the resulting safety risks they underlie, based on three principles:

- (a) BCAA will take action against those who consistently and deliberately operate outside civil

aviation regulations;

- (b) BCAA will seek to educate and promote training or supervision of those who show commitment to resolving safety deficiencies; and
- (c) BCAA will give due and equitable consideration to distinguish premeditated violations from unintentional errors or deviations.

#### 4. Natural Justice and Accountability

Enforcement decisions must:

- (a) the fair and follow due process;
- (b) be transparent to those involved;
- (c) take into account the circumstances of the case and the actions/attitudes of the service provider or individual when considering action;
- (d) be consistent actions/decisions for like/similar circumstances; and
- (e) be subject to appropriate internal and external review.

#### 5. Exceptions

- 5.1 This policy is not applicable if there is evidence of a deliberate effort to conceal non-compliance.
- 5.2 This policy is not applicable if the service provider fails to maintain an acceptable SMS or its agreed safety performance.
- 5.3 This policy is not applicable if the service provider is deemed by the authority as a recurrent violator.
- 5.4 In the above circumstances, the authority may deal with such non-compliance or violations according to established enforcement procedures as deemed appropriate.



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## Chapter 1: Policy, Objectives & Resources

### 1.1 Civil Aviation Act

- 1.1.1 The Parliament of Bhutan enacts the Civil Aviation Act of Bhutan, 2016.
- 1.1.2 All of the aviation legislative instruments and regulations of Bhutan are available to the public, at no cost, at the BCAA website: <https://www.bcaa.gov.bt/>
- 1.1.3 Bhutan has legislative instruments that define the independent roles of the BCAA, AIG, and service providers. AIG is an independent entity under the Ministry of Information and Communications (MoIC).
- 1.1.4 Bhutan ratified the Convention on International Civil Aviation (Chicago Convention) on 17 May 1989. The primary aviation legislation of Bhutan that gives effect to the Convention is the Civil Aviation Act of Bhutan 2016. This act provides for the approval for ratifying the Convention, its text, protocols, and amendments.
- 1.1.5 BCAA is responsible for implementing the Act, Bhutan Air Navigation Regulations (BANRs), and Bhutan Civil Aviation Requirements (BCARs).
- 1.1.6 The Act also contains provisions for the enactment of regulations that contain and give effect to the Chicago Convention and the standards and recommended practices (SARPs) outlined in the Annexes to the aforementioned Convention.
- 1.1.7 The main legislative instruments of Bhutan are:
- ✓ Civil Aviation Act of Bhutan 2016
  - ✓ Bhutan Air Navigation Regulations 2021
  - ✓ Bhutan Civil Aviation Requirements

### 1.2 Specific Operating Regulations

- 1.2.1 The aviation safety legislative system of Bhutan is also made up of a subordinate regulatory body consisting of regulations, orders, guidance, and advisory material. To ensure the effectiveness of the safety oversight system, proposals for change are developed in consultation with the industry and other stakeholders, involving safety and cost/benefit analyses.
- 1.2.2 BCAA leads the regulatory development in Bhutan and has adopted a three-tier structure consisting of the act, regulations/requirements, and guidance & advisory material.
- 1.2.3 Bhutan develops its requirements based on the standards outlined in the Annexes to the Convention on International Civil Aviation. If applicable, it will consider incorporating into its regulations requirements developed by other organizations such as EASA, FAA, IATA, etc. If Bhutan chooses not to follow a standard of any of the Annexes, it will file a difference with ICAO, and in case of a significant difference, it will coordinate with the aeronautical information service (AIS) provider for its inclusion in the aeronautical information publication (AIP) of the State. Differences filed with ICAO must be

substantiated.

- 1.2.4 Bhutan will continue reviewing its regulatory framework to ensure consistency with the SARPs and international regulations, with special emphasis on the development of performance-based regulations and requirements. BCAA will work closely with the international aviation community to support the future regional and global development of regulatory priorities.

**Appendix A** - provides more information on the aviation legislation of Bhutan.

### **1.3 State System and Functions**

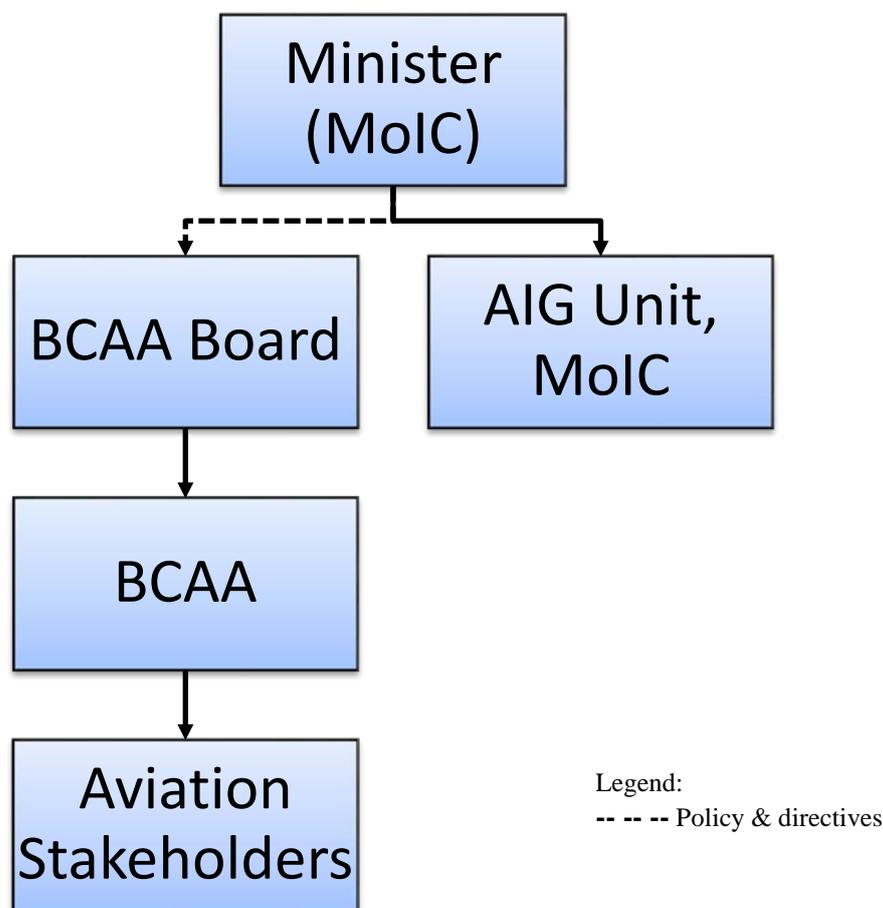
- 1.3.1 The Royal Government of Bhutan, through the MoIC, defines the general direction of the aviation policy. The BCAA board is accountable for civil aviation matters, including aviation safety and security.

- 1.3.2 The main entities responsible for civil aviation safety management in Bhutan are:

- ✓ Bhutan Civil Aviation Authority
- ✓ AIG Unit

**Appendix B** - defines the general roles and responsibilities of the various entities responsible for aviation functions in Bhutan within the SSP framework.

- 1.3.3 BCAA Board will provide the resources necessary for the establishment and operation of the SSP.

**State Safety Programme Organizations Chart:****Coordination within the aviation safety system of Bhutan**

- 1.3.4 Overall safety performance in Bhutan requires an integrated and collaborative approach, which is essential for SSP implementation and operation.
- 1.3.5 Bhutan has established the following groups to coordinate among the organizations that are part of the SSP. These coordination groups will improve cooperation and coordination among the regulatory and administrative bodies of the State in terms of safety, efficiency, and capacity.

**Safety Committee**

The Safety Committee, which is comprised of a technical representative from the individual safety section (AIR, OPS, ANS, and AGA), will coordinate the implementation and subsequent management of the SSP among stakeholders of the State that are part of the SSP. This safety committee will ensure that the development, periodic review, policy-making, and decision-making related to SSP activities, such as the safety policy, safety indicators, enforcement policy, safety data protection, and distribution policy, SMS regulatory requirements, and SSP review and internal findings, are carried out in an integrated and coordinated manner.

In addition, this group shall function to facilitate the exchange of safety data and

information and the analysis among regulatory and service providers of the State, with the only purpose of maintaining and improving aviation safety.

#### **1.4 Qualified Technical Personnel**

- 1.4.1 BCAA is mandated to implement a training programme and plan for all its personnel in accordance with BCAA Training Manual (*access from the BCAA website: <https://www.bcaa.gov.bt/>*), with special emphasis on the technical training of safety personnel, including SMS oversight. The training programme of the BCAA for its safety personnel comprises initial, on-the-job, recurrent, and specialized training. This also includes a comprehensive induction programme for newly recruited inspection personnel.
- 1.4.2 All the investigators of the AIG Unit complete their aviation accident and incident investigation training programme. In addition to the technical skills and industry experience required to fulfill their functions, all investigation personnel completes the required safety management training (SSP/SMS).

#### **1.5 Technical Guidance, Tools, and Provision of Safety-Critical Information**

- 1.5.1 The top priority of the BCAA is to maintain and improve aviation safety performance. This should be achieved through a series of strategies and initiatives to provide technical guidance, resources, and information for strengthening the capacity of personnel.
- 1.5.2 The safety principles of the BCAA underline the importance of the commitment of government and industry organizations to the provision of resources for safety management and oversight, and of personnel training to acquire the skills and experience required for them to fulfill their duties proficiently.
- 1.5.3 BCAA and AIG unit shall develop and keep the safety-related guidance material and work aids for inspectors, investigators, and technical personnel up to date. Likewise, they will develop and keep the guidance material for the industry updated.

## Chapter 2: Safety Risk Management

State safety risk management (SRM) is a key component of the safety management system that includes hazard identification, risk assessment, risk mitigation, and safety risk acceptance. It is important to recognize that this function is a continuing activity, because hazards, risk assessment, and the effectiveness of safety risk mitigation change over time.

The modern safety management approach requires a systemic approach to safety management, covering organizational structures, policies and procedures - the SMS approach.

Risk management in the aviation industry of Bhutan is a responsibility shared by the industry and the aeronautical organizations of the State (BCAA and AIG Unit). The aviation industry and the State aviation organizations (BCAA and AIG Unit) need to work collaboratively to obtain the best safety outcomes.

SSP recognizes the need to make the transition to a systems-based approach to safety oversight, together with risk-based surveillance (RBS). This change puts more responsibility on service providers and changes how the BCAA performs safety oversight and monitoring functions.

Aviation safety hazard identification and risk management involve a tiered process in which systems and risk information can be added to high-category levels, ending in an assessment of the overall risk level throughout the aviation industry.

Bhutan shall develop a National Aviation Safety Plan every three years. This plan identifies the risks existing in the system and the treatment applied by the State to risk management.

The risk management system of Bhutan consists of the following risk management levels:

- ✓ regulatory risk management;
- ✓ risk management based on oversight outcomes;
- ✓ service provider/industry profile risk management;

**Appendix C** - describes each risk management level in greater detail.

AIG Unit in its independent accident and incident investigation role recognizes risk management requirements. Upon determining the severity of the safety issues identified during an investigation, AIG Unit assesses the implications of systemic risks and recommends the appropriate safety actions to mitigate the risks identified.

BCAA uses a common risk management framework to ensure an approach that is consistent with safety management.

### 2.1 Licensing, Certification, Authorisation, and Approval Obligations

2.1.1 Pursuant to the Act, Bhutan has established an authorization scheme for safety-critical activities that involve granting of licenses, certifications, authorizations, and/or approvals to industry personnel, air service operators, service providers, and aerodromes by BCAA.

## 2.2 Obligations of the Safety Management System (SMS)

2.2.1 Bhutan has established the requirements for SMS implementation in various sectors of the aviation industry. BCAA has issued the requirements for SMS implementation by the following civil aviation service providers:

- ✓ Approved training organizations (ATOs): PEL requires that ATOs that are exposed to safety risks related to the operation of aircraft when providing their services implement an SMS acceptable to Bhutan;
- ✓ Air operators: BCAR-ORO requires that aircraft and helicopter operators authorized to conduct commercial air transport activities implement an SMS acceptable to the BCAA;
- ✓ Approved maintenance organizations (AMOs): BCAR-145 requires that AMOs that offer services to aircraft or helicopter operators engaged in commercial air transport implement an SMS acceptable to the BCAA;
- ✓ Air traffic service (ATS) providers: BCAR-ATM/ANS and BCAR-11 requires that service provider implement an SMS acceptable to the BCAA; and
- ✓ Certified aerodrome operators: Bhutan Aerodrome Standard requires that certified aerodromes implement an SMS acceptable to the BCAA.

## 2.3 Accident and Incident Investigation

2.3.1 AIG Unit is the entity responsible for implementing the provisions of Bhutan Air Navigation Regulations – Investigation of accidents and serious incidents emanating from Annex 13 concerning the reporting and independent investigation of accidents, serious incidents, and incidents related to the operation of aircraft that occur in Bhutan, and for participating in the investigation of accidents and other occurrences involving aircraft of Bhutan registry in other States. Reported occurrences and investigation results are sent to ICAO following the provisions of Bhutan Air Navigation Regulations – Investigation of accidents and serious incidents.

2.3.2 AIG Unit is responsible for investigating all accidents and serious incidents and significant safety incidents related to the operation of aircraft, to the extent necessary and according to the provisions of Bhutan Air Navigation Regulations – Investigation of accidents and serious incidents, to determine, if possible, the causes and/or contributing factors, and, where applicable, formulate safety recommendations. Likewise, AIG Unit will provide the SSP with safety information on the results of trend analyses of accidents, serious incidents, and significant incidents related to the operation of aircraft.

2.3.3 The sole objective of accident and incident investigation by the AIG Unit is to prevent future accidents and incidents and not the apportion of blame or liability.

2.3.4 The reports of all investigations conducted by the AIG Unit are made public. For purposes of the investigation conducted by the AIG Unit, early identification of safety matters within the context of air transport is fundamental. The AIG Unit, in a dated letter sent to the

responsible authorities, including those of other States, at any phase of the investigation of an accident or incident, will recommend all the preventive measures it deems should be adopted promptly to improve aviation safety.

- 2.3.5 The AIG Unit prefers to encourage the appropriate organization(s) to adopt proactive safety measures to address safety issues. However, AIG Unit may use its authority to make a formal safety recommendation at any time or at the end of an investigation, according to the level of risk associated with a safety issue and the scope of the corrective measures to be undertaken by the appropriate organization.
- 2.3.6 When the AIG Unit issues safety recommendations, these will focus on clearly describing the safety issues of concern instead of providing instructions or opinions on a preferred method for their solution.
- 2.3.7 More information on AIG Unit can be found at: <https://www.moic.gov.bt/en/>

## **2.4 Hazard Identification and Safety Risk Assessment**

- 2.4.1 Aviation safety systems rely on timely, precise, and informative reports on safety incidents and occurrences. The availability of appropriate safety intelligence on what is happening with aviation safety systems permits the identification of trends, the resolution of repetitive issues, and measurement and proper response to risks within the aviation system of Bhutan.
- 2.4.2 As required by their respective legislative responsibilities, BCAA and AIG Unit, collect and maintain various records related to accidents, incidents, and other global safety data.
- 2.4.3 In the interest of aviation safety, safety information (processed safety data) is shared among regulatory bodies. BCAA and AIG Unit have issued a safety policy statement that reflects the “just culture” principle.
- 2.4.4 Bhutan encourages a positive reporting policy whereby all industry stakeholders are willing to report any incident that occurs and any error made. Following the “just culture” approach, individuals report incidents and errors, they are not prosecuted nor punished, except in those cases in which their actions have been reckless, negligent, or deliberate without best intention.

### **Reporting of accidents, serious incidents, incidents, and latent conditions**

- 2.4.5 BCAA and AIG Unit is responsible for collecting and analyzing safety data on accidents, serious incidents, incidents, and latent conditions related to aircraft operations. BCAA manages the collected reports through mandatory and voluntary reporting systems.

Inappropriate safety procedures, errors, failure to comply with requirements, and may be considered latent conditions.

- 2.4.6 BCAA is also responsible for collecting and analyzing safety data on incidents, deficiencies, and latent conditions that are not directly related to the operation of aircraft.

**Mandatory safety reporting system (MOR)**

- 2.4.7 The MOR established following BCAR-M, BCAR-145, BCAR-ORO, BCAR-ATM/ANS, and Bhutan Aerodrome Standards collects information on occurrences that jeopardize or might jeopardize aviation safety. The collected data provides information on real or potential safety hazards and deficiencies. The information is used for identifying safety issues that must be addressed to improve aviation safety in Bhutan.
- 2.4.8 By Annex 13 to the Chicago Convention, AIG Unit provides ICAO with data on accidents, serious incidents, and incidents through the accident/incident data reporting system (ADREP).
- 2.4.9 Bhutan encourages any individual who has an aviation safety concern, to report to:
- ✓ the AIG Unit when the concern is related to the operation of aircraft; and
  - ✓ the BCAA when the concern is not directly related to the operation of aircraft.
- 2.4.10 The protection of safety data and information, as well as their related sources, is the priority of this system.

**Availability of data and information on aviation occurrences**

- 2.4.11 AIG Unit makes the investigation report available to the public.
- 2.4.12 The information for the public will not contain details such as aircraft registration, the name of the owner, or the name of crew member(s).

**Data Analysis and Reporting**

- 2.4.13 AIG Unit, in addition to reporting occurrences as required by Annex 13 to ICAO through the ADREP reporting system, also provides safety information to the AP-RASP for analysis and development of trend indicators for the Asia Pacific Region.

**AIG Unit**

- 2.4.14 AIG Unit will pursue its objective of identifying relevant safety issues instead of providing prescriptive solutions. This approach will enable Bhutan to take measures to identify the most suitable means to address particular safety issues.
- 2.4.15 AIG Unit also conducts specific investigation activities and produces reports that allow for a more in-depth analysis of specific types of occurrences.
- 2.4.16 This activity provides national and international entities with safety studies and promotes the adoption of measures to improve safety systems and operations.

**Bhutan Civil Aviation Authority**

- 2.4.17 BCAA maintains updated information on all regulatory safety activities it carries out.
- 2.4.18 Among its main activities, BCAA plans and executes the annual oversight programme directed to aeronautical personnel, service, and aeronautical material providers that have

been granted a license, certification, authorization, or approval. The findings of the oversight programme are collected and maintained by the respective safety sections, which permits, on the one hand, follow-up through their resolution and, on the other, hazard identification and safety risk assessment.

2.4.19 Risk management of findings allows for the identification of trends of greater concern. Based on this information, the BCAA increases oversight to prevent recurrence and to reduce and control risks to an acceptable level of safety.

2.4.20 Bhutan has established the *National Aviation Safety Team*, which consists of representatives from the following stakeholders:

- ✓ Regulator (Safety committee);
- ✓ Air operators (Safety & Quality Manager);
- ✓ Air Navigation Service providers;
- ✓ Aerodrome operator (Safety Manager);
- ✓ Ground handling agent.

## **2.5 Safety Risk Management**

2.5.1 One of the functions of the BCAA under the Act is to regulate the safety of civil aviation operations within the territory of Bhutan and the operation of aircraft of Bhutan outside its territory, by means that include the development of effective oversight strategies to ensure compliance with aviation safety requirements.

2.5.2 This is a primary regulatory function that Bhutan must perform in the interest of safety and in accordance with its obligations under the Chicago Convention.

2.5.3 The Act sets forth the principles concerning the performance of its regulatory functions and the exercise of its regulatory powers.

2.5.4 When not required to do so, the holders of authorization are encouraged to use an SMS that includes corrective and preventive mitigation measures, through an internal reporting system to address safety deficiencies. The regulatory philosophy of BCAA and the “just culture principles” contained therein will increasingly govern the key elements of the enforcement policy of BCAA and will clarify the circumstances under which safety information may or may not be used and the sources of such information that can be protected from punitive action.

### Chapter 3: Safety Assurance

Safety oversight based on an SMS approach relies on a mutual responsibility and accountability philosophy rather than on a prescriptive approach aimed exclusively at regulatory compliance. This increases the responsibility of service providers that have daily control over maintaining a safe operational environment, focusing on safety throughout the structures, policies, and procedures of the organization.

The BCAA continues to play a fundamental role in the quality assurance of the safety system of Bhutan through its oversight functions.

#### 3.1 Oversight Obligations

3.1.1 Oversight is the mechanism whereby the BCAA monitors the safety status and the level of maturity of authorization holders.

3.1.2 The BCAA oversight components include:

- ✓ trained and skilled technical personnel, with specific training in SMS;
- ✓ procedures and documented guidance material for acceptance and oversight of the associated safety processes;
- ✓ licensing, certification, authorization, and approval; and
- ✓ oversight activities, including scheduled and unscheduled audits and inspections, data collection and exchange, analysis, workflow management, and information management.

3.1.3 The main objective of oversight is to determine whether an authorization holder is complying with its obligations under the Act and the regulations. BCAA adopts a risk- and system-based approach that uses product control as needed, to assess risk mitigation and the level of compliance by authorization holders.

3.1.4 Oversight provides an assessment of the capacity of the authorization holder to manage its safety risks and its willingness to comply with the legislation, including compliance with an SMS if necessary. Oversight can be scheduled or unscheduled, it can be conducted based on opportunity, or at random, or cover all aspects of the aviation industry. This oversight approach seeks to encourage the development of authorization holder systems and guides the aviation industry toward a better understanding of its safety responsibility.

3.1.5 The oversight programme is reviewed and updated periodically.

3.1.6 The oversight manual of the BCAA can be found at: <https://www.bcaa.gov.bt/>

### **Guidance Based on Safety Data**

- 3.1.7 Safety data collected by the BCAA and AIG Unit are reviewed, analyzed, and reported regularly to identify trends and emerging safety issues, and to help address existing safety issues.

### **BCAA**

- 3.1.8 Part of the main function of the BCAA is to monitor safety performance and identify safety trends and risk factors, taking into account the evolution of international safety. Another key function of the BCAA is the collection of safety data through the mandatory and voluntary safety reporting systems of Bhutan in its areas of responsibility (AIR, OPS, ANS, and AGA).

### **Oversight of Domestic Operators**

- 3.1.9 The oversight conducted by the BCAA allows for prioritization of oversight activities based on known information and focuses on assessing how effective is an authorization holder in managing safety risks in its implemented systems.
- 3.1.10 The oversight manual of the BCAA details the schedule of audits, based on a series of indicators.

### **Oversight of Foreign Operators**

- 3.1.11 Foreign passenger and cargo operators provide scheduled and non-scheduled services to and from Bhutan.
- 3.1.12 In accordance with the commitments of Bhutan as an ICAO contracting State, the BCAA implements a ramp inspection programme for foreign airlines.
- 3.1.13 This oversight is carried out following the oversight manual of the BCAA.

### **AIG Unit**

- 3.1.14 AIG Unit investigates aviation accidents and incidents and collects safety data through the mandatory and voluntary safety reporting systems of Bhutan.
- 3.1.15 AIG Unit uses this data to determine the prevalence of certain types of occurrences in different types of aviation operations and proactively monitors emerging safety trends. Upon monitoring trends, it communicates safety issues and takes measures to prevent accidents.
- 3.1.16 Proactive monitoring of trends is a process based on safety information whereby all occurrences are reviewed to see if there are significant changes that might indicate a bigger problem.
- 3.1.17 Potential issues are monitored by AIG Unit and shared with the BCAA and the industry. The accountable executives of the aforementioned organizations implement mitigation measures to prevent these issues from causing accidents.

3.1.18 These trends may also indicate the need for the AIG Unit to focus on certain types of occurrences for investigation purposes. AIG Unit regularly publishes reports on emerging trends in accidents, serious incidents, and incidents that are directly related to the operation of aircraft.

### 3.2 State Safety Performance

3.2.1 The measurement and monitoring of safety performance are the means used for describing and assessing the safety performance of the aviation system of Bhutan. The analysis of safety data and information can help identify emerging risk areas. This information is used for communicating decisions concerning the implementation of the appropriate safety measures and the subsequent assessment of their effectiveness.

3.2.2 Bhutan has classified its safety performance indicators (SPIs) into lagging indicators and leading indicators.

3.2.3 Lagging indicators measure past occurrences, and the State and the service providers try to avoid negative results. These indicators are used for monitoring the aviation safety performance of the State. Within the framework of lagging indicators, Bhutan has identified low probability/high severity indicators and high probability/low severity indicators, the latter known as “precursor event” indicators.

3.2.4 Low probability/high severity indicators (accidents, serious incidents) identified by Bhutan are measurements of adverse safety results, according to the operating sector and the level of activity (exposure) in that sector. (An example of this SPI could be damage to the aircraft and/or engine due to a bird strike.)

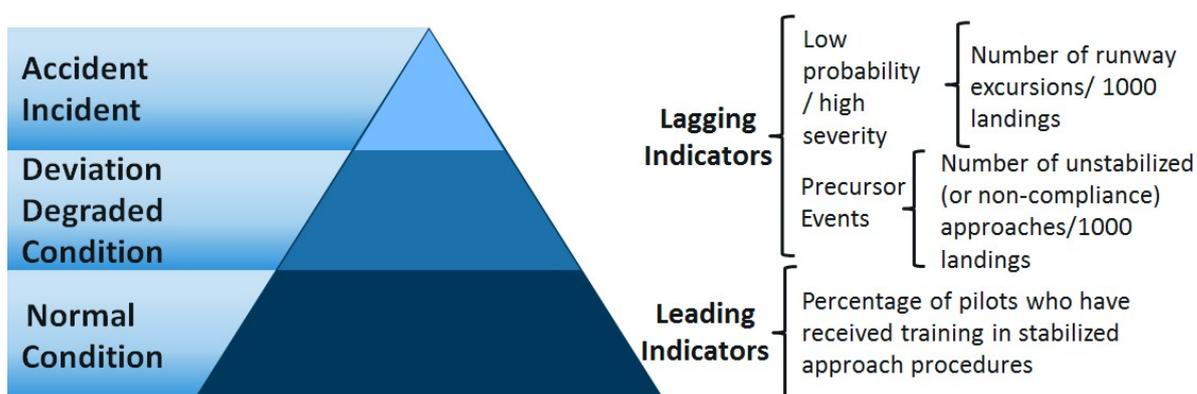
3.2.5 High probability/low severity indicators or “precursor” indicators are results that do not necessarily manifest themselves in an accident or serious incident. Bhutan will use high probability/low severity SPIs mainly for monitoring specific safety issues and measuring the effectiveness of existing safety risk mitigation measures. (An example of this type of precursor SPI would be: radar detection of birds (which indicates the level of bird activity rather than the actual number of bird strikes)).

3.2.6 Leading indicators are measurements that focus on the processes and inputs implemented to enhance or maintain safety. These are also known as "activity or process SPIs" since they oversee and measure the conditions that could cause or contribute to a specific result.

3.2.7 Examples of leading SPIs that promote the development of organizational skills for proactive safety management include a percentage of personnel that has completed safety training on a timely basis or a percentage of timely execution of the agreed mitigation actions.

3.2.8 Leading SPIs of Bhutan can also inform the organization about how its operations address change, including changes in its operating environment. The focus will be on anticipating weaknesses and vulnerabilities resulting from change, or on performance oversight following a change. (An example of SPI for monitoring a change in operations would be: the percentage of sites that have implemented a procedure that has been enacted.)

- 3.2.9 For a more precise and useful indication of safety performance, Bhutan has identified a set of lagging and leading indicators. This provides a more complete and realistic image of the safety performance of the State.
- 3.2.10 To define its indicators, Bhutan has established a clear link between the low probability/high severity lagging SPIs, the precursor events (high probability/low severity), and the leading SPIs. Likewise, Bhutan has defined the low probability/high severity lagging SPIs before determining the precursor SPIs or the leading SPIs. The definition of a precursor SPI (high probability/low severity indicator) concerning a more serious occurrence or condition (low probability/high severity indicator) ensures a clear correlation between the two.
- 3.2.11 Bhutan has developed its indicators in its national aviation safety plan in such a way as to align the higher-risk areas of the State with the different sectors of the aviation industry.
- 3.2.12 The framework adopted by Bhutan for determining its safety performance indicators is described in the figure below.



Detailed safety performance targets and indicators are defined in the National Aviation Safety Plan (NASP).

**Acceptable Level of Safety Performance (ALoSP)**

3.2.13 To determine and update the ALoSP of Bhutan, the effectiveness of the following four components has been taken into account:

- ✓ SSP implementation by the State;
- ✓ SMS implementation by service providers;
- ✓ Safety risk management in the aviation system of the State and the associated safety performance indicators; and
- ✓ Implementation by the State of the standards and recommended practices (SARPs) of the Annexes to the Convention on International Civil Aviation.

Bhutan reviews each of these elements through its aviation safety system.

**The Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA)**

3.2.14 Bhutan applies a national systemic and coordinated approach to aviation safety management.

3.2.15 The results of the latest ICAO USOAP CMA activity conducted in 2018 support this approach.

3.2.16 The latest complete USOAP report of Bhutan, which includes updates to the corrective action plan of Bhutan, is available on the ICAO public website.

## Chapter 4: Safety Promotion

An effective safety promotion programme is essential to support the core operational objectives of the SSP of Bhutan. BCAA and industry carry out safety promotion activities as part of their SSP responsibilities.

Safety promotion is enhanced through personnel training and better communication and dissemination of safety information.

### 4.1 Internal Communication and Dissemination of Safety Information

4.1.1 Mandatory and recommended SSP and SMS training shall be provided to its employee.

4.1.2 BCAA and AIG Unit is regularly in contact concerning accident and incident investigations, safety activities, shared training opportunities, and requests for information.

### 4.2 External Communication and Dissemination of Safety Information BCAA

4.2.1 BCAA conducts safety promotion activities to maintain the aviation industry and community increasingly informed and aware of safety issues, including emerging safety matters.

4.2.2 BCAA also publishes a series of manuals and guidance materials available to the public and the industry. Manuals and guidance material of BCAA can be found at: <https://www.bcaa.gov.bt/>

#### AIG Unit

4.2.3 AIG Unit is also responsible for communicating and disseminating safety information, especially that derived from accident and incident investigations and the investigation and analysis of safety matters.

4.2.4 AIG Unit publishes accident and incident investigation reports and delivers specific safety notices to service providers and their personnel, and delivers safety messages to the aviation community of the State through coordination with the BCAA.

4.2.5 The alert area of the AIG Unit also highlights the safety concerns derived from investigation findings and occurrences reported by the industry and offers strategies to help manage risk areas.

## Chapter 5: Challenges, Priorities & Objectives

### 5.1 Challenges

#### Aviation Market

- 5.1.1 The international and domestic passenger market of the airlines of Bhutan has grown significantly during the last decade.
- 5.1.2 It is foreseen that the aviation market of Bhutan will continue to grow during the next 10 years.

#### Operational Complexity

- 5.1.3 The safety system of Bhutan might continue to become complex because of the addition of different types of aircraft, which go from turbojets to be operated by international and domestic, to helicopters operating in difficult terrains, and Unmanned aircraft systems (UAS).
- 5.1.4 The complexity of the industry poses continuous challenges to regulatory, investigation, and air service organizations. Therefore, the allocation of resources to these organizations, as well as staff retention, will need to be carefully planned.

#### Infrastructure / Technology

- 5.1.5 The continuous growth foreseen, especially at the main airports of Bhutan, will increase the demand for a whole range of infrastructure and airport, air traffic, rescue, and firefighting services, resulting in larger investments in resources by the State to maintain or improve safety.
- 5.1.6 Technology will also continue playing a vital role in the fulfillment of future safety, efficiency, and capacity requirements of Bhutan. Modern aircraft and air traffic management give access to more precise communications, navigation, and surveillance.
- 5.1.7 Bhutan is introducing satellite-based technologies in its airspace to improve safety oversight precision and reliability throughout the country, using automatic dependent surveillance-broadcast (ADS-B), while navigation is increasingly based on the Global navigation satellite system (GNSS).
- 5.1.8 The growing use of technology creates the need for government organizations, the industry, and the aeronautical community in general to make a safe and effective transition to new procedures and processes, to be implemented over several years to facilitate a more effective change.
- 5.1.9 Clear and appropriate regulatory requirements will also be established to support the use of new technology and infrastructure.
- 5.1.10 Bhutan will pursue its commitment to ICAO and other international organizations concerning the development of standards and recommended practices to facilitate the safe adoption of new and improved technologies and infrastructure at the global and national

levels.

### **Personnel Capabilities**

- 5.1.11 The addition of new aircraft, satellite-based navigation systems, and other new technologies requires adequate and duly trained, experienced, and skilled personnel to operate these aircraft, systems, and equipment safely and effectively.
- 5.1.12 Training and development of skilled personnel will be key factors to make sure that aviation safety performance in Bhutan is maintained and improved.
- 5.1.13 The use of the system- and risk-based approaches by the industry will require planning strategies for the selection, recruitment, and retention of trained and skilled personnel.
- 5.1.14 Increased use of performance-based rules and risk-based oversight concepts in safety oversight approaches will require a change in the way in which the BCAA performs its regulatory oversight functions, which in turn will require different sets of skills for its personnel.

### **Commercial aviation operations with aircraft weighing 5 700 kg or less**

- 5.1.15 Operations that pose a challenge to the aviation industry of Bhutan are commercial aviation operations with aircraft weighing 5700 kg or less.
- 5.1.16 BCAA and AIG Unit shall maintain sensitization programmes to continue highlighting safety hazards and risks and will guide to facilitate compliance with regulatory and performance requirements by the industry to ensure that hazards and risks continue to be addressed responsibly.

## **5.2 Global Priorities**

- 5.2.1 The ICAO GASP establishes the following four global aviation safety priorities:
- ✓ improve effective implementation (EI) by States;
  - ✓ implement SSP and SMS;
  - ✓ reduce accident rates in categories of higher risk to aviation;
  - ✓ maintain zero fatalities in aviation accidents;
  - ✓ regional collaboration;
  - ✓ use of industry programmes; and
  - ✓ availability of the appropriate infrastructure in air navigation services and aerodromes to support safe operations.
- 5.2.2 All global priorities are relevant for the aviation industry of Bhutan, despite its excellent safety record in scheduled commercial air transport operations and effective implementation of the USOAP CMA.

5.2.3 Bhutan has had no occurrence in the following high aviation risk categories: Runway excursion (RE), loss of control in-flight (LOC-I), and controlled flight into terrain (CFIT).

5.2.4 Nevertheless, Bhutan has taken and will continue to take a series of measures to maintain a zero accident rate in the aforementioned accident categories. Furthermore, it will take the following actions:

- ✓ improvement of services that are essential for air navigation and aerodromes;
- ✓ increased surveillance and navigation capacity through the broader implementation of ADS-B and GNSS;
- ✓ establishment of local runway safety teams;
- ✓ Bhutan undertakes to implement safety measures in support of a safe aviation system in the region and a globally harmonized system.

### 5.3 Regional Priorities

5.3.1 The diversity of the Asia Pacific Region, in addition to forecasts of continuous air traffic growth during the next decade, poses major challenges to regional aviation safety. Taking into account these events and challenges, the global priorities outlined in the GASP have been adopted as regional priorities, but with shorter deadlines. Moreover, the following activities are included:

- ✓ full implementation of performance-based navigation (PBN) in en route and terminal airspace;
- ✓ increased use of air traffic flow management and airport collaborative decision-making (A-CDM);
- ✓ increased use of data link, such as automatic dependent surveillance - Contract (ADS-C) and controller-pilot data link communications (CPDLC); and
- ✓ exchange of data with neighboring air navigation service providers.

5.3.2 Bhutan participates actively in the development of regional aviation safety priorities and policies through forums such as:

- ✓ the Aviation safety group – Asia Pacific (RASG-AP);
- ✓ the Conference of Directors General of Civil Aviation, Asia and Pacific Region;

### 5.4 Objectives

5.4.1 SSP implementation will be consistent with the legislative framework of Bhutan and will be supported by the initiatives and guidelines of the AP-RASP, which constitutes one of the axes of the Plan for the sustainability of air transport in Asia Pacific Region.

5.4.2 To make improvements to the safety system, Bhutan will take into account the following critical factors:

- ✓ continuous dialogue among the regulatory and administrative bodies of the State that are part of the SSP, the industry, and the community in general;
- ✓ synchronization of infrastructure and equipment investments by the State and the industry, so that stakeholders may derive safety and efficiency benefits;
- ✓ support for international and regional harmonization;
- ✓ knowledge of the regulation and management of airspace in which aircraft of different capabilities operate; and
- ✓ a clear regulatory policy and deadlines so that State entities and the industry may have greater certainty and capacity to plan when changes occur.

5.4.3 Bhutan will gradually introduce performance-based regulations and risk-based systems and approaches for safety oversight to replace prescriptive regulations and oversight.

5.4.4 The transition to a performance-based approach, together with the issues described in Section 5.1, poses a challenge to the organizations responsible for aviation safety and the industry in terms of the impact on the respective roles, responsibilities, and the allocation of resources.

5.4.5 Given the fast pace of change in aviation, Bhutan will mainly focus on its objectives for 2025, 2028, and 2030. However, the indicators, targets, and alert levels will be calculated every three years in the national aviation safety plan.

5.4.6 An overview of the key objectives of Bhutan to meet future challenges and priorities is shown below.

**By 2025**

- ✓ implement an effective SSP;
- ✓ maintain zero accident rates & numbers and fatalities in all aviation segments;
- ✓ Increase effective implementation (EI) to 60%;
- ✓ Regional collaboration such as SARI, COSCAP-SA, ICAO-APAC
- ✓ Availability of the appropriate infrastructure to support safe operations

**By 2028**

- ✓ Increase effective implementation to ICAO global average and maintained zero accidents and fatalities in all aviation segments;
- ✓ Bhutan will participate actively in the development of regional safety priorities and policies through a forum such as:
  - SARAST
  - APRAST

- RASG-AP
- COSCAP-SA
- DG Conference –AP
- ✓ Exchange of safety data and information within the regions
- ✓ Bhutan will seek technical assistance when the State has areas with negative safety oversight margins or provide technical assistance when it has positive safety oversight margins.
- ✓ Bhutan will ensure the availability of the appropriate infrastructure to support safe operations in the field of Air Navigation and Aerodrome.

**By 2030**

- ✓ Maintain effective implementation at ICAO global average and improve it.
- ✓ Achieve by 2030 a consecutive 3-year period without fatalities in aircraft accidents and maintain zero fatalities thereafter;
- ✓ National Aviation Safety Plan will target to maintain zero accident rates;
- ✓ Bhutan will continue to actively participate in the development of regional safety priorities and policies through a forum such as:
  - SARAST
  - APRAST
  - RASG-AP
  - COSCAP-SA
  - DG Conference –AP
- ✓ Bhutan will seek technical assistance when the State has areas with negative safety oversight margins or provide technical assistance when it has positive safety oversight margins.
- ✓ Bhutan will ensure the availability of the appropriate infrastructure to support safe operations in the field of Air Navigation and Aerodrome.

## Appendices:

### Appendix A - Safety Regulations, Instruments & Other Publications

The subordinate aviation regulations and instruments of Bhutan and the advisory material include:

- ✓ Bhutan Air Navigation Regulations
- ✓ Bhutan Civil Aviation Requirements
- ✓ Orders
- ✓ Advisory circulars
- ✓ Guidance materials

BCAA will also develop a series of procedural handbooks guiding the staff, delegates, and authorized individuals engaged in matters concerning, inter alia, the drafting, assessment, and processing of requests for various certificates, authorizations, approvals, permits, and exemptions.

- ✓ Airworthiness Procedure Manual
- ✓ Airworthiness Inspector Manual
- ✓ Flight Operation Inspector Manual
- ✓ Air Operator Certification manual
- ✓ Aerodrome Inspector Handbook
- ✓ Aerodrome Certification Procedure Manual
- ✓ ANS Safety Oversight Manual
- ✓ ANSP Certification Manual
- ✓ ATCO Licensing Manual
- ✓ Exemption Manual
- ✓ Enforcement Manual
- ✓ Surveillance and Regulatory Audit

The documents will be made available on the BCAA website: <https://www.bcaa.gov.bt/>

## Appendix B - State Safety Roles & Responsibilities under the SSP

The Royal Government of Bhutan, through the Minister of the Ministry of Information and Communications, sets the general direction of aviation policy. The minister is accountable to the cabinet for civil aviation matters, including aviation safety and security.

BCAA is the legal authority established by the Civil Aviation Act of Bhutan 2016, is the point of contact for coordination with ICAO, and is responsible for the implementation, maintenance, and coordination of the SSP of Bhutan, and for monitoring progress and providing information on the associated implementation plan.

BCAA is responsible for the safety regulation of civil aviation operations in the territory of Bhutan and of aircraft of Bhutan that operates outside the territory of Bhutan. BCAA is also responsible for regulating airspace management in Bhutan.

BCAA is responsible for fulfilling the obligations of Bhutan under the Annexes to the Chicago Convention.

BCAA is responsible for managing the mandatory (regulatory) and voluntary reporting systems of Bhutan concerning safety deficiencies, such as incidents not related to the operation of aircraft, failures, non-compliance, and findings identified during safety oversight.

More information on BCAA, it can be found at: <https://www.bcaa.gov.bt/>

### **AIG Unit**

AIG Unit is the independent investigation body of Bhutan that operates under the Civil Aviation Act of Bhutan 2016.

AIG Unit is responsible for the independent investigation of accidents, serious incidents, and other safety occurrences involving civil aircraft in Bhutan, and for participating in the investigation of accidents and other occurrences involving aircraft of Bhutan abroad.

AIG Unit is also responsible for the mandatory and voluntary reporting systems of Bhutan concerning accidents, serious incidents, and incidents related to the operation of aircraft. Its analytical and investigation functions are derived from this responsibility concerning the collection and management of aviation safety data.

AIG Unit is responsible for fulfilling the obligations of Bhutan according to Annexes 13 and 19 to the Chicago Convention.

## Appendix C – Description of Risk Management

Consistent with the increasing international emphasis on a safety risk management programme, and as highlighted in Annex 19 to the Convention on International Civil Aviation (Safety management) and Doc 9859 (Safety management manual), Bhutan effectively identify, evaluate, control, and monitor aviation safety risks.

As outlined in Chapter 2 – State Safety Risk Management, management of aviation safety risk in Bhutan is undertaken through a multi-layered process that can identify and manage risks at various levels of the aviation industry. The system is comprised of the following levels of risk management:

### Regulatory Risk Management

Aviation safety regulations must be shown to be necessary. They will be developed based on addressing known or likely safety risks that cannot be addressed adequately by non-regulatory means. Each proposed regulation must be assessed against the contribution it will make to aviation safety.

### Surveillance Outcomes Risk Management

Risk-based surveillance seeks to assess an authorization holder's management system and its ability to identify and keep operational risks to an acceptable level of safety performance while at the same time ensuring compliance with the aviation legislation of Bhutan. Risk-based surveillance is a structured process used by the BCAA to prioritize surveillance activities based on authorization holders' risk profiles. It focuses on the effectiveness of an authorization holder's management of its risks and enables targeted surveillance of high-risk areas of an authorization holder's systems.

### Industry Risk Profiling

The industry risk profiling process links to the SSP and the safety management system of the BCAA by providing an aviation industry review of the impact of the risks on the industry.

The role of the BCAA in regulating safety requires the identification of potential risks within the industry. Aggregating safety-related information gathered from multiple sectors provides an industry-level understanding of the risks and enables the development of a baseline measurement for safety performance.

The risk profiling process at an industry level draws on the aviation body of knowledge, which includes updated strategic studies that reflect how the industry and economy are evolving and system and sector risks identified.

The current risks and the emerging risks identified at an industry level are compared and prioritized based on their relevance and impact on system safety. The industry risk profile involves high-level analysis taking a strategic approach to the risk. Aggregating the risks enables the development of safety performance measures at the industry level.

## Appendix D - Requirements for the Service Provider's SMS

The following table is information on SMS requirements for service providers that are obliged to implement an SMS:

Service providers	Regulations and website
Aircraft operators authorized to conduct commercial air transport activities	BCAR-ORO can be found at: <a href="https://www.bcaa.gov.bt/">https://www.bcaa.gov.bt/</a>
Approved maintenance organizations (AMOs) serving aircraft or helicopter operators engaged in commercial air	BCAR-145 can be found at: <a href="https://www.bcaa.gov.bt/">https://www.bcaa.gov.bt/</a>
Air traffic service (ATS) providers	BCAR-ATM/ANS & BCAR-11 can be found at: <a href="https://www.bcaa.gov.bt/">https://www.bcaa.gov.bt/</a>
Certified Aerodrome Operators	Bhutan Aerodrome Standard can be found at: <a href="https://www.bcaa.gov.bt/">https://www.bcaa.gov.bt/</a>

## Appendix E - Glossary

For this document:

### **Definitions:**

#### **Acceptable level of Safety Performance (ALoSP):**

The level of safety performance agreed by State authorities to be achieved for the civil aviation system in a State, as defined in its State Safety Programme, expressed in terms of safety performance targets and safety performance indicators.

#### **Accountable executive:**

A single, identifiable person having responsibility for the effective and efficient performance of the service provider's SMS.

#### **AIG Unit :**

It is an independent unit/section under the Ministry of Information and Communications (MoIC).

#### **Change management:**

A formal process to manage changes within an organization in a systematic manner, so that changes that may impact identified hazards and risk mitigation strategies are accounted for, before the implementation of such changes.

#### **Defences:**

Specific mitigating actions, preventive controls, or recovery measures are put in place to prevent the realization of a hazard or its escalation into an undesirable consequence.

#### **Errors:**

An action or inaction by an operational person that leads to deviations from organizational, or the operational person's, intentions or expectations.

#### **Hazard:**

A condition or an object with the potential to cause or contribute to an aircraft incident or accident.

#### **Risk Mitigation:**

The process of incorporating defences, preventive controls, or recovery measures to lower the severity and/or likelihood of a hazard's projected consequence.

#### **Safety:**

The state in which risks associated with aviation activities, related to, or indirect support of the operation of aircraft, are reduced and controlled to an acceptable level.

#### **Safety Data:**

A defined set of facts or set of safety values collected from various aviation-related sources, which is used to maintain or improve safety.

**Safety information:**

Safety data processed, organized, or analysed in a given context so as to make it useful for safety management purposes.

**Safety Management System (SMS):**

A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

**Safety Objective:**

A brief, high-level statement of safety achievement or desired outcome to be accomplished by the State safety programme or service provider's safety management system.

**Safety Oversight:**

A function performed by a State to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations.

**Safety Performance:**

A State's or service provider's safety achievement as defined by its safety performance targets and safety performance indicators.

**Safety Performance Indicator:**

A data-based parameter used for monitoring and assessing safety performance.

**Safety Performance Target:**

The State or service provider's planned or intended target for a safety performance indicator over a given period that aligns with the safety objectives.

**Safety Performance Indicator:**

A measure (or metric) used to express the safety performance in a system.

**Safety Risk:**

The predicted probability and severity of the consequences or outcomes of a hazard.

**State Safety Programme (SSP):**

An integrated set of regulations and activities aimed at improving safety.

**Surveillance:**

The State activities through which the State proactively verifies through inspections and audits that aviation licence, certificate, authorization or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State.

**System:**

An organized, purposeful structure that consists of interrelated and interdependent elements and components, and related policies, procedures and practices created to carry out a specific activity or solve a problem.

**Service Provider:**

Any organization providing aviation services. The term includes approved training organizations, aircraft operators, maintenance organizations, organizations responsible for type design and/or assembly of aircraft, air traffic services providers, and certified aerodrome operators, as applicable.

**Trigger:**

An established level or criteria value for a particular safety performance indicator that serves to initiate an action required, (e.g., an evaluation, adjustment, or remedial action).

**Abbreviations and Acronyms:**

ACT	Civil Aviation Act of Bhutan 2016
ADREP	Accident/Incident Data Reporting
AIA	Accident Investigation Authority
ALoSP	Acceptable Level of Safety Performance
AOC	Air Operator Certificate
AP-RASP	Asia Pacific – Regional Aviation Safety Plan
ATS	Air Traffic Service(s)
BCAA	Bhutan Civil Aviation Authority
BARNs	Bhutan Air Navigation Regulations
DoAT	Department of Air transport
CAAB 2016	Civil Aviation Act of Bhutan 2016
CVR	Cockpit Voice Recorder
D3M	Data-driven decision making
Doc	Document
ERP	Emergency Response Plan
FDA	Flight Data Analysis
FDR	Flight Data Recorder
FMS	Financial Management System
FRMS	Fatigue Risk Management Systems
GASP	Global Aviation Safety Plan
HOA	Head of Authority
ICAO	International Civil Aviation Organization
iSTARS	Integrated Safety Trend Analysis and Reporting System
LOSA	Line Operations Safety Audit
MoIC	Ministry of Information & Communications
OHSMS	Occupational Health and Safety Management System
OSHE	Occupational Safety, Health and Environment
PIRG	Planning and Implementation Regional Group
QMS	Quality Management System
RASG	Regional Aviation Safety Group
RSOO	Regional Safety Oversight Organization
SAG	Safety Action Group

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SARPs	Standards and Recommended Practices
SD	Standard Deviation
SDCPS	Safety Data Collection and Processing System
SeMS	Security Management System
SMM	Safety Management Manual
SMP	Safety Management Panel
SMS	Safety Management System
SPI	Safety Performance Indicator
SPT	Safety Performance Target
SRB	Safety Review Board
SRBS	Safety Risk-Based Surveillance
SRM	Safety Risk Management
SSO	State Safety Oversight
SSP	State Safety Programme
STDEVP	Population Standard Deviation
TNA	Training Needs Analysis
USOAP	Universal Safety Oversight Audit Programme

– END –