PROGRAMME
PSOE-ANAC
SAFETY IS OUR MISSION

GUIDELINES FOR SMS ASSESSMENT

ANAC NATIONAL CIVIL AVIATION AGENCY - BRAZIL

PSOE PROGRAMME

PROJECT 8 – SUPPORT FOR THE IMPLEMENTATION OF THE SMS

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PSOE-ANAC
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1. INTRODUCTION

1.1 CONTEXTUALIZATION

As an integral part of ANAC Safety Programme (PSOE), Civil Aviation Service Providers implement the Safety Management System (SMS), which represents a systematic approach to safety management. The SMS is a management system focused on safety, consisting of four components and twelve elements. The first component corresponds to safety policies and objectives, SMS structure, emergency response plan, procedures, records and documents. The second refers to the management of safety risks. The third component corresponds to safety assurance, while monitoring and measuring safety performance, including specific audits, indicators and targets; analyzing the impacts changes may cause on safety; and continuously improving the SMS. The last component focuses on safety promotion, supporting other components through training programmes and communication.

Safety management aims at developing and implementing appropriate and effective measures to mitigate safety risks in a proactive way. Taking into account the increasing complexity of the civil aviation system and in favor of its continuous improvement, both ANAC and service providers shall consider prescriptive and performance elements in the assessment of safety performance.

SMS implementation and maintenance intends to be in accordance with regulation related to the system and to measure the performance of civil aviation service providers, anticipating operating problems for each type of regulated entity.

Given the importance of the SMS for safety management, ANAC shall have appropriate mechanisms for an adequate assessment of the system, considering prescriptive and performance aspects. In addition, since the interaction between different service providers is intense, SMS assessment shall be harmonized between the various areas of ANAC.

In this sense, these guidelines direct the work of all organizational units responsible for the certification and continuous surveillance of service providers.

1.2 OBJECTIVE

In agreement with PSOE-ANAC, this document details guidelines for ANAC inspectors for the harmonization of SMS assessment in certification and continuous surveillance activities performed in service providers. Harmonization and guidance are essential to guarantee credibility, quality, professionalism and independence during the work of inspectors.

SMS assessments shall support ANAC in the decision-making processes relevant for maintaining the safety of the system.

1.3 APPLICABILITY

These guidelines are applicable to inspectors, managers and heads of departments whose duties are related to SMS oversight activities of the following service providers:

I. Civil aviation instruction organizations (such as aero clubs and civil aviation schools) and civil aviation training centers exposed to safety risks during their operations, certified under RBAC 141 and RBAC 142 respectively;
II. Operators certified under RBAC 121 and RBAC 135 holding an Air Operator Certificate according to RBAC 119;
III. Agricultural aviation operators, certified under RBAC 137;
IV. Holders of Aeronautical Product Maintenance Certificate issued under RBAC 145 that provide services to the service providers listed in items I, II or III;
V. Organizations responsible for the designing or manufacturing of aircraft, certified under RBAC 21;
VI. Civil public aerodromes subject to the applicability of RBAC 139; and
VII. Service providers required to implement a Safety Management System as defined by ANAC's Board of Directors.

2. SMS AUDIT

2.1 IMPORTANCE OF THE SMS AUDIT

ABNT Standard NBR ISO 19011: 2018 defines audit as "a systematic, independent and documented process for obtaining objective evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled."

Therefore, the various processes related to safety oversight assess the fulfillment of requirements considering evidences obtained and the effectiveness of processes related to the requirements.

As a result, the SMS audit contributes to the maintenance and continuous improvement of adequate levels of safety. It helps developing appropriate conditions to facilitate service providers in the performance of their operations in a safe and effective way complying with applicable laws and regulations.

SMS audit also provides information about risk management, as well as service providers performance in relation to the planned safety objectives. The SMS audit contributes to determine the performance of the management system audited and can support decisions at all levels within ANAC.

2.2 GENERAL PRINCIPLES OF THE SMS AUDIT

According to ABNT NBR ISO 19011: 2018, an audit implies trust and some principles. These principles can help the audit become an effective and reliable tool, providing information from which civil aviation service providers may improve their performance. Adherence to principles is important for relevant and sufficient audit conclusions besides allowing auditors to work independently and reach similar conclusions in similar circumstances. This way, ISO principles have been adapted to SMS assessment.

Integrity

The foundation of professionalism

During SMS assessments, inspectors shall act in an honest, diligent and responsible manner besides complying with any applicable legal requirements. They shall demonstrate they are competent and perform work in a fair and unbiased manner avoiding bias in all situations. Inspectors shall remain sensitive to influences exerted upon their judgement while carrying out audits.

Fair presentation

The obligation to report truthfully and accurately

All SMS audit reports and findings shall reflect truthfully and accurately the activities of the audit. Significant problems encountered that have not been resolved due to differences of opinion between inspectors and regulated parties shall be reported. All communication shall be timely, clear, complete, truthful, precise and objective.

Due professional care

Diligence and judgement in auditing

For the SMS audit it is important that inspectors have the capacity to make reasoned judgements in all situations during the audit. Inspectors shall exercise due professional care in all tasks performed, in accordance with the confidence placed in them by the Agency and by society.

Confidentiality

Security of information

During SMS audits, inspectors may come across sensitive safety information and, therefore, they shall handle confidential or sensitive information appropriately and be discreet when using and protecting information obtained in the course of their duties. Information shall not be used inappropriately, including for personal gain.

Independence

Audit impartiality and objectivity

Inspectors shall not hold any bias or conflict of interest. For SMS audits, objectivity during the process shall be maintained to make sure all findings and results are based only on evidence.

Evidence-based approach

Rational, reliable, reproducible results

Audit evidence shall be based on samples of available information, in acknowledgement of the fact that SMS audits are conducted within limited periods of time, with limited resources. To ensure confidence of findings, the appropriate use of audit sampling shall be employed.

Risk-based approach

Considering risks

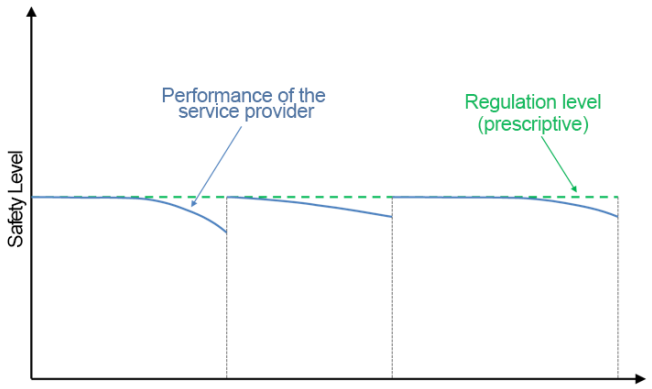
A risk-based approach shall influence all stages of the SMS audit: planning, conduct of the activity and possible actions resulting from audit findings. Audits shall focus on matters that are significant for safety and to achieve safety objectives.

2.2.1 PERFORMANCE EVALUATION X PRESCRIPTIVE EVALUATION

SMS audit criteria are based on performance evaluations and prescriptive evaluations. They complement each other and make it possible to evaluate the requirements that regulated entities shall comply with.

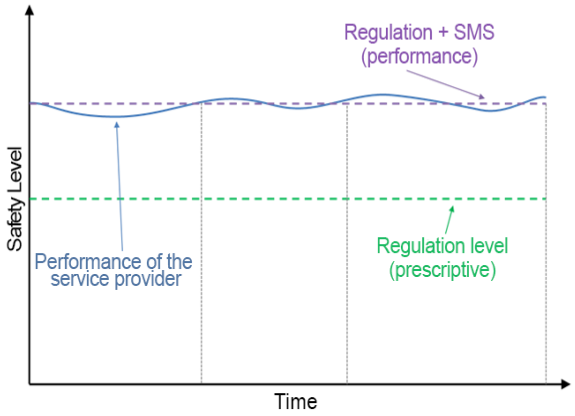
In prescriptive regulation there is a definition of minimum safety standards which are established directly by regulation, in the form of requirements (ANAC, 2013).

Based on prescriptive regulation, a service provider's performance over time can be represented as follows:



Picture 1 - Performance of the service provider according to prescriptive regulation

On the other hand, in regulation based on performance there is a definition and a monitoring of safety performance levels. It also occurs in the form of requirements, but it is not limited to checking compliance with minimum standards (prescriptive). Results achieved by the SMS are taken into account (ANAC, 2013). Based on performance regulation, a service provider's performance over time can be represented as follows:



Picture 2 - Performance of the service provider according to performance regulation

However, performance regulation is not always appropriate, especially when a standardized form of compliance is required. For example, when establishing requirements that enable interoperability such as requirements for runways and taxiways markings and signs. In such cases, enforcement is straightforward, since nonconformities can be easily determined.

For SMS requirements, it is important that the evaluation is not completely prescript as this approach might compromise SMS purpose of complementing traditional requirements with a performance-based approach. All SMS components and elements are connected and interdependent, so all of them are necessary for the system to work effectively. SMS gives foundation and tools for service providers to meet performance-based regulations. But this does not guarantee that every service provider with a SMS automatically obtains the ability to achieve the expected performance. For example, a service provider may be able to demonstrate that it has a process in place that meets regulation (for example, a reporting system), but may not be able to demonstrate that the process produces the expected result (for example, that the reporting system is effective) (ICAO, 2018).

To allow service providers to achieve the expected performance, a change is needed in both the industry approach and ANAC approach. This includes the fact that service providers need to be more conscious of risks and ways to monitor safety performance in order to be sure they are taking the correct actions to control the risks. It is necessary to consider not only in what proportion the service provider meets the regulation, but also to what extent the service provider understands and manages safety risks and monitors safety performance. And that requires inspectors to think in a different way. The fact that a service provider has a well-written Safety Management Manual and performs safety training does not necessarily generate an effective SMS (New Role for the Regulator, 2013).

For this reason, ANAC shall be prepared to assess safety performance considering the specific operational context of each service provider and shall not check only prescriptive aspects of regulatory compliance. If both prescriptive and performance aspects are considered, the establishment of systems or processes that meet requirements and favor the implementation of systems that produce desired safety results is ensured.

2.2.2 IMPORTANCE OF THE AUDITOR'S PERCEPTION IN THE CONTEXT OF THE SMS AUDIT

An SMS is adaptable to the reality of each organization. Thus, it is not possible to contemplate all situations auditors may face, even if assessment criteria are defined. In addition, during audits or other monitoring activities regarding service providers performance, hazards that involve more than one service provider or that affect the entire aviation system can be identified and, therefore, shall be addressed in a more systematic and integrated manner by the Agency. So, the auditor's perception is an important component of an SMS audit. It shall always be guided by auditing and public administration principles and shall be based on evidence and appropriate professional judgment. Moreover, auditors shall be properly trained and have the necessary competences to perform their functions to make their perception relevant in the context of safety management. Besides auditing skills, the inspector shall understand the comprehensive safety management context, including management systems, risk management, performance assessment, safety culture, human factors and SMS effectiveness.

Hence, for an effective risk management, inspectors shall provide relevant information about service providers and the Agency shall register and incorporate this information to the assessment of service providers performance and the civil aviation system performance.

3. SMS AUDITOR PROFILE

3.1 COMPETENCES OF THE SMS AUDITOR

In order to ensure that SMS oversight is conducted by ANAC in a consistent way, inspectors shall be properly trained and have specific competences to carry out the assessments.

Inspectors who carry out SMS assessment shall have the necessary competences to perform the following activities:

- Analyze risk management methodologies adopted by service providers;
- Apply audit techniques to safety management systems;
- Evaluate the effectiveness of the SMS of service providers through safety indicators;
- Evaluate how service providers ensure compliance with safety requirements;
- Develop regulations related to the safety management system;
- Analyze the impact of regulation on civil aviation activities considering safety and the guidelines established by PSOE-ANAC.

In this sense, competences listed below may be considered essential for an SMS auditor.

The auditor:

- Understands management systems;
- Understands the regulatory framework and its intention to ensure that organizations meet the requirements;
- Understands SMS oversight techniques;
- Understands how organizational structure and safety performance indicators are developed and used in a management system;
- Understands the different cultures found in an organization and how they can affect system performance;
- Understands the sensitivity of confidential issues to prevent inadvertent disclosure of specific organizational data by the regulator;
- Communicates effectively to ensure an interface between the industry and internal interested parties;
- Has analytical skills compatible with roles and responsibilities to assess safety performance;
- Has the necessary decision-making skills to make judgments based on all available information;
- Open mind: accepts new ideas or different points of view and recognizes that a management system is proportional to the size and complexity of the organization;
- Systemic thinking: can recognize the components of a system and how they interact;
- Assertiveness: has the quality of being able to declare and defend opinions with confidence and vigor;
- Teamwork: can work cooperatively in a multidisciplinary environment;
- Analysis of the subjectivity of safety management and of the need to establish objective evidence, when possible;
- Understanding of human performance and limitations and organizational factors that may influence them;
- Understanding of the risk to assess problems or proposed changes and the impact on the organization and the aviation system.

3.2 LEARNING TRACK

As a way of providing inspectors with the necessary competences to carry out SMS assessment, ANAC established the Specific Training Programme on Safety, containing events required for the "SMS Auditor" profile.

It should be noted that the training strategies provided in ANAC Specific Training Programme on Safety are not exhaustive. Thus, each Department shall map specific needs for the performance of activities that impact safety, ensuring that inspectors are able to develop safety management functions.

4. RESPONSIBILITIES CONCERNING SMS OVERSIGHT

The responsibilities of ANAC's top management (Director-President, Board of Directors and Heads of Departments) are listed in the PSOE–ANAC Safety Programme:

The Director-President is responsible for activities developed by ANAC regarding safety oversight and management, including accountability for:

I. planning, developing, operationalizing, maintaining, monitoring, revising, critically analyzing and continuously improving PSOE-ANAC;
II. ensuring the existence and allocation of financial, human, technological and infrastructure resources needed for the effective operationalization of PSOE-ANAC;
III. fostering actions aimed at the dissemination of PSOE-ANAC and initiatives to promote safety.

ANAC Board of Directors is responsible for:

I. ensuring that PSOE objectives are achieved;
II. monitoring the operationalization of PSOE-ANAC aiming at its continuous improvement;
III. approving the regulation of civil aviation activities in the interest of safety, considering guidelines set forth in the PSOE Programme and Brazilian international agreements;
IV. establishing and monitoring the Acceptable Level of Safety Performance (ALoSP); and
V. guiding the various branches of ANAC to continuously plan, organize, develop, control, promote, improve and stimulate safety, with the support of assistance Offices.

Considering the areas under their responsibility, Heads of Departments are responsible for:

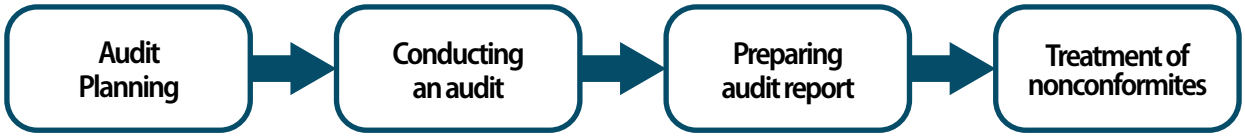
I. implementing actions to reach objectives and targets established by PSOE-ANAC and by other related regulatory documents;
II. ensuring the availability of suitably trained staff to carry out safety oversight and management;
III. ensuring that the checking of SMS development, operationalization, maintenance and continuous improvement is included in the certification and continuous surveillance processes of service providers, where applicable.

Inspectors shall also be aware of their specific responsibilities related to oversight activities within the Agency and the legislation applicable to federal civil servants.

5. SMS AUDIT PROCESS

5.1 PROCESS OVERVIEW

In general, the main steps in the audit process are:



Activities may vary depending on the scope and applicability of each audit, so they are described in detail in the procedure manuals of each Department. But some of the guidelines on how SMS audits may be planned and executed within ANAC are here presented.

5.1.1 SMS AUDITS PLANNING

According to ABNT NBR ISO 19011: 2018, the audit planning shall be established considering the size and nature of the organization to be audited, as well as the nature, functionality, complexity, type of risks and level of maturity of the management system to be audited. So, assessment tools shall be appropriate to the size of the organization.

Subsequently, the audit team shall be selected – the size of the team will depend on the size and complexity of the service provider to be audited. The service provider should be informed about the audit planning and about documented information and records which will be needed as proofs of the SMS processes.

In this step, data related to safety events shall be gathered, with an emphasis on events since the last SMS audit. Results of previous audits, inspections or other activities carried out by ANAC, data from a Corrective Action Plan, and other documents and relevant facts reported by the service provider shall also be considered during audit planning.

5.1.2 CONDUCTING SMS AUDITS

During the conduction of the SMS audit, the SMS assessment tool attached to this document shall be used. The tool contains specific questions that shall be assessed during the audit and are related to either the record or the implementation and effectiveness of SMS elements. The correspondence between procedures and processes performed by the operator and those described in the SMS documentation – which includes the SMS manual – shall be evaluated.

The questions on the tool are organized according to the basic structure of SMS components and elements provided by regulations. However, the audit team shall consider that a sequential scan of items may not be the optimal way to evaluate the service provider system. Risk management processes, for example, are linked to aspects related to different elements of the SMS, and an integrated assessment of the different aspects may prove to be more efficient and effective than a segmented assessment. In addition, it is worth remembering that there are other requirements applicable to some service providers which are part of the SMS and, therefore, shall be considered in the assessment. For example, the flight data analysis program used by air operators.

The audit team can use the following auditing techniques contained in ABNT NBR ISO 19011:2012 as guidelines to conduct planned activities and to fill in the assessment tool:

Techniques for obtaining physical evidence

- **Physical inspection**
  - On-site verification of the existence of an object or item, as well as its attributes; and/or
- **Direct observation**
  - Method of collecting contextualized information on how the inspected object works.

Techniques for obtaining documentary evidence

- **Documentary analysis**
  - Based on documents, it is the proof of authenticity of acts and facts which interest the surveillance activity and the search of data or information that may serve as evidence of nonconformities;
- **Circularization**
  - Confirmation of information about the audited organization consulted with outside third parties. It is based on the assumption of independence of external sources, persons or entities, that would not have connections with the original source of information; and/or
- **Process map**
  - Decomposition of a work process, sequencing the activities that compose it in the form of a flowchart. It can help to obtain knowledge about the operation of the inspected area. It is generally used in conjunction with the Interview technique.

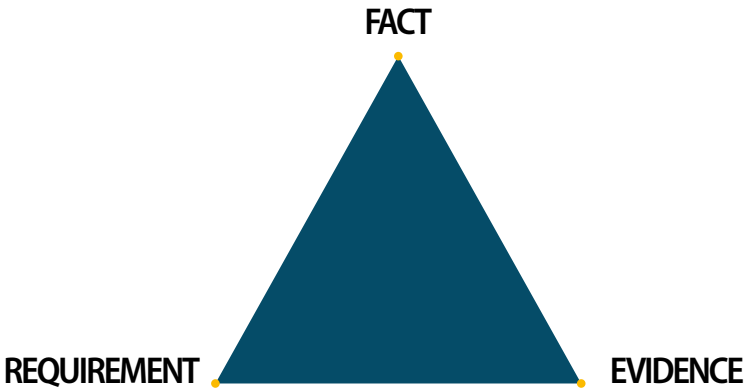
Techniques for obtaining testimonial evidence

- **Interview**
  - Questions aiming at obtaining answers to previously defined items. It shall be carried out with management and operational personnel. It is recommended to be applied by those who know the activity, the process, or the entity being audited well; and/or
- **Written inquiry**
  - Formulation and presentation of questions, via official channels, with the objective of obtaining the entity's written statement.

Techniques for obtaining analytical evidence

- **Calculation checks**
  - Review of calculation memories related to the object of inspection;
- **Compatibility**
  - Comparison of records with facts or occurrences;
- **Analytical review**
  - Use of logical inferences or structuring of reasoning that allows reaching a certain conclusion about the audited object; and/or
- **Data extraction and crosschecking**
  - Request of systematized data that will be compared considering the crosschecking of data with other parallel data sources.

The SMS assessment tool allows the identification of nonconformities, that is, noncompliance with a requirement. Fact, requirement and evidence are needed for a nonconformity to be identified.



If inspectors consider there is enough evidence to point out a nonconformity, they shall collect and record such evidence.

Even if the entity is considered "compliant" with the assessment tool criteria, the audit team may point out possible opportunities for improvement related to SMS elements and processes. Factors that may motivate an opportunity for improvement include:

a. Risk of nonconformities;
b. Potential problems or hazards identified by the ANAC inspector during the audit;
c. Inefficiencies; and
d. Failures to apply industry best practices.

Opportunities for improvement can also be identified by assessing the effectiveness of processes. Besides the specific aspects of each question, the following key questions shall be considered:

a. What is the purpose of the process?
b. How does the process interact with other processes?
c. What are the key steps in the process?
d. What are the inputs (people, materials, methods, equipment, environment) and outputs (results, records) of the process?
e. How is the process monitored/measured?
f. Are there targets for improving the process?

5.1.3 PREPARING AUDIT REPORT

Both nonconformities and opportunities for improvement shall be recorded in the audit conclusion document. The text describing the nonconformity shall depict in an objective way the requirement not met, the failure committed by the service provider and the evidence supporting the findings.

5.1.4 TREATMENT OF NONCONFORMITIES

Nonconformities identified in SMS audits trigger administrative measures that can be preventive, sanctioning and cautionary.

According to Article 4 of Resolution No. 472/2018, decisions on the application of administrative measures shall follow the provisions of the Inspection Compendiums (CEF), which may consider criteria related to history, compliance with corrective action plans and service providers risk and performance indicators.

6. MODEL ARTIFACT FOR SMS ASSESSMENT

6.1 ARTIFACT PRESENTATION

The template tool is attached to this document and it is composed of the following fields:

- Question assessed.
- Field to indicate if the item is "present" and guidelines for assessment.
- Field to indicate if the item is "suitable" and guidelines for assessment.
- Field to indicate if the item is "operational" and guidelines for assessment.
- Field to indicate if the item is "effective" and guidelines for assessment.
- Open field for the inspector conducting the assessment to include observations.
- Field to indicate evidence, to be filled preferably by the regulated entity.
- General guidelines on how to assess the question – instructions on item assessment for the inspector.

6.2 TEMPLATE TOOL OBJECTIVE

This tool was developed with the objective of assessing the compliance and effectiveness of the Safety Management System of civil aviation service providers, considering the basic structure of an SMS defined in the PSOE-ANAC.

Each aspect of the SMS shall be assessed to determine whether it is present, suitable, operational and effective, using the definitions and guidelines set out below:

Present: there is evidence that the process is documented in the organization's safety management manual and/or in the SMS documentation.

Suitable: the process is adequate based on the size, nature, complexity of the organization and on the risk of the activity. The assessment of adequateness is specific to the organization.

Operational: there is evidence that the process is in use and is producing results for the organization.

Effective: there is evidence that the process is achieving the desired result and has a positive impact on safety.

6.3 HOW AND WHEN TO USE THE ASSESSMENT FORM

6.3.1 TOOL APLICABILITY

This tool was developed for SMS assessment of service providers in certification processes or in continuous surveillance activities and can be used for any type of organization that has to implement or is already implementing an SMS.

For the application of the tool, the organizational units (UORG) shall incorporate it in their respective procedures manuals (MPR). The following steps are suggested:

1. To define applicable questions according to the type of audit to be performed.
2. To assess the description of the expected condition for analysis fields.
3. To relate questions to normative documents linking them to compliance criteria.
4. To describe how to use the tool.

1. TO DEFINE APPLICABLE QUESTIONS ACCORDING TO THE TYPE OF AUDIT TO BE PERFORMED

Definition of questions to be applied to each type of audit will guide inspectors as to the type of evidence needed and in their conduct during the task. Definition of questions can be based on the SMS development stage or on the type of process: certification or continuous surveillance.

For guidance and standardization purposes we suggest that:

- Service providers that have not implemented the SMS yet or have submitted SMS documentation only: consider the fields "present" and "suitable". In case any activity is already being carried out, the "operational" aspect may be evaluated.
- Service providers that have already implemented the SMS: all fields shall be considered, "present", "suitable ", "operational" and "effective".

After the implementation of the SMS, the continuous surveillance processes of the organizational units shall ensure that the system will be continuously reassessed in its 4 aspects - "present", " suitable", "operational" and "effective". Thus, it will be possible to measure the SMS as to its maturity over time.

2. TO ASSESS THE DESCRIPTION OF THE EXPECTED CONDITION FOR ANALYSIS FIELDS

The attached model tool provides a description of the expected conditions for the assessment fields. This way, the "present", "suitable", "operational" and "effective" forms of assessment are filled with a standard form of assessment. It is recommended that organizational units assess and identify where it would be necessary to complement the guidelines and expected conditions without necessarily changing the proposed fields.

3. TO RELATE QUESTIONS TO NORMATIVE DOCUMENTS LINKING THEM TO COMPLIANCE CRITERIA

In order to guide inspectors, questions in the attached tool were framed according to the various items of the respective service provider regulations. However, this does not necessarily represent a direct link between audit findings and nonconformity. For the framing of assessment fields and questions in compliance criteria, each organizational unit shall analyze which tool evaluation criteria (PSOE) correspond to items of the associated regulation.

Additionally, each UORG shall define how their combination leads to a nonconformity.

4. TO DESCRIBE HOW TO USE THE TOOL

a. Use of the assessment scale

The level of the PSOE scale, "present", "suitable", "operational" and "effective" shall be considered progressive:

- Step 1: is the process present?
- Step 2: is the present process considered suitable?
- Step 3: is the suitable process operational?
- Step 4: is the operational process effective?

For the analysis of each item on the "PSOE" scale, an expected condition is presented. The inspector shall assess if the condition of the service provider is compatible with the expected condition and, then, mark the answer to the item.

The "present" and "suitable" fields have been defined in order to assess service providers manuals and procedures. The "operational" field considers evidence produced by the operability of the processes. The "effective" field is used to assess SMS effectiveness. Therefore, due to the progressive nature of the four dimensions of PSOE scale, the question will receive as a conclusion the last level according to which the expected conditions have been met. For example, if for a question the expected aspects associated with the levels "present" and "suitable" were met, but the same did not occur with the "operational" aspect, then the question will have the "suitable" conclusion.

And for the conclusion of an item regarding its compliance, it shall be considered if there has been no compliance with items of the regulations associated with the expected conditions.

b. Guidelines for assessing questions

Each question presents a guideline ("What and how to assess?"), which is not intended to be a checklist, but to guide the inspector in the analysis of each process. Some guidelines may not be relevant depending on the type or nature of the organization. The inspector shall use guidelines pertinent to the type of analysis and the type of organization.

6.3.2 AUDIT FINAL RESULT

As previously mentioned, the "present" and "suitable" fields assess the organization's manuals and procedures. The "operational" field assesses evidence produced by the operability of the processes. If any of these fields is not considered satisfactory, an audit finding shall be set up to allow the organization to adapt. These items may also constitute nonconformity with regulation items, so the inspector is responsible for carrying out the assessment of the applicability of administrative or sanctioning measures provided for in the appropriate Inspection Compendium.

This means, therefore, that not every audit finding corresponds to a nonconformity. The nonconformity arises when audit finding shows a noncompliance with the requirement applicable to the service provider.

The "effective" field is used to assess SMS effectiveness. Deficiencies associated with the "effective" field do not constitute nonconformity but can generate recommendations to the service provider concerning SMS improvement.

In total, the level of SMS effectiveness – which varies on a scale from 0 to 1 – will be the index calculated below, considering the following weighting:

Component 1 – Safety policy and objectives (10%)

Component 2 – Management of risks to safety (40%)

Component 3 – Safety assurance (30%)

Component 4 – Safety promotion (20%)

Level of SMS effectiveness

$$= 0{,}1 \times \frac{\sum^{effective\ questions}_{component\ 1}}{\sum_{component\ 1}^{questions}} + 0{,}4 \times \frac{\sum^{effective\ questions}_{component\ 2}}{\sum_{component\ 2}^{questions}} +$$

$$0{,}3 \times \frac{\sum^{effective\ questions}_{component\ 3}}{\sum_{component\ 3}^{questions}} + 0{,}2 \times \frac{\sum^{effective\ questions}_{component\ 4}}{\sum_{component\ 4}^{questions}}$$

7. NORMATIVE REFERENCES

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