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Doc 10131

Manual on the Development of Regional and National Aviation Safety Plans

First Edition, 2020



Approved by and published under the authority of the Secretary General

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AMENDMENTS

Amendments are announced in the supplements to the *Products and Services Catalogue*; the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

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FOREWORD

In line with the Safety Strategic Objective of the International Civil Aviation Organization (ICAO), the 2020-2022 edition of the *Global Aviation Safety Plan* (GASP, Doc 10004) outlines key safety enhancement initiatives (SEIs) at the global level, the roles and responsibilities for States, regions and industry, and provides a framework for the cooperation and collaboration of these to support States with the management of organizational challenges and operational safety risks. The global aviation safety roadmap, included in the GASP, serves as an action plan to assist the aviation community in achieving the GASP goals through a structured, common frame of reference for all relevant stakeholders.

Consistent with the GASP, each region and State is encouraged to develop a regional aviation safety plan (RASP) and national aviation safety plan (NASP), respectively, outlining its strategic direction for the management of aviation safety for a set time period. Each plan should be developed in line with the GASP goals, targets and high-risk categories of occurrences (HRCs). The NASP demonstrates a State's commitment to the implementation of activities for the improvement of safety.

This manual complements the 2020-2022 edition of the GASP. It addresses different aspects to be considered by a region or State when developing or modifying its aviation safety plan, and in implementing regional and national aviation safety plans consistent with the GASP.

The content of this manual was developed with inputs from experts from civil aviation authorities, industry, as well as regional and international organizations, and thereafter submitted for extensive peer review, taking into account feedback from the expert community. ICAO gratefully acknowledges the contributions of the ICAO Global Aviation Safety Plan Study Group (GASP-SG) and individual experts who provided support, advice and input for this manual.

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GLOSSARY

DEFINITIONS

Accident investigation authority. The authority designated by a State as responsible for aircraft accident and incident investigations within the context of Annex 13.

Audit. A systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which requirements and audit criteria are fulfilled.

Audit area. One of eight audit areas pertaining to the Universal Safety Oversight Audit Programme (USOAP), i.e. primary aviation legislation and civil aviation regulations (LEG), civil aviation organization (ORG); personnel licensing and training (PEL); aircraft operations (OPS); airworthiness of aircraft (AIR); aircraft accident and incident investigation (AIG); air navigation services (ANS); and aerodromes and ground aids (AGA).

Contributing factors. Actions, omissions, events, conditions, or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident or incident occurring, or mitigated the severity of the consequences of the accident or incident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

Critical elements (CEs). The critical elements of a safety oversight system encompass the whole spectrum of civil aviation activities. They are the building blocks upon which an effective safety oversight system is based. The level of effective implementation of the CEs is an indication of a State's capability for safety oversight.

Effective implementation (EI). A measure of the State's safety oversight capability, calculated for each critical element, each audit area or as an overall measure. The EI is expressed as a percentage.

Gap analysis. An evaluation that compares an existing situation to the desired one, it identifies specific steps that can be taken to reach a desired goal.

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

Incident. An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

Note.— The types of incidents which are of main interest to the International Civil Aviation Organization for accident prevention studies are listed in Annex 13, Attachment C.

Maximum mass. Maximum certificated take-off mass.

Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

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

Safety audit. A USOAP CMA audit that a State requests and pays for (on a cost-recovery basis). The State determines the scope and date of a safety audit. Also see definition of *audit*.

Safety enhancement initiative (SEI). One or more actions to eliminate or mitigate risks associated with contributing factors to a safety occurrence or to address an identified safety deficiency.

Safety management system (SMS). A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

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 or a 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 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.

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ABBREVIATIONS AND ACRONYMS

ADREP	Accident/incident data reporting
AIB	Accident investigation board
ATO	Approved training organization
CAA	Civil aviation authority
CAST	Commercial Aviation Safety Team
CICTT	ICAO Common Taxonomy Team
GASP	Global Aviation Safety Plan
HRC	High-risk category of occurrence
LOC-I	Loss of control in-flight
NASP	National aviation safety plan
NCLB	No Country Left Behind
PIRG	Planning and implementation regional group
PQ	Protocol Question
RAIO	Regional accident and incident investigation organization
RASG	Regional aviation safety group
RASP	Regional aviation safety plan
RSOO	Regional safety oversight organization
SARP	Standards and Recommended Practices
SEI	Safety enhancement initiative
SMS	Safety management system
SSC	Significant Safety Concern
SSP	State safety programme
USOAP	Universal Safety Oversight Audit Programme



Chapter 1

INTRODUCTION

1.1 BACKGROUND

1.1.1 Safety is aviation's top priority, Assembly Resolution A40-1: *ICAO Global planning for safety and air navigation* recognizes the importance of a global framework in support of the Safety Strategic Objective of ICAO. The *Global Aviation Safety Plan* (GASP, Doc 10004), available at www.icao.int/gasp, sets forth ICAO's safety strategy, which supports the prioritization and continuous improvement of aviation safety. Its purpose is to continually reduce fatalities, and the risk of fatalities, by guiding the development of a harmonized safety strategy and the implementation of regional and national aviation safety plans. The GASP promotes coordination and collaboration among international, regional and national initiatives, such as the *No Country Left Behind* (NCLB) initiative.

1.1.2 Each region and State is encouraged to develop a regional aviation safety plan (RASP) and national aviation safety plan (NASP), respectively, in which the strategic direction for the management of aviation safety for a set time period is presented. Each plan should be developed in line with the GASP goals, targets and high-risk categories of occurrences (HRCs). For States that have fully implemented a State safety programme (SSP), the NASP demonstrates commitment to the implementation of additional initiatives for the improvement of safety in the State (e.g. strengthening the SSP and achieving the State's safety objectives).

1.1.3 A questionnaire was distributed in preparation for the Thirteenth Air Navigation Conference (AN-Conf/13), held in October 2018, providing States and other key stakeholders the opportunity to give feedback on the draft 2020-2022 edition of the GASP, in relation to organizational challenges, operational safety risks, implementation of the GASP at the national and regional levels, and safety performance measurement. Seventy-one States and five international organizations replied to the questionnaire. To assist with its implementation, respondents suggested the following be made available: workshops; training; sample tools; and a template for the NASP.

1.2 PURPOSE

1.2.1 This manual complements the 2020-2022 edition of the GASP. It addresses different aspects to be taken into account by a region or a State when developing or modifying its aviation safety plan, and to implement regional and national aviation safety plans consistent with the GASP. In the context of the GASP, the term "region" refers to a group of States and/or entities working together to enhance aviation safety within a geographic area.

1.2.2 This manual provides guidance that may be used to:

- a) establish a development process for the aviation safety plan, including methods to identify safety enhancement initiatives (SEIs) of the RASP and NASP;
- b) address the relationship between the NASP and SSP;
- c) monitor the plans' implementation and their effectiveness; and
- d) report on safety performance measurement, including reporting methods for individual States to the regional aviation safety groups (RASGs).

1.3 APPLICABILITY

The content of this manual is presented as guidance and should not be considered as the sole means to develop and implement regional and national aviation safety plans. States should consult specific requirements within their region and align their efforts with the RASP, where applicable. States should address Significant Safety Concerns (SSCs), if any, as a priority and comply with ICAO Standards and Recommended Practices (SARPs), as a means to achieve the GASP Goals.

Chapter 2

DEVELOPMENT PROCESS

2.1 DEVELOPING REGIONAL AND NATIONAL AVIATION SAFETY PLANS

The GASP sets out a process for the development of regional and national aviation safety plans. Figure 2-1 illustrates the seven steps of the NASP development process. These steps assist the responsible entity in the State (e.g. civil aviation authority) to develop a NASP that defines the specific SEIs to improve safety. Detailed guidance on each step is found in the GASP. This chapter focuses on Steps 4 and 5 of the process – the selection and prioritization of SEIs to be included in the NASP.

Note.— The same steps and rationale should be used when developing a RASP.

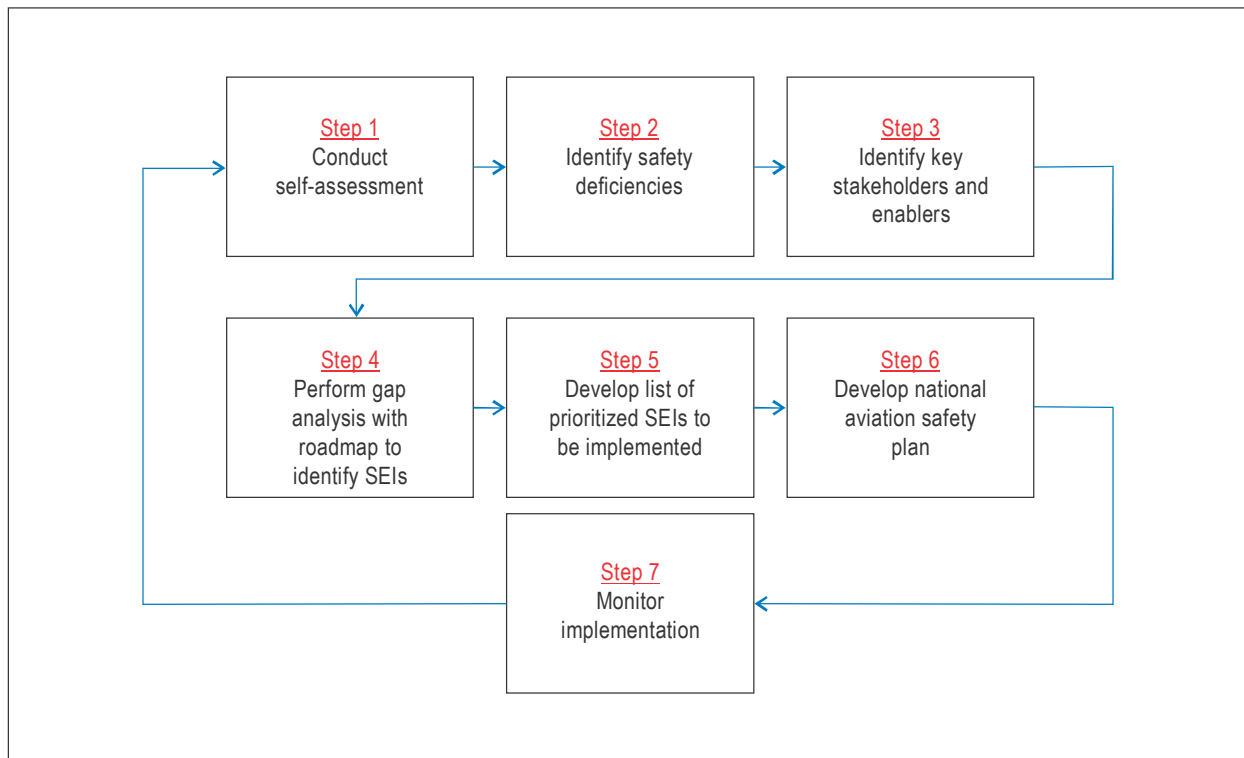


Figure 2-1. National aviation safety plan development process

2.2 UNDERSTANDING THE DEVELOPMENT PROCESS

2.2.1 A NASP is a strategic document that serves as an action plan which defines specific SEIs that should be implemented nationally to improve safety. The process for developing the NASP begins with an evaluation of the current situation in the State to obtain an understanding of its operational context; this activity is referred to as a self-assessment. Based on the results of the self-assessment, the responsible entity can identify the safety deficiencies that need to be addressed, as well as the stakeholders who should be involved in addressing them. In the context of the NASP development process, safety deficiencies include operational safety risks and other safety issues, such as organizational challenges (e.g. lack of effective safety oversight, difficulties in implementing an SSP). In addition to the State's self-assessment, the responsible entity should consult the latest edition of the GASP and RASP, if one exists, to assist in determining operational safety risks (including HRCs) and their contributing factors, as well as organizational challenges (e.g. systemic issues) as presented in the respective parts of the roadmap that may be common to the region or of global concern. It may also refer to the RASG for assistance in identifying safety deficiencies.

2.2.2 The next step is to conduct a gap analysis, which helps the responsible entity identify specific steps to be taken to reach a desired goal (e.g. implement an effective SSP). The responsible entity should not only focus on the weaknesses it needs to address, but also identify the strengths within the State that can facilitate closing the gap, such as existing economic frameworks, access to training, etc. For the purpose of developing the NASP, the responsible entity should conduct the gap analysis using the global aviation safety roadmap.

2.2.3 The roadmap contains a series of SEIs providing detailed actions to be taken when addressing the identified safety deficiencies. Using the roadmap, the responsible entity selects which SEIs, and their specific actions, will be implemented and in what order. As a result of this step, the responsible entity generates a prioritized list of SEIs. From that list, the responsible entity builds the NASP, which presents the national safety goals and targets, the operational safety risks and other safety issues (i.e. the identified safety deficiencies), the SEIs and specific actions to address them, the time frame and the entity responsible for their implementation.

2.2.4 Reviews of unsuccessful attempts at previous efforts to improve safety have shown that strategic plans should be developed so that they define successive activities that are achievable. The responsible entity should not select SEIs that would require significant transformations of the aviation system in a short time frame. It should identify a step-by-step approach to achieving implementation (following all the steps presented in Figure 2-1).

2.3 THE OPERATIONAL CONTEXT

2.3.1 To develop the NASP, the responsible entity should understand the operational context in which the SEIs will be implemented. Every State has a collection of factors that support aviation safety within it. A key part of the NASP development process is to identify the State's strengths and enablers that can promote change and to build upon these. The self-assessment helps to understand the State's operational context and should include: the analysis of established capabilities; system size and level of complexity; and available resources, using several sources of information. Additional information on a State's operational context is presented in Chapter 4, 4.3.1.

2.3.2 Other key aspects that should be assessed by the responsible entity are:

- a) the effective implementation of the eight critical elements of a safety oversight system; and
- b) the status of SSP implementation and its continuous maintenance.

2.3.3 These aspects allow the responsible entity to understand the State's safety oversight capabilities and operational context. At the regional level, these aspects should be assessed for the States that make up the region. The Integrated Safety Trend Analysis and Reporting System (iSTARS) may assist States in identifying specific deficiencies

related to safety oversight and SSP implementation. These tools are available online at www.icao.int/safety/iStars. Additionally, the *Safety Management Manual* (Doc 9859) provides guidance on the State safety risk management process.

2.3.4 Although States may also have a series of regional SEIs from the RASP to incorporate and implement into their respective NASPs, it is valuable for the responsible entity to understand the State's operational context and identify its organizational challenges and operational safety risks. These are important steps in the NASP development process.

2.4 INVOLVING ALL STAKEHOLDERS

2.4.1 The NASP development process requires the involvement of all stakeholders within the State. The wide representation of all stakeholders allows for a better understanding of the operational context, the identification of safety deficiencies and the development of possible mitigation strategies from the perspective of each stakeholder. Therefore, stakeholders should be identified early in the development process. In addition to the direct stakeholders (e.g. civil aviation authority, service providers), any entity which could be involved in financing, implementing or influencing changes, or which is significantly affected by these changes, should be considered.

2.4.2 Once the key stakeholders have been identified, the responsible entity should review the list of participants on the NASP development team to ensure that all appropriate constituents are represented. Successful implementation of the NASP depends on having the appropriate stakeholders actively engaged in its development.

2.5 IDENTIFYING AND PRIORITIZING SEIS

2.5.1 To identify SEIs that address organizational challenges, the responsible entity should refer to the Organizational Challenges (ORG) Roadmap portion of the Global Aviation Safety Roadmap. Using data from a number of existing sources (e.g. Universal Safety Oversight Audit Programme (USOAP), State's surveillance activities, industry assessment programmes) or from the knowledge provided by subject matter experts, the responsible entity can identify the appropriate starting point within the ORG Roadmap (e.g. Phase I).

2.5.2 Following the completion of the gap analysis, the responsible entity should select a series of SEIs that are needed to address the safety deficiencies identified and that will achieve the national safety goals and targets presented in the NASP. By reviewing the safety deficiencies identified and/or results of the gap analysis in comparison to the selected SEIs, a list of potential SEIs can be selected. For example, in Phase I of the ORG Roadmap, SEI-3 calls for States to establish an independent accident and incident investigation authority, consistent with Annex 13 — *Aircraft Accident and Incident Investigation*. To determine if the State has already completed this SEI, the responsible entity may consider the latest USOAP results or the State's own data if an internal evaluation was conducted. If it is determined that the State has not established an independent accident and incident investigation authority, consistent with Annex 13, this would then be listed as a "gap". SEI-3 would then be identified as one of the SEIs that should be incorporated into the NASP. The associated actions listed under SEI-3 (as presented in the roadmap) would need to be listed as actions to complete this SEI.

2.5.3 In addition, the responsible entity should conduct a similar review of the SEIs presented in the Operational Safety Risks (OPS) Roadmap portion of the Global Aviation Safety Roadmap and identify those that have not been implemented to serve as safety risk mitigations for the HRCs. A series of SEIs should be implemented to address contributing factors leading to the HRCs. Some of these SEIs may be derived from the OPS Roadmap; others may be identified through sources such as accident or incident investigations or safety risk assessments.

2.5.4 The gap analysis identifies SEIs that have not been adequately implemented. By reviewing the gaps and the associated SEIs, a list of potential actions can be produced. However, it is impractical to attempt to implement a plan that addresses all SEIs listed in the roadmap. The responsible entity should select the SEIs relevant to the State and its operational context.

2.5.5 When reviewing the gaps identified, the responsible entity should consider evaluating the safety impact and the ability of (or ease of implementation for) the State to effect the change for each gap.

Safety impact

2.5.6 The responsible entity should evaluate how safety will be enhanced through the elimination of each identified gap and should prioritize SEIs that have the greatest impact on safety. Ideally, a quantitative approach using various methodologies should be used. However, it may be difficult to apply a quantitative assessment to the SEIs, as most address the key foundation of aviation safety. For example, ORG Roadmap SEI-17 — *Establishment of safety risk management at the national level (step 1)*, calls for States to establish a confidential voluntary safety reporting system providing data to the safety database. It may be difficult to quantify the impact of implementing a voluntary safety reporting system in isolation. However, it is possible to qualitatively evaluate the gap created by the absence of such a system by noting that SEI-17 provides the necessary groundwork so that many of the elements of a safety management system (SMS), such as hazard identification, can be implemented. With the knowledge of subject matter experts that form part of the NASP development team, the responsible entity can list potential actions in a manner that will have the greatest impact on safety.

Ease of Implementation

2.5.7 Although the responsible entity should consider the impact on safety as the primary method to prioritize the list of potential SEIs, it should also assess the ability of the stakeholders to make the changes and adapt to a new situation. The evaluation of the ability to effect a change should include:

- a) the existence of political will to change; and
- b) the availability of resources necessary to implement the change.

2.6 USING SEIS TO DEVELOP THE NASP

2.6.1 Once a list of potential prioritized SEIs is developed, the responsible entity develops the NASP, which becomes the master document for implementing the SEIs at the national level. Using the list of SEIs, the responsible entity should specify which should be implemented first. The list should include a manageable set of actions that represent the steps necessary to progress towards the achievement of the national safety goals and targets, in line with those of the GASP.

2.6.2 The NASP does not have to include all actions that will support each SEI in detail; some SEIs may be presented in a stand-alone document containing a detailed implementation plan (e.g. the establishment of an independent accident and incident investigation authority or the implementation of an SSP). The NASP should provide a summary of the SEI, associated actions, the responsible entity assigned to lead the implementation, general timelines, stakeholders involved, metrics to measure implementation, the priority assigned to the SEI and the means to monitor implementation and effectiveness. A link or reference to the detailed implementation plan may be included in the NASP.

2.6.3 Detailed guidance on the development of the RASP and NASP is presented in Chapters 3 and 4, respectively.