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ATM Safety Assessment in Change Management - USOAP PQs

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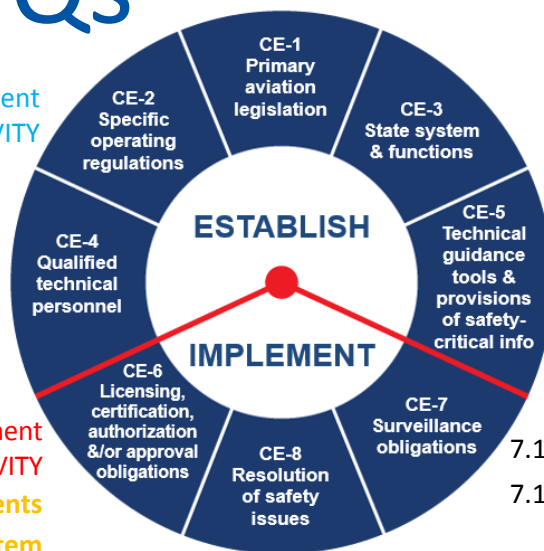
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Current PQs

7.189 Runway safety programme establishment
LOW SSC SENSITIVITY



7.081 ATS capacity assessment
HIGH SSC SENSITIVITY

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7.187 ATS incident reporting system
MEDIUM SSC SENSITIVITY

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Current PQs

7.081 ATS capacity assessment

- The key is the word ‘mechanism’ in terms of how the regulator ensures capacity assessment, which is normally a certification/approval check.
- As a CE-6 PQ, the auditor will assess the State oversight, and how effective this is by sampling the service provider’s actual systems, including actual staffing levels and planning methodology. In terms of infrastructure the ANSP’s plan and the National Air Navigation Plan may be referenced to check alignment.

PQ No.	Protocol Question	Guidance for Review of Evidence	ICAO References	CE
7.081	Does the State ensure that the service provider responsible for the air traffic service (ATS) has developed policies and procedures for determining the capacity of the ATS system, including the number of staff required to ensure the provision of an adequate ATS system?	1) Review mechanism to ensure compliance. 2) Review the documented process applied in determining staff requirements. 3) Confirm effective application to ensure provision of adequate service.	PANS Doc 4444 (ATM) 3.1 GM Doc 9426 Part II, Section 1, C1, 2 & App. C	CE-6





Current PQs

7.177 ATS service provider conducts safety assessments

- As a CE-6 PQ the ‘mechanism’ checks compliance before certification or approval of the ANSP, and by ‘documented evidence’ it means CE-2 legislation, the CE-5 guidance material and the internal CAA processes.
- This PQ cannot be ‘satisfactory’ without checking implementation to confirm evidence of early, independent and empowered reviews.

PQ No.	Protocol Question	Guidance for Review of Evidence	ICAO References	CE
7.177	Does the State ensure that the service provider carries out safety assessments, with respect to significant airspace reorganizations, a) for significant changes in the provision of ATS procedures applicable to <u>an airspace</u> or an aerodrome, and b) for the introduction of new equipment, systems or facilities?	1) Review mechanism established to ensure effective implementation. 2) Review documented evidence requiring safety assessment of any significant safety related change to the ATS system and confirm enforcement. 3) Review methodology and effectiveness.	PANS Doc 4444 (ATM) 2.6	CE-6





Current PQs

7.183 Safety reviews conducted by ATS provider

- As a CE-7 PQ the focus is on regulatory surveillance, so the ‘mechanism’ could be the programme (including unannounced audits), checklists, and processes to assess effectiveness.
- However, auditor shouldn’t assign this PQ as being ‘satisfactory’ if the audit checklists submitted as evidence are empty templates.
- The guidance also stresses the need to assess how effective the provider’s processes are (findings, follow up, and I add systemic focus).

PQ No.	Protocol Question	Guidance for Review of Evidence	ICAO References	CE
7.183	Does the State ensure that safety reviews are conducted regularly by the ATS service provider?	1) Review mechanism established to ensure effective implementation. 2) Check findings of last safety review that was carried out and follow up action(s) taken.	PANS Doc 4444 (ATM) 2.5	CE-7





Current PQs

7.185 Safety reviews conducted by qualified personnel

- Again the ‘mechanism’ is likely to be the audit programme, checklist etc.
- Verification activities would include an assessment of the training files of safety personnel to determine whether they’ve attended appropriate safety management training in accordance with the State’s guidance, and a review of safety reviews to assess competency. Sampling should indicate if such personnel are independent and empowered, and produce expected results (especially in terms of corrective versus preventive actions, and ‘Just Culture’).

PQ No.	Protocol Question	Guidance for Review of Evidence	ICAO References	CE
7.185	Does the State ensure that the ATS provider has appropriately qualified personnel to conduct safety reviews?	1) Review mechanism established to ensure effective implementation. 2) Verify qualifications and experience of personnel involved.	PANS Doc 4444 (ATM) 2.5.1	CE-7



Current PQs

7.187 ATS incident reporting system

- This CE-8 PQ focuses on the effectiveness of the incident reporting system, which should be electronic to allow the recording, cataloguing, analysing and follow up of incidents.
- It should be voluntary and confidential reporting processes, and include safety concerns, not just incidents in terms of Annex 19 proactive work.
- It should also be integrated with other **S**afety **P**erformance **I**ndicator systems, such as PIRG deficiencies, external and internal findings, and user feedback.

PQ No.	Protocol Question	Guidance for Review of Evidence	ICAO References	CE
7.187	Has the State established and implemented a system for reporting and following up air traffic incidents?	Review documented evidence confirming the existence and use of an incident reporting process inclusive of follow-up action.	PANS Doc 4444 (ATM) 16.3	CE-8



Current PQs

7.189 Runway safety programme establishment

- This PQ is only indirectly associated with ATM change management, in terms of safety assessment and review of the safety-critical runway operations.
- As a CE-2 PQ the focus is on the specific operating regulations that set the framework for an effective runway safety programme, such as the WHO, WHAT, WHEN, WHERE, HOW and with WHOM aspects.
- This PQ can be assessed off-site by the USOAP auditors.

PQ No.	Protocol Question	Guidance for Review of Evidence	ICAO References	CE
7.189	Has the State promulgated a regulation requiring the establishment of a runway safety programme and has such a programme been implemented?	1) Verify regulation. 2) Verify implementation.	GM Doc 9870 C3	CE-2



SSP PQs

The amended SSP-related PQs have as a 'background' the following key questions related to SSP implementation.

- What are the State's main/ top safety risks?
- How does the State know it?
- What is the State doing about it?
- Is it working?



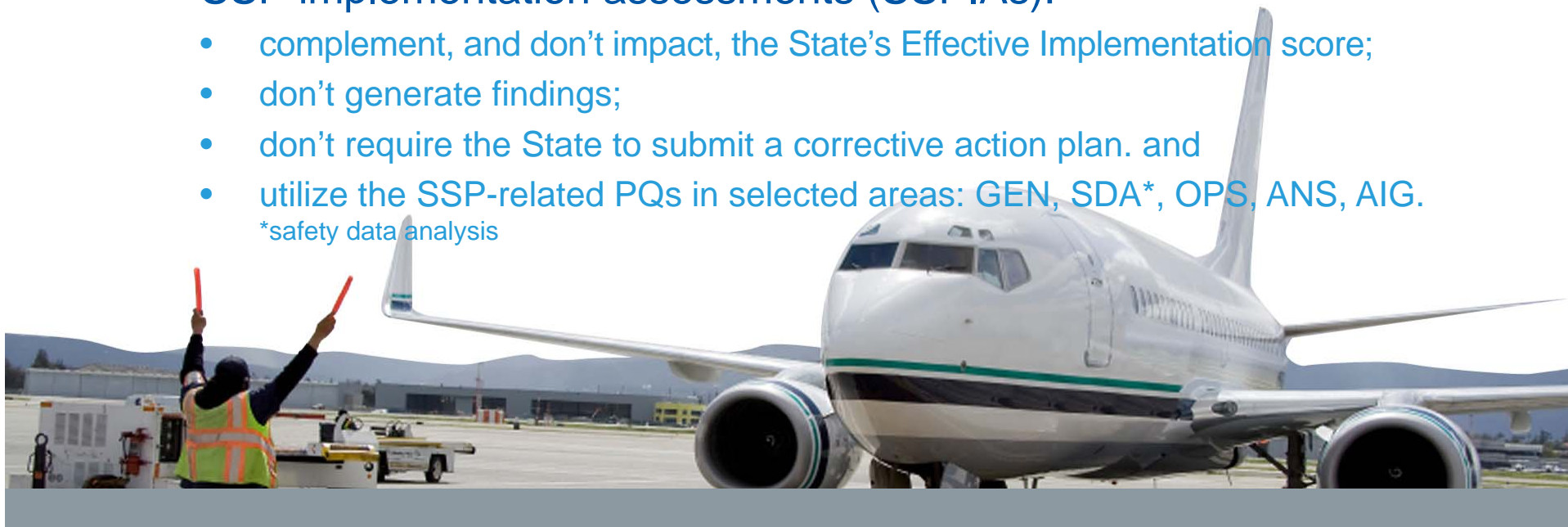


SSP PQs

SSP implementation assessments (SSPIAs):

- complement, and don't impact, the State's Effective Implementation score;
- don't generate findings;
- don't require the State to submit a corrective action plan. and
- utilize the SSP-related PQs in selected areas: GEN, SDA*, OPS, ANS, AIG.

*safety data analysis





SSP PQs

SSP.ANS.05	How does the State determine the initial and continued acceptability of the ATS provider's SMS?	SMM 8.4.7	State Safety Risk Management
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8.4.7.3 The State's SMS regulatory requirements and SMS guidance material should be periodically reviewed. The review should take into consideration: industry feedback, periodic review of the State safety risk profile, current status, and applicability of ICAO SMS SARPs and guidance material.





SSP PQs

SSP.ANS.06	How does the State assess the effectiveness of the hazard identification and risk management processes of ATS providers?	SMM 8.4.7	State Safety Risk Management
		SPI SPT	Safety performance indicator Safety performance target

8.4.7.15 The acceptance of the service provider's SPTs may be addressed after the SPIs have been monitored over a period of time. This establishes the baseline performance. It may be based on targets established at the State, regional or global level. Achievement of State SPTs will require the coordination of safety risk mitigation actions with the service provider.





SSP PQs

SSP.ANS.07	How does the State ensure that ATS providers monitor and analyze safety data to identify trends and take appropriate action when needed?	SMM 8.4.7	State Safety Risk Management
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9.5.4.14 When establishing SPIs service providers should consider:

- a) *Measuring the right things*: Determine the best SPIs that will show the organization is on track to achieving its safety objectives. Also consider what are the biggest safety issues and safety risks faced by the organization, and identify SPIs which will show effective control of these.
- b) *Availability of data*: Is there data available which aligns with what the organization wants to measure? If there isn't, there may be a need to establish additional data collection sources. For small organizations with limited amounts of data, the pooling of data sets may also help to identify trends. This may be supported by industry associations who can collate safety data from multiple organizations.





SSP PQs

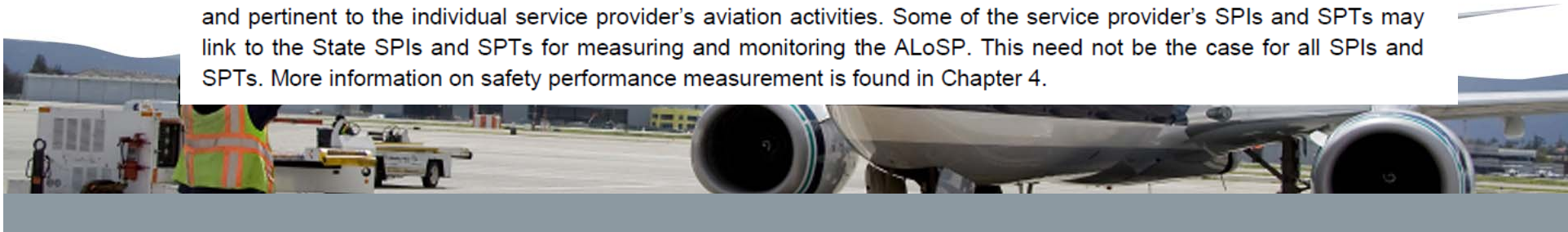
SSP.ANS.08	How does the State review and monitor safety performance indicators (SPIs), alert levels and target levels, when applicable, of individual ATS providers?	SMM 8.4.7	State Safety Risk Management
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Acceptance of SPIs and SPTs

SPI
SPT

Safety performance indicator
Safety performance target

8.4.7.14 Service providers' proposed SPIs are reviewed and accepted by the relevant State regulatory authority as part of the SMS acceptance. States might consider planning the acceptance of a service provider's SPIs later in the implementation process. This is especially practical for service providers at initial certification as they often do not have enough data to develop meaningful indications. The regulator may be satisfied that the proposed SPIs are appropriate and pertinent to the individual service provider's aviation activities. Some of the service provider's SPIs and SPTs may link to the State SPIs and SPTs for measuring and monitoring the ALoSP. This need not be the case for all SPIs and SPTs. More information on safety performance measurement is found in Chapter 4.





Regional Guidance to States

The following guidance to help States prepare for USOAP on-site USOAP activities is available:

- On Line Framework <https://soa.icao.int/CMAUnifyLogin/Index.aspx?ReturnUrl=%2fusoap>
- *USOAP Programme – Basic Guidance to States*





Regional Guidance to States

Aviation Culture

The Asia/Pacific Seamless ANS Plan has regional guidance and expectations related to SMS and change management.

<http://www.icao.int/APAC/Pages/edocs.aspx>

Just Culture

- Open Reporting to Management
- Non-Punitive
- Focus on Preventive, not Corrective Action

Responsible Management

- Proactive, Safety Priority
- Informed, Open Communication
- Team Management Approach

AVIATION CULTURE

Human Factors

- Ergonomic Designs, Human-in-the-Loop Systems
- Fatigue Management
- Training and Use of Simulators
- Safety Nets and Contingency Planning

Organisational Culture

- Effectively Driven by Management
- Imbedded Safety Review and Assessment Teams
- Organic: Responding to the Environment to Learn and Improve





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5.22 An optimal 'aviation culture' within regulators and service providers can only be implemented when top managers instil an understanding of a system-wide approach that creates an organic, learning and safe environment. When considering the key factors supporting an 'aviation culture', it is important to acknowledge that no 'national culture' is perfectly aligned with 'aviation culture', so there will always be a need for gap analysis and changes where development of an appropriate in culture is required. In focussing on management it is therefore important to train managers, and for **managers to have a level of competency** in the following areas (Figure 6):

- a) the advantages of a responsible, informed and accountable management, which promotes a proactive organisational culture with safety as a first priority, using **open communications and a team management approach**; and
- b) the implementation of an appropriate organizational culture which is effectively driven by management through **embedded safety review and assessment teams**, allowing the organization to respond organically to its operating environment;
- c) the systematic application of human factors principles in –
 - air safety investigation;
 - system design (ergonomics, human-in-the-loop);
 - effective training (including the use of simulators);
 - fatigue management;
 - automated safety nets; and
 - contingency planning;
- d) the implementation of effective safety reporting systems that –
 - are **non-punitive, supporting a 'Just Culture'**;
 - promote **open reporting** to management; and
 - focus on **preventive (systemic)**, not corrective (individual) actions in response to safety concerns, incidents and accidents.



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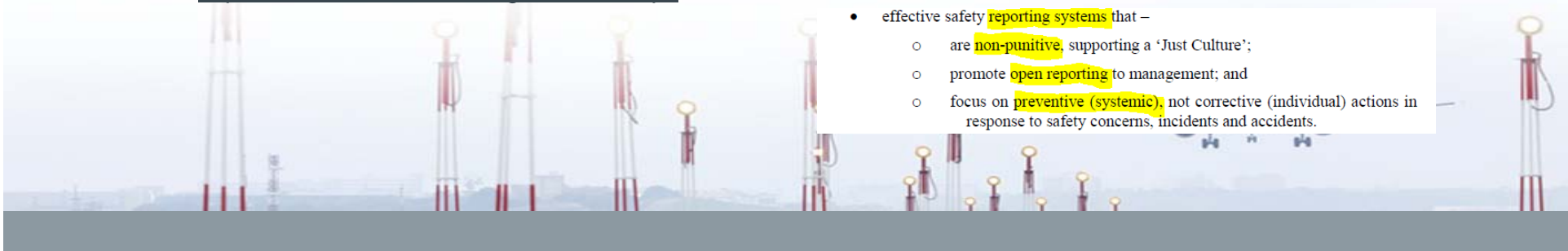
<http://www.icao.int/APAC/Pages/edocs.aspx>

7.43 The following systems should be established to support human performance in the delivery of a Seamless ANS service. The systems should consider all the elements of the SHEL Model (Software, Hardware, Environment and Liveware – humans), in accordance with the ICAO Human Factors Digest No. 1 and related reference material:

- a) human performance **training for all managers** of operational air navigation services (such as aerodrome operators, ATC organisations and aeronautical telecommunications), such training to include the importance of:
 - a **proactive organisational culture** where managers and operational staff are informed and safety is a first priority, using **open communications** and an effective **team management** approach;

.....
 - assessment and management of risks by **safety review and assessment teams** comprising multidisciplinary operational staff and managers which review safety performance and assess significant proposals for change to ATM systems, particularly those related to human capabilities and limitations;

.....
 - effective safety **reporting systems** that –
 - are **non-punitive**, supporting a ‘Just Culture’;
 - promote **open reporting** to management; and
 - focus on **preventive (systemic)**, not corrective (individual) actions in response to safety concerns, incidents and accidents.





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- c) human performance-based training and procedures for staff providing operational air navigation services (such as aerodrome staff operating 'airside', air traffic controllers and aeronautical telecommunications technicians) regarding the importance of:
- an effective safety reporting culture; and
 - 'Just Culture' (Priority 1).





Conclusions

The following key conclusions relate to USOAP ATM safety assessment:

1. 'Aviation Culture' is a foundation for the development of an organic approach to change management, as it encourages a team approach and open communication.
2. Training, independence and empowerment of staff responsible for safety assessment are essential for a robust safety result.





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