ANS SAFETY OVERSIGHT WORKSHOP

Federal Aviation
Administration

Presenters

- Mr. Kevin Haggerty, Director, International Integration Staff FAA Air Traffic Safety Oversight Service (AOV), FAA
- Mr. Michael Beckles, Manager, Future Technologies and Safety Management, AOV
- Mr. Corbin Jones, Manager, Audits and Compliance, AOV
- Ms. Kimberly Fowler, Foreign Affairs Specialist, International Integration Staff, AOV
- Mr. Shayne Campbell, Safety Programme Manager, CANSO

Workshop Guidelines

- **Participants are requested to:**
  - Sign in
  - Turn off or silence cell phones
  - Arrive on-time and return promptly from breaks
  - Wear name badges
  - Respect the views and ideas of other participants
  - Ask questions
  - Be engaged in discussions and activities

Workshop Materials

- Activity and reference materials are available on participant flash drives

Why Are We Here?

- In 2014, ICAO adopted the target set by African States to attain 60% EI of the critical elements of a State safety oversight system by 2017
  - 60% EI corresponds to the minimum level necessary for a State to perform effective safety oversight
- Support the Effective Implementation (EI) in ANS and Aerodromes, Air Routes, and Ground Aids (AGA) globally

Workshop Goals

- Review safety oversight responsibilities and the USOAP Critical Elements of State Safety Oversight
- Discuss strategies for applying the Critical Elements to the oversight of air navigation services
- Identify focus areas to target for measurable improvement
- Encourage knowledge and resource sharing among safety professionals in the APAC region

Workshop Objectives

- Address the ICAO USOAP Effective Implementation (EI) in the NACC region, in ANS 61.93%
- Provide best practices on effective implementation of safety oversight of an ANSP and continued performance monitoring

The Importance of ANS

- **Air Navigation Services** support capacity building and efficient civil aviation operations

- Aviation is an economic driver
  - **Safe** and efficient services inspire public confidence and support growth

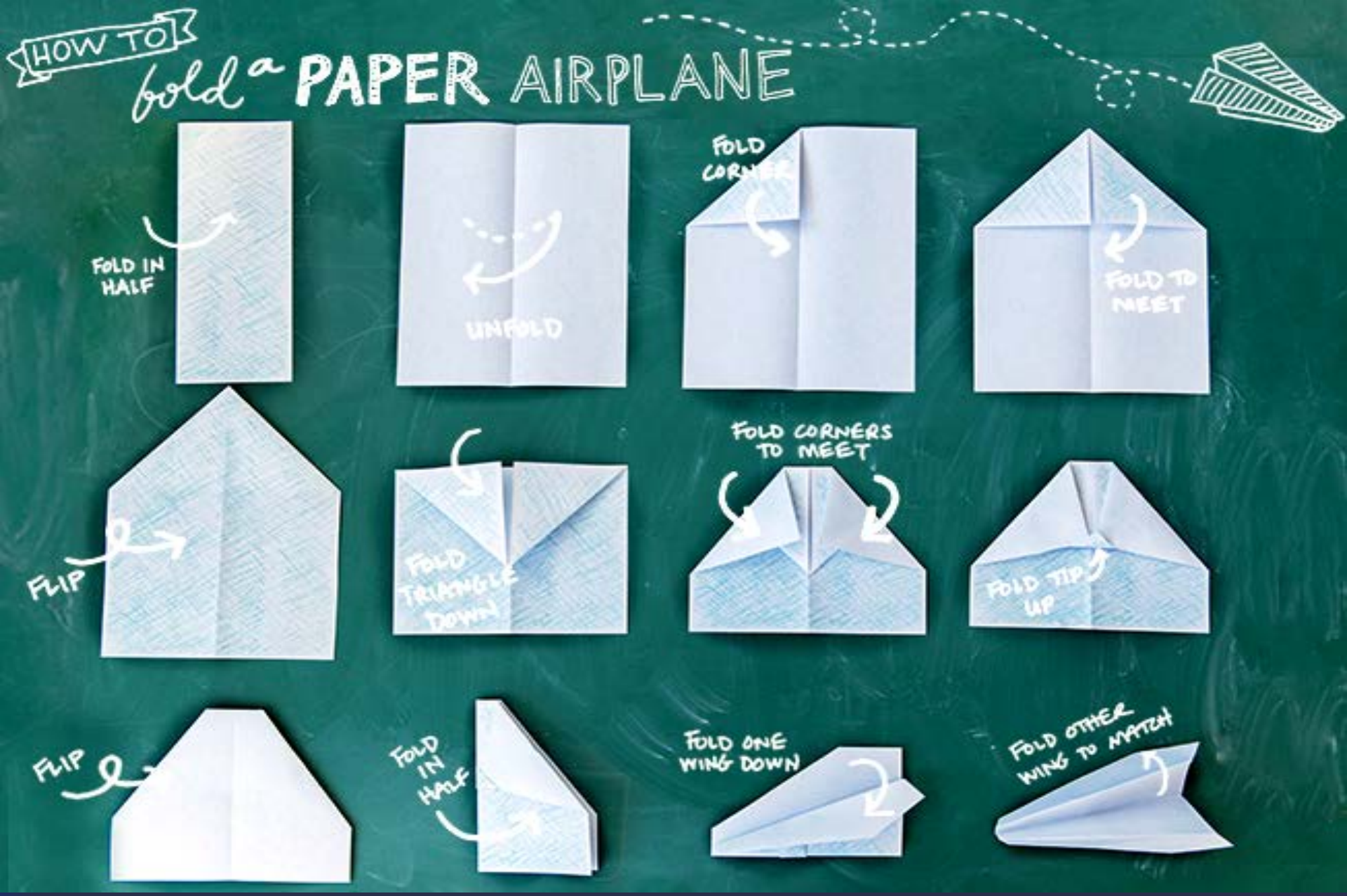
Workshop Curriculum

- Discuss strategies to apply the Eight Critical Elements of State Safety Oversight to the oversight of ANS
- Review of USOAP Protocol Questions related to ANS oversight
- Workshop activities:
  - Strength, Weaknesses, Opportunities and Threats (SWOT) Analysis
  - Developing an air traffic safety audit
- Self-Assessment and Action Plan activity and discussion

Introductions

Activity

[1] www.womensministrytoolbox.com


HOW TO
fold a PAPER AIRPLANE
FOLD IN HALF
UNFOLD
FOLD CORNER
FOLD TO MEET
FLIP
FOLD TRIANGLE DOWN
FOLD CORNERS TO MEET
FOLD TIP UP
FLIP
FOLD IN HALF
FOLD ONE WING DOWN
FOLD OTHER WING TO MATCH

Turning Point

- **Discussion tool**
- **Live voting**
- **Participating with Turning Point**
  - Vote via the web at:

www.ttpoll.com

Session ID: ansoversight

What is your favorite color?

Essential Safety Oversight Responsibilities

What Does it Mean to Regulate?

Regulators do so much more than administer laws. They also deliver services, build partnerships, solve problems, and provide guidance.

-- M. Sparrow

What is Safety Oversight?

- **The process of ensuring that aviation professionals – such as air traffic controllers, engineering/electronics personnel, and others – perform their functions *safely* and *responsibly***
  - Effective implementation of international Standards and Recommended Practices and associated procedures

Essential Responsibilities

- ✓ **Establish rules**
- ✓ **Perform surveillance**
- ✓ **Resolve safety concerns**

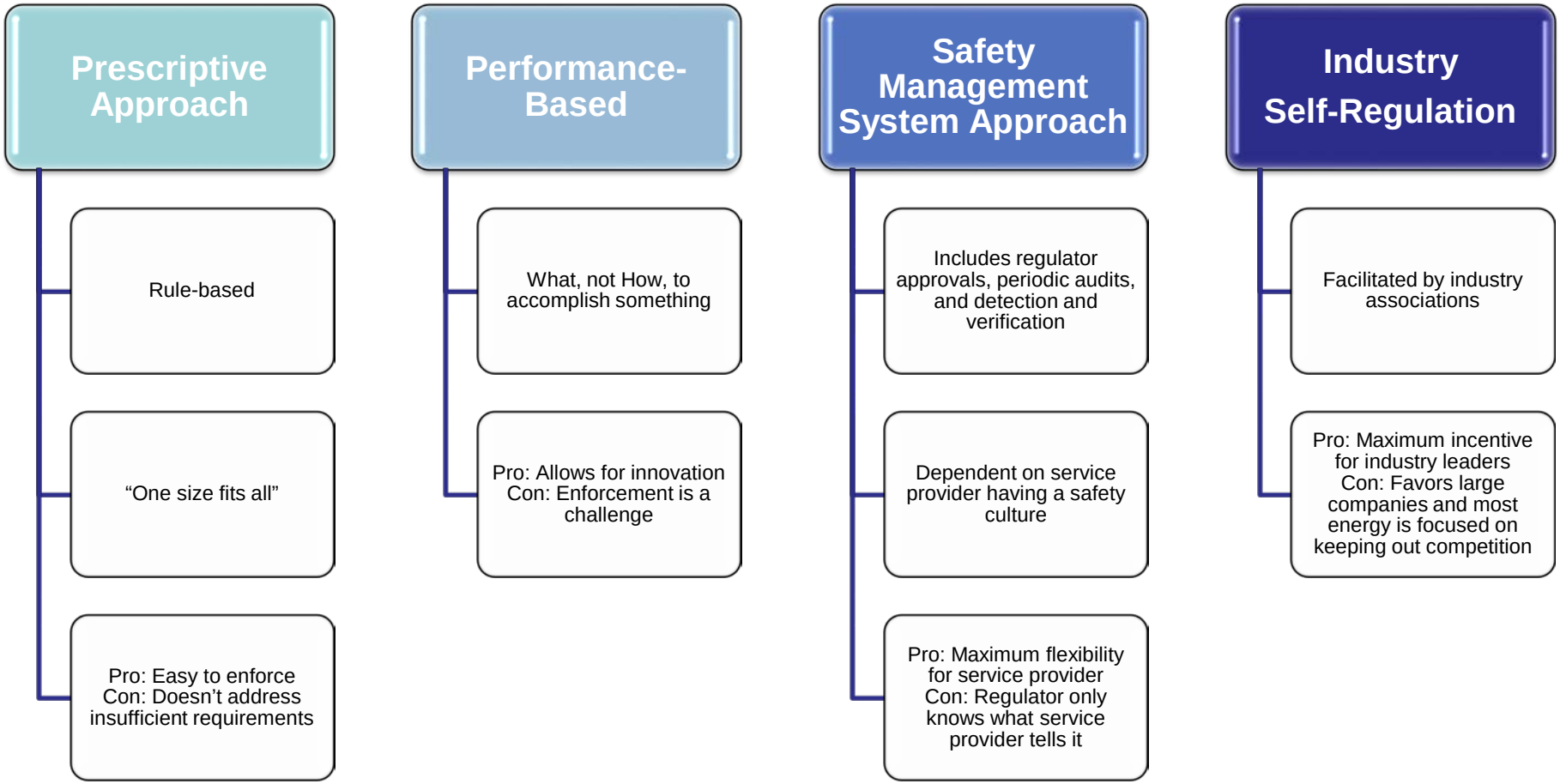
Basic Safety Oversight Activities

- **Issuing licenses and approvals**
- **Surveillance**
  - Monitoring
  - Investigations
  - Audits/Inspections
  - Assessments/Evaluations
- **Cooperation with other safety services/organizations**

ANS Oversight Required by ICAO

- Air traffic control services
- Safety personnel (air traffic controllers)
- Flight procedures and flight inspection
- Communication, Navigation, and Surveillance services
- Aeronautical Telecommunication services
- Meteorological services
- Aeronautical Information Services and Aeronautical Information Management
- Cartographic services
- Search and rescue

Regulatory Models



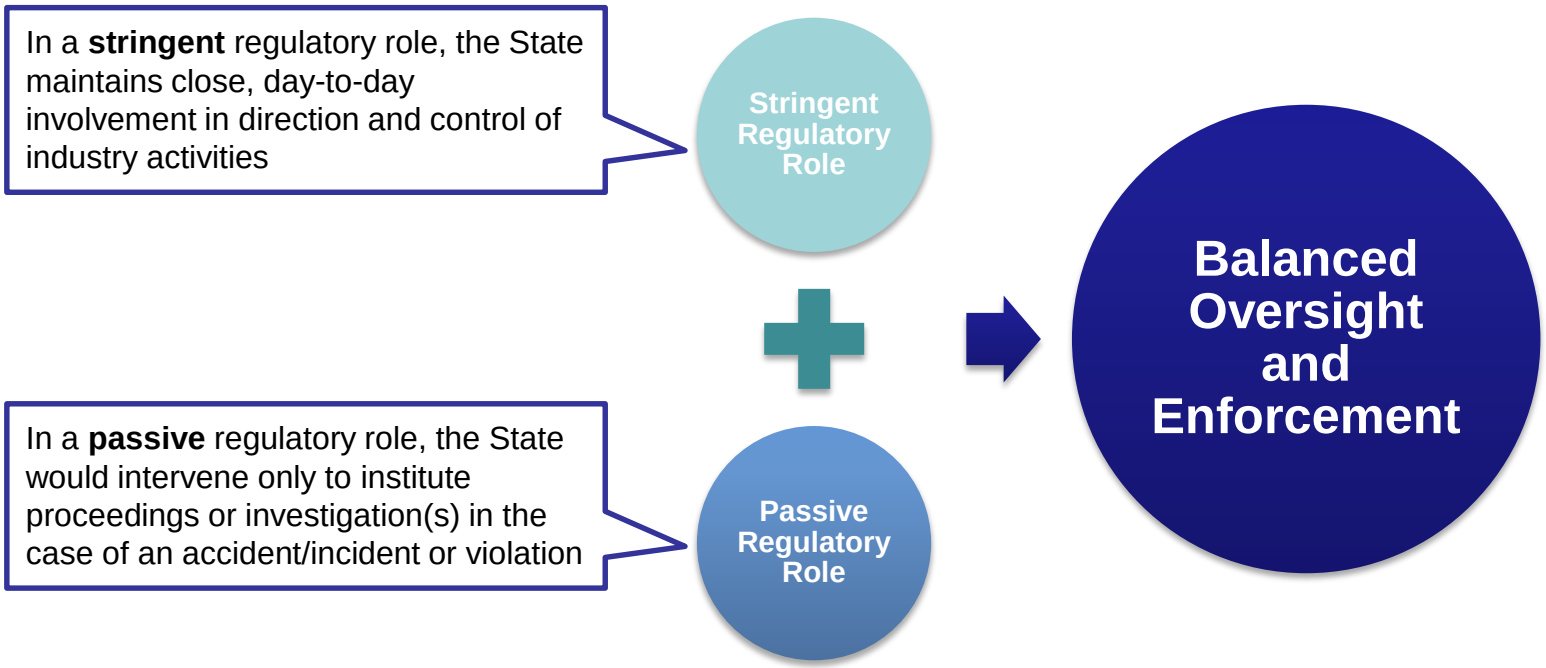
[1] Based on models discussed by Malcolm Sparrow

Which model describes the regulatory approach in your State?

A. Prescriptive
B. Performance-based
C. Safety Management System
D. Industry Self-Regulation

Achieving Balance

- In a balanced regulatory environment, the State and the aviation community share responsibility for the safe, regular and efficient conduct of civil aviation activities



Strategies for Risk-Based Regulation

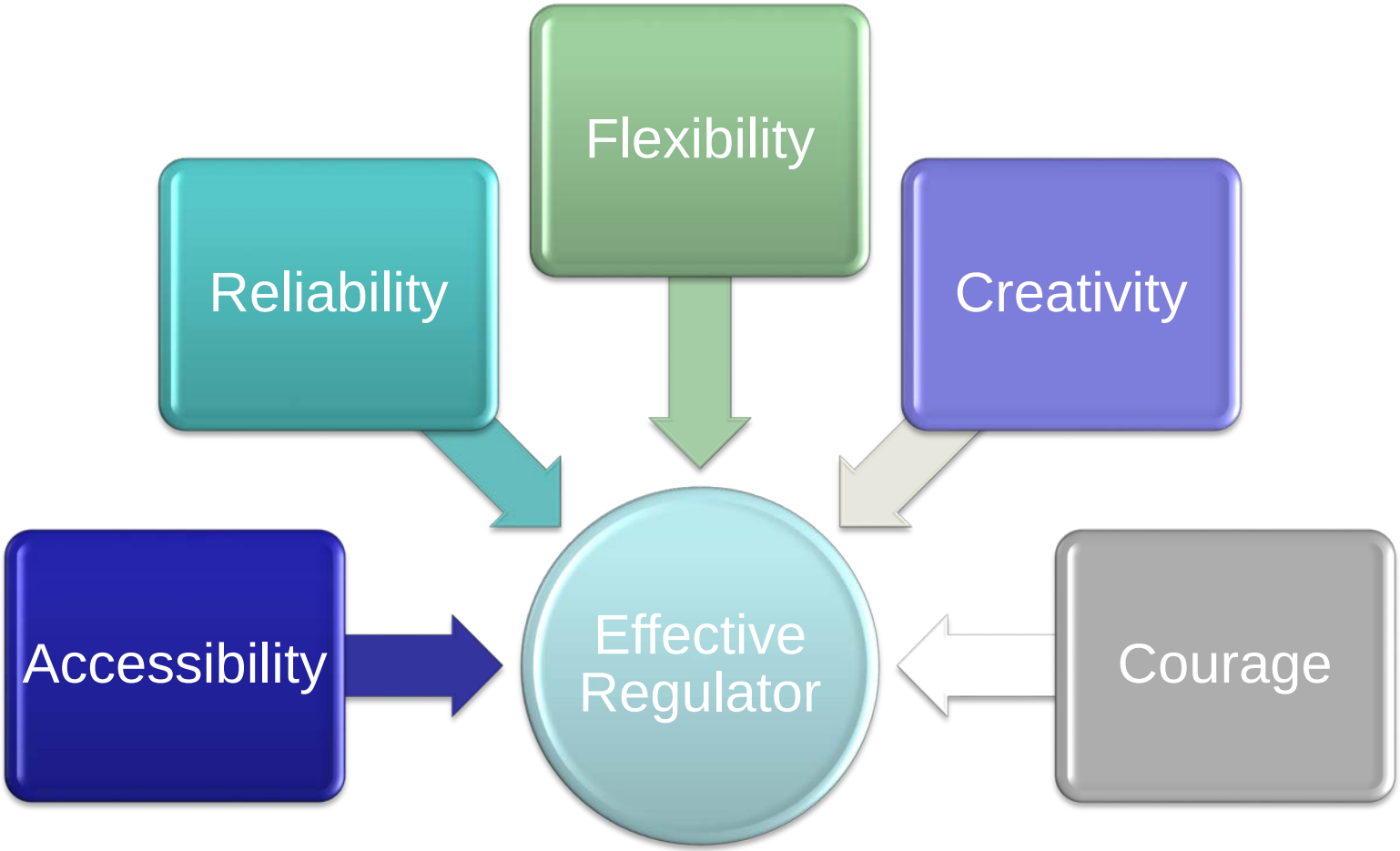
Strategies for Risk-Based Regulation

- Consider whether it is more effective to focus on identifying and reducing “bads” (risks/harms), or on defining and promoting “goods”
- Use risk mitigation as the foundation for partnerships (shared responsibility)
- Fit different regulatory structures to different classes of risk (structural versatility)
- Understand types of risk that pose special challenges

[1] Based on concepts discussed by Malcolm Sparrow

The Regulatory Continuum

Characteristics of Effective Regulators



Characteristics of Effective Regulators, Robert Eric Borgström

What other characteristics do you think are important to be an effective regulator?

References

- ***Characteristics of Effective Regulators*, by Robert Eric Borgström**
- **List of ICAO ANS Reference Documents**
- **ICAO Safety Oversight Manual, Doc 9734**
- **The Regulatory Craft, by Malcolm Sparrow**

Basic Safety Oversight of an ANSP

Establishing a Safety Oversight Program

- **Key Questions to Consider:**
  - Who provides ANS/ATS?
  - What are their responsibilities?
  - What are the applicable requirements?
  - How will you determine whether requirements are met?
  - How will you resolve safety concerns?

ANSP Responsibilities

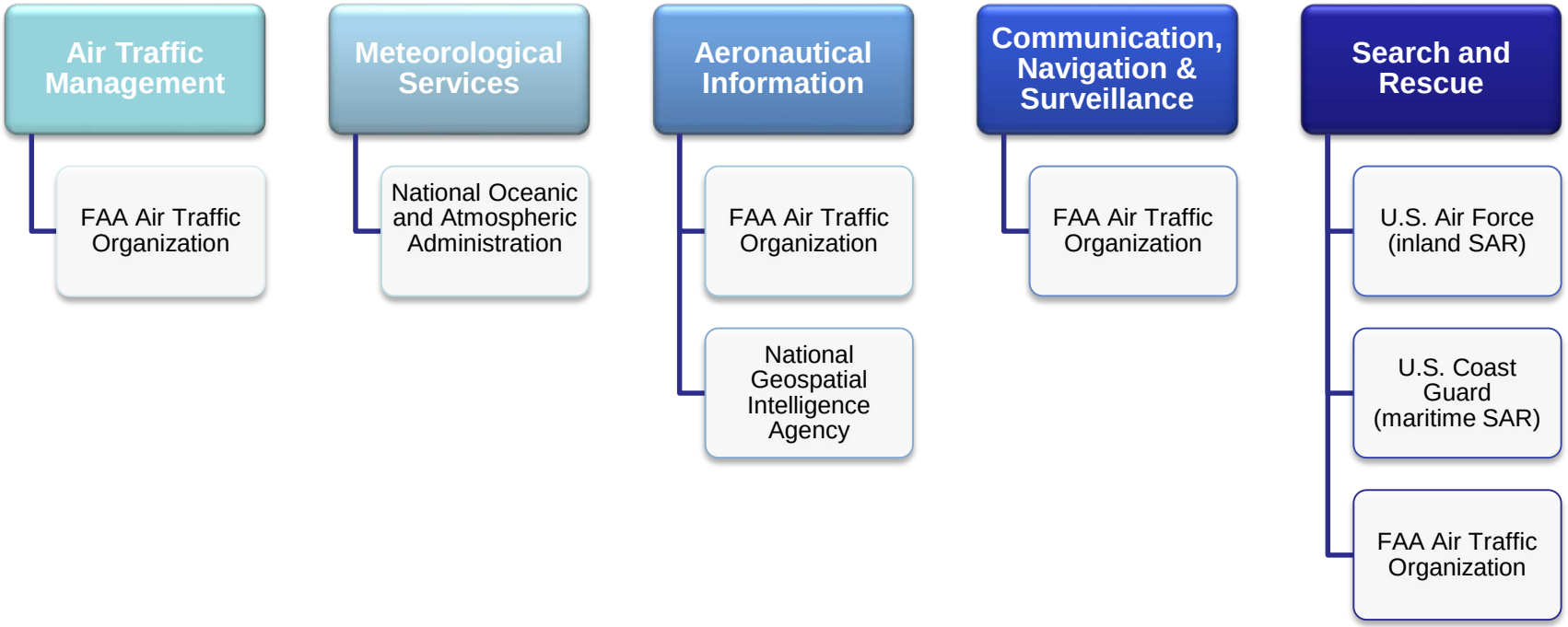
- **Promote a safe and orderly flow of air traffic**
  - Prevent collisions between aircraft operating within the system
  - Conduct and maintain an orderly flow of traffic
  - Notify concerned organizations of and assist in search and rescue operations
- **Provide Air Traffic Services**
  - Air Traffic Control
  - Air Traffic Advisory
  - Flight Information
  - Alerting

ANSP Responsibilities

- **Acquire and maintain communications, navigation, and surveillance equipment and infrastructure**
- **Provide Aeronautical Information Services/Aeronautical Information Management**
- **Provide meteorological services**
- **Design routes and procedures**
- **Plan and manage airspace**
  - Cooperate with military aviation authorities (ICAO Circular 330)

FAA Example: ANS Responsibilities

- **The following U.S. entities have ANS responsibilities:**



Components of a Successful Safety Oversight Program

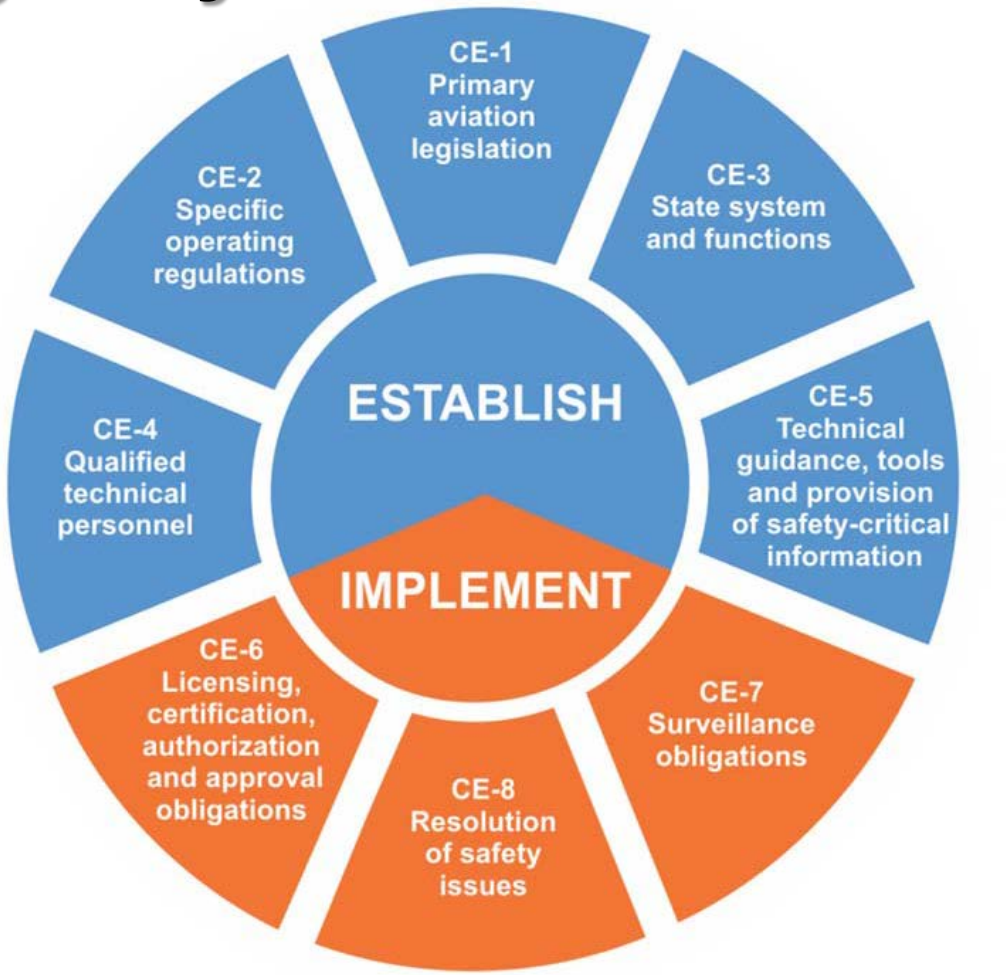
- **Requirements**
  - Regulations
  - Implementing Rules
  - Directives
- **Personnel Licensing Program**
- **Surveillance Program**
  - Monitoring
  - Investigations/Inspections/Audits/Assessments
- **Enforcement Program**
- **Regulator-ANSP Safety Information Exchange**

ICAO Critical Elements

ICAO Critical Elements

- ICAO's Critical Elements (CEs) 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

Critical Elements of a Safety Oversight System

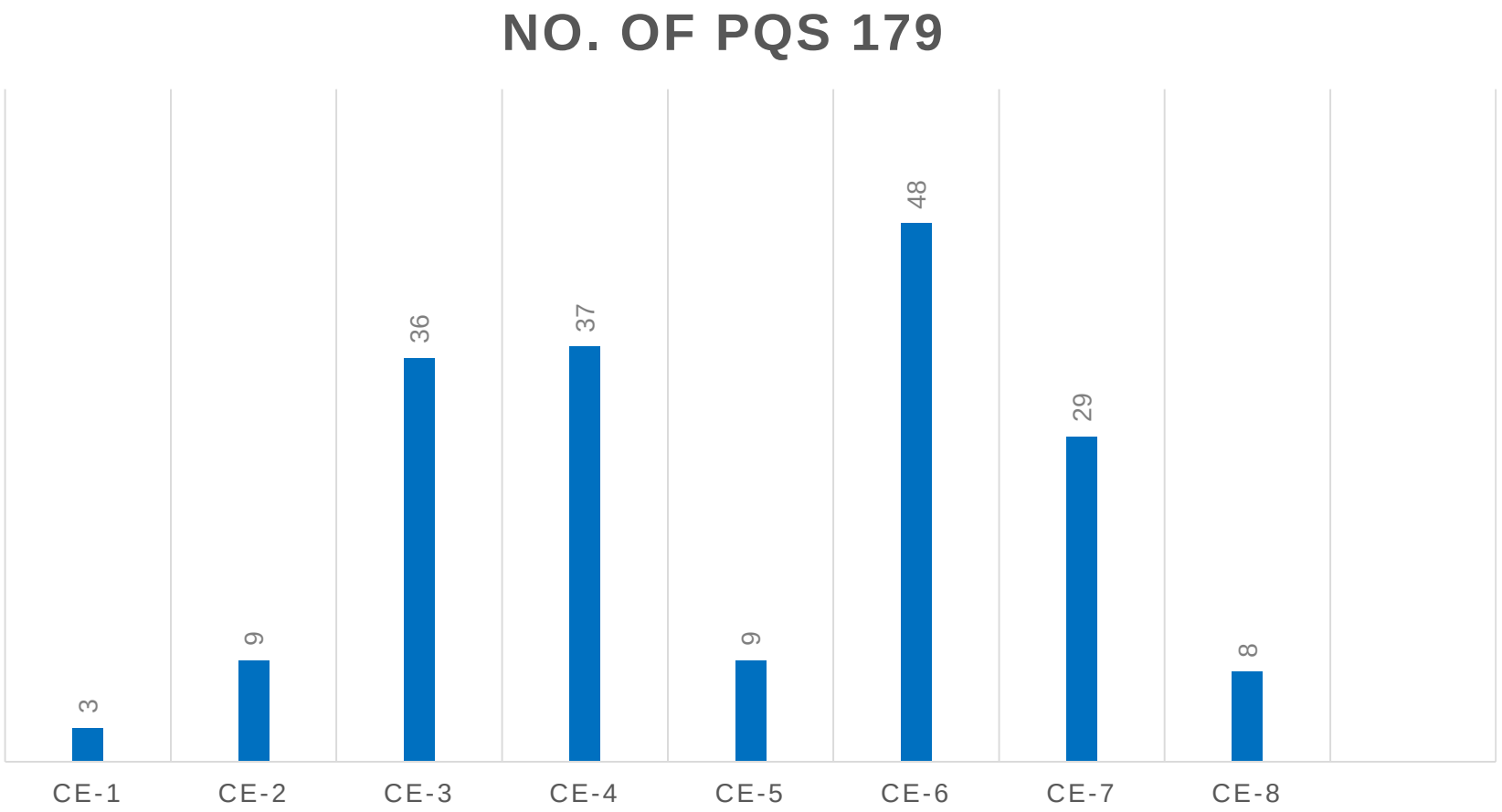


USOAP Protocol Questions

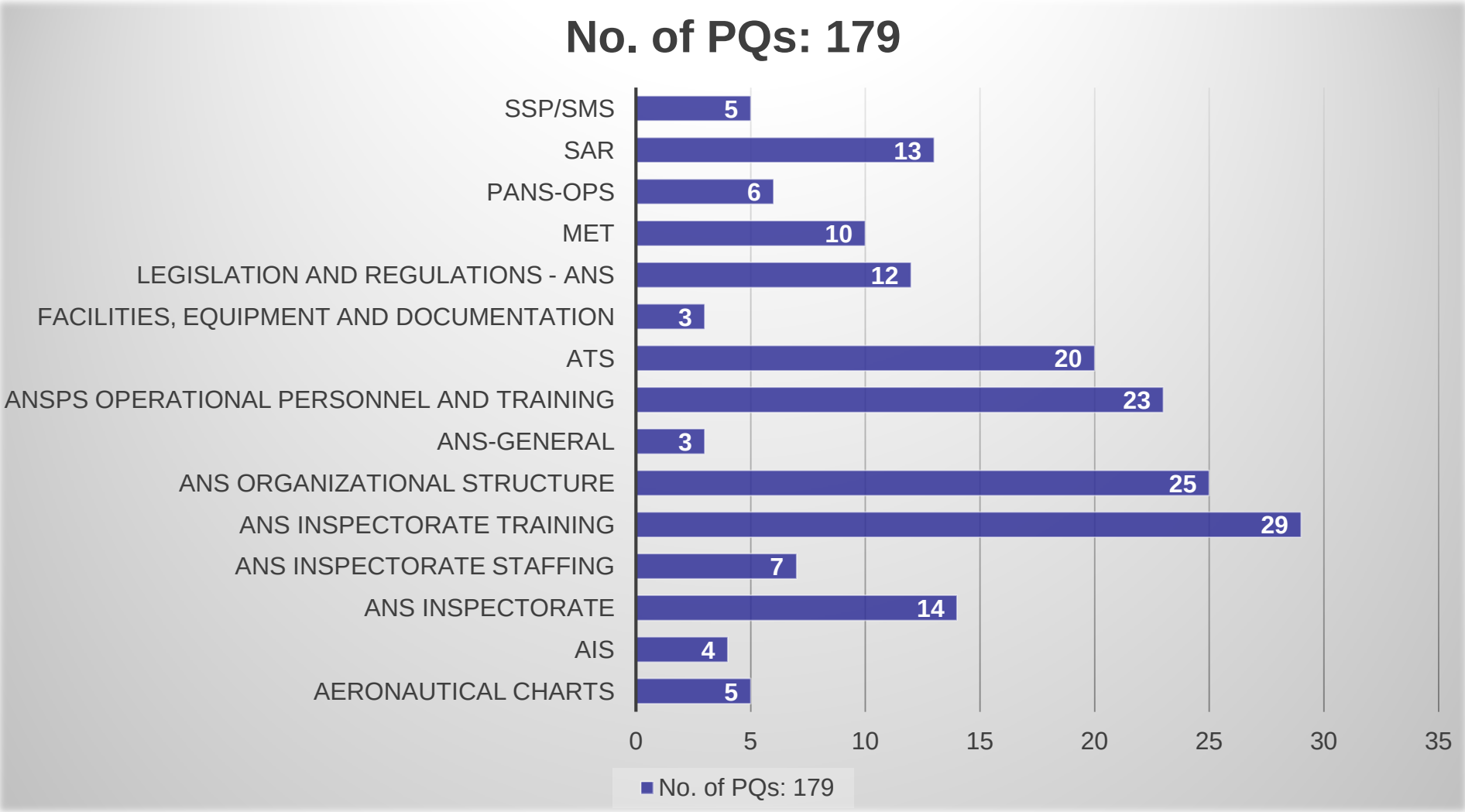
- **PQs are the main tool used during ICAO USOAP audits and continuous monitoring to assess a State's safety oversight capability**

- **Each PQ is linked to one of the CEs**

USOAP Protocol Questions (PQs) by Critical Elements (CEs)



Functional Areas by PQs



Effective Implementation

- **Measurement used to determine USOAP results is a State's Effective Implementation (EI) score**
  - Most favorable USOAP results are those having the highest EI percentage

Most favorable	Moderate	Least favorable
• EI of 70% and above	• EI between 50% and 70%	• EI below 50%

ANS EI Scores

World
ANS EI 64%

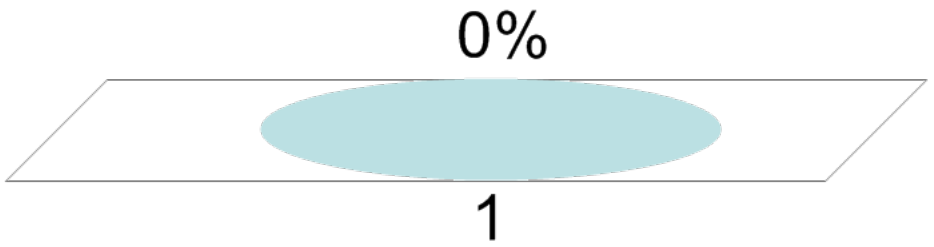
NACC Region
ANS EI 61.93%

ICAO Reference Material related to ANS PQs

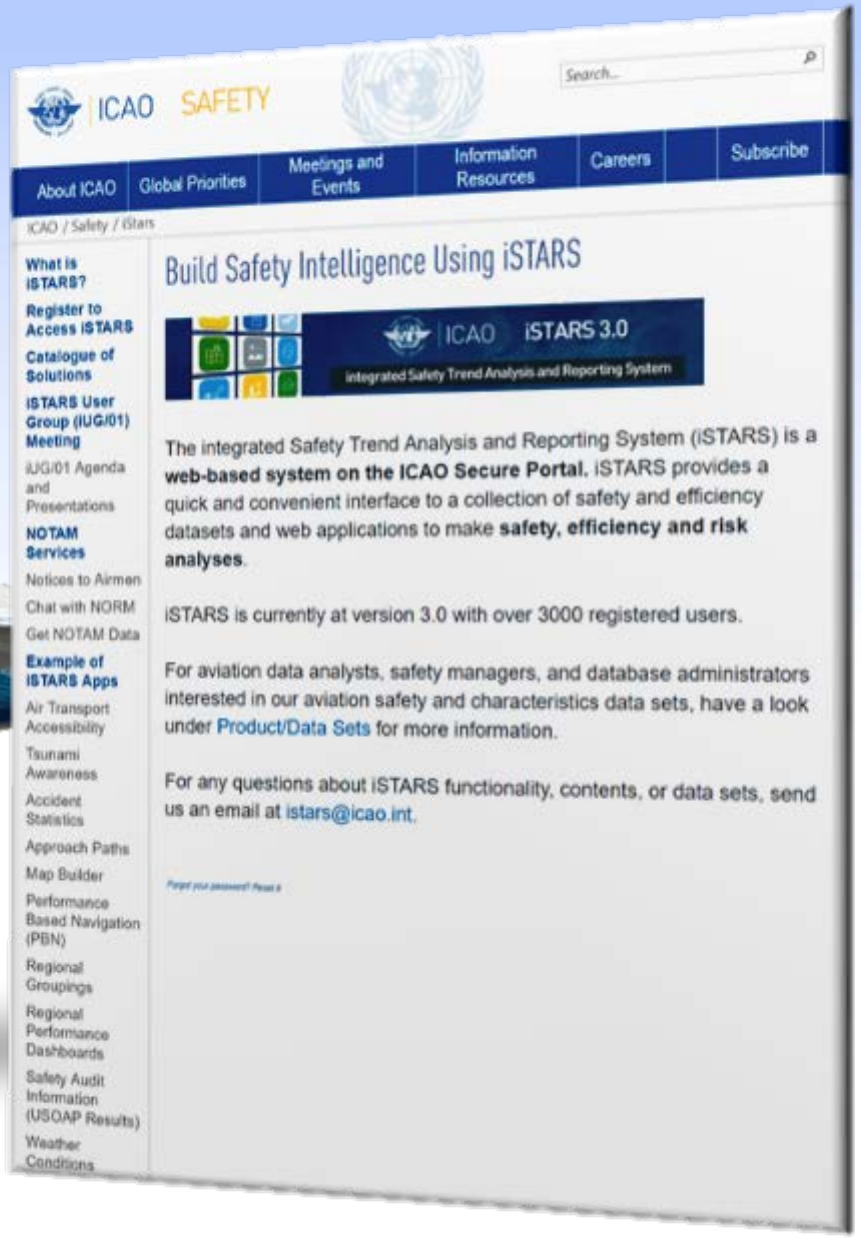
- Convention on International Civil Aviation (Doc 7300)
- Annexes 1, 2, 3, 4, 5, 6, 10, 11, 12, 13, 15, 19
- Regional Supplementary Procedures (Doc 7030)
- PANS-ATM (Doc 4444)
- Air Traffic Services Planning Manual (Doc 9426)
- RVSM Manual (Doc 9574)
- Performance-based Navigation (PBN) Manual (Doc 9613)
- PANS-OPS (Doc 8168)
- PANS-AIM (Doc 10066)
- AIS Manual (Doc 8126)

What CE do you think your State should focus more/most on?

Rank	Responses
1	
2	
3	
4	
5	
6	



ICAO iSTARS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What is iSTARS?
Register to Access iSTARS
Catalogue of Solutions
iSTARS User Group (iUG/01) Meeting
iUG/01 Agenda and Presentations
NOTAM Services
Notices to Airmen
Chat with NORM
Get NOTAM Data
Example of iSTARS Apps
Air Transport Accessibility
Tsunami Awareness
Accident Statistics
Approach Paths
Map Builder
Performance Based Navigation (PBN)
Regional Groupings
Regional Performance Dashboards
Safety Audit Information (USOAP Results)
Weather Conditions
Build Safety Intelligence Using iSTARS
ICAO iSTARS 3.0
Integrated Safety Trend Analysis and Reporting System
The integrated Safety Trend Analysis and Reporting System (iSTARS) is a web-based system on the ICAO Secure Portal. iSTARS provides a quick and convenient interface to a collection of safety and efficiency datasets and web applications to make safety, efficiency and risk analyses.
iSTARS is currently at version 3.0 with over 3000 registered users.
For aviation data analysts, safety managers, and database administrators interested in our aviation safety and characteristics data sets, have a look under Product/Data Sets for more information.
For any questions about iSTARS functionality, contents, or data sets, send us an email at istars@icao.int.

ICAO iSTARS

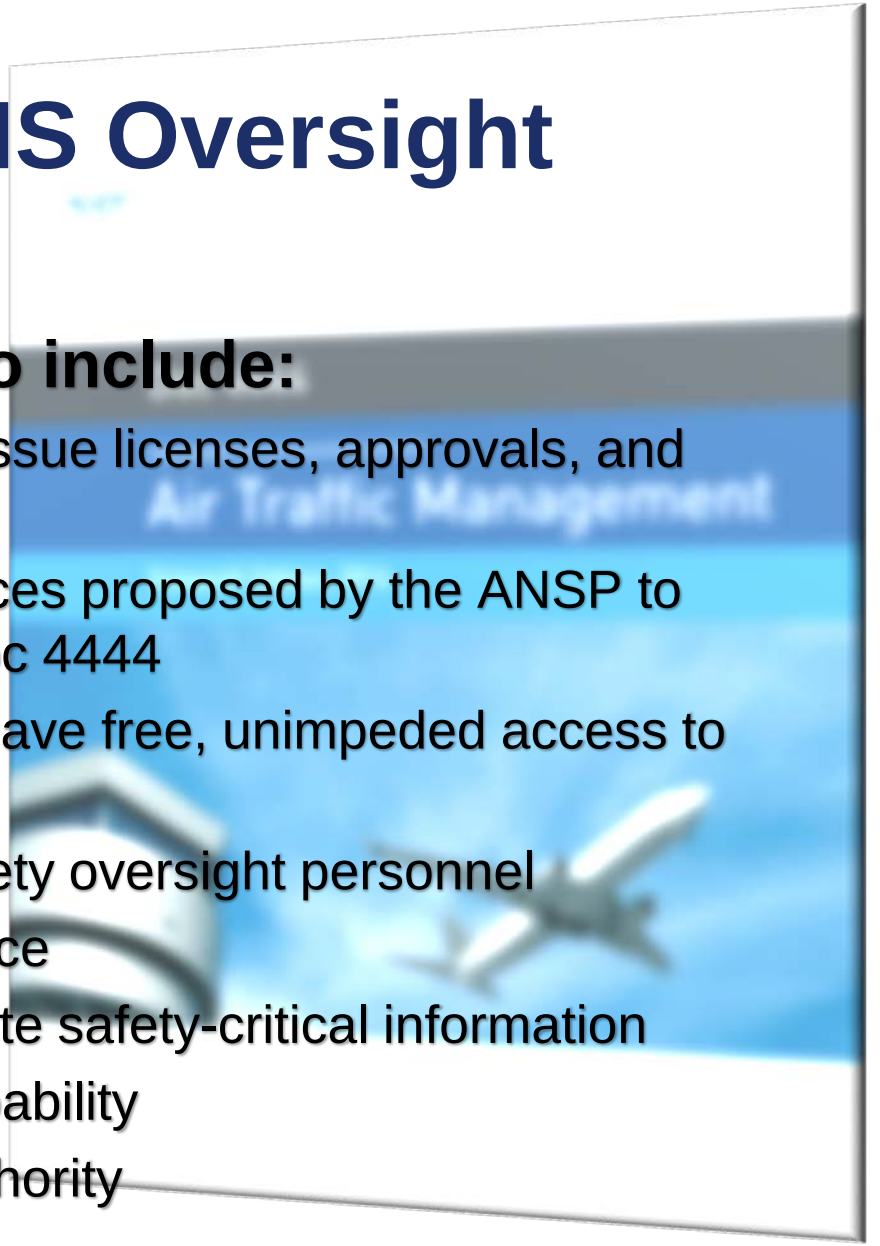
- **Web-based system on the ICAO Secure Portal**
  - Access must be requested through the ICAO Portal, which requires an ICAO Portal user account
- **iSTARS contains safety information and statistics, available through a catalogue of individual applications**
  - View the list of USOAP PQs
  - Check EI of the CEs and functional areas (e.g., ANS) for a single State or group of States
  - View Significant Safety Concerns

Critical Element 1

- **Primary Aviation Legislation**
  - The provision of a comprehensive and effective aviation law consistent with the environment and complexity of the State's aviation activity and compliant with the requirements contained in the Convention on International Civil Aviation (Chicago Convention).
- **Primary aviation legislation for air traffic oversight should establish an oversight organization *independent* from ANSPs**

Applying CE 1 to ANS Oversight

- **The legislation should also include:**
  - Authority to set standards and issue licenses, approvals, and waivers
  - Authority to review any differences proposed by the ANSP to be filed to SARPs and ICAO Doc 4444
  - Authorization for inspectors to have free, unimpeded access to facilities and records
  - Qualification and training of safety oversight personnel
  - Ability to issue technical guidance
  - Ability to receive and disseminate safety-critical information
  - Monitoring and surveillance capability
  - Enforcement and resolution authority



CE-1 USOAP PQs

- Has the State promulgated primary aviation legislation in compliance, without exception, with the applicable provisions of Annex 2 on high seas airspace? (7.001)

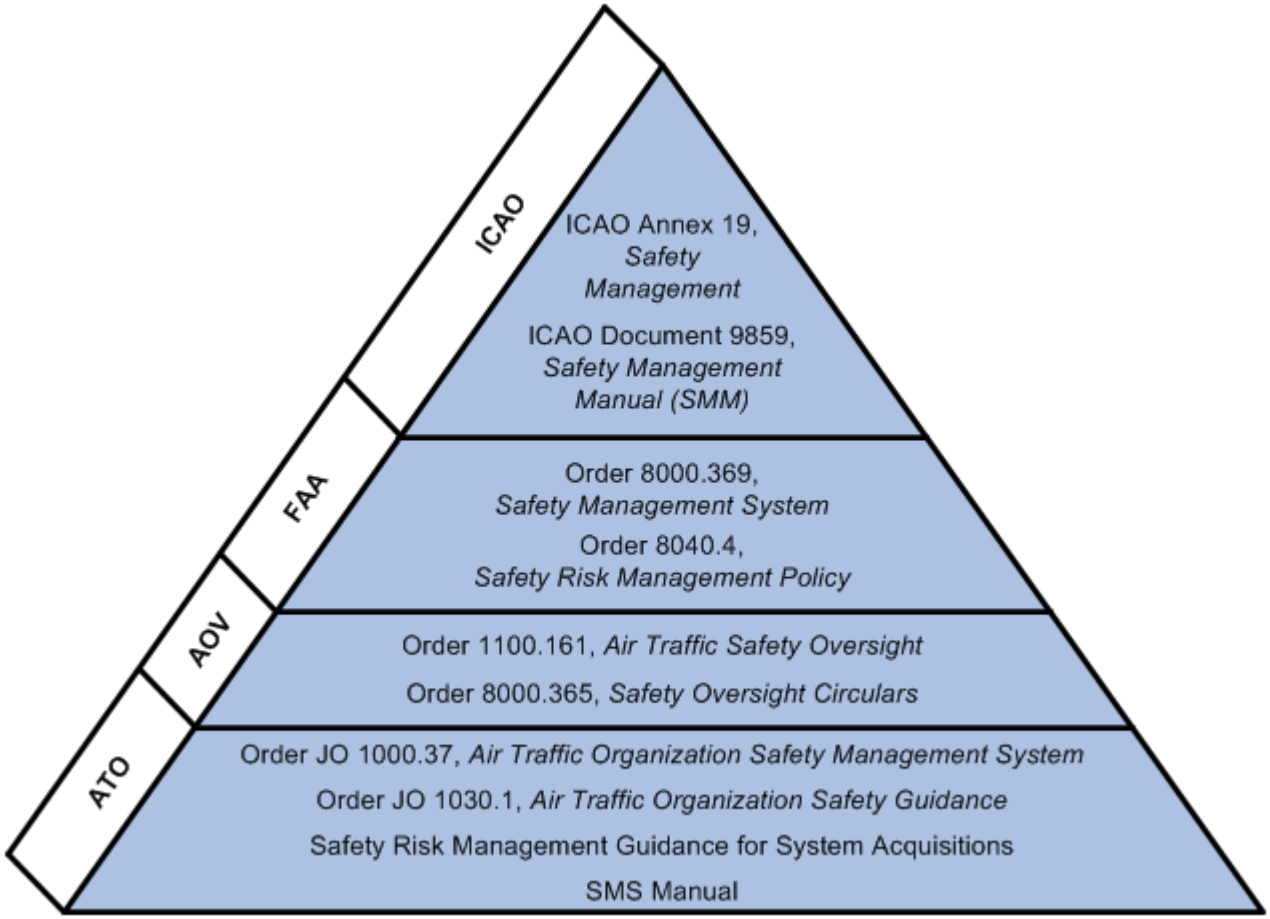
- Has the State promulgated primary aviation legislation to ensure that air navigation services (ANS) called for under Article 28 of the Chicago Convention are provided in accordance with ICAO SARPs or established from time to time, pursuant to the Chicago Convention? (7.003)

- Has the State promulgated primary aviation legislation to facilitate the assistance of aircraft in distress in its territory in adherence to Article 25 of the Chicago Convention? (7.005)

Example: FAA Authority

- The FAA's authority to prescribe regulations and minimum standards that the Administrator finds necessary for safety in air commerce is found in Title 49 of the United States Code

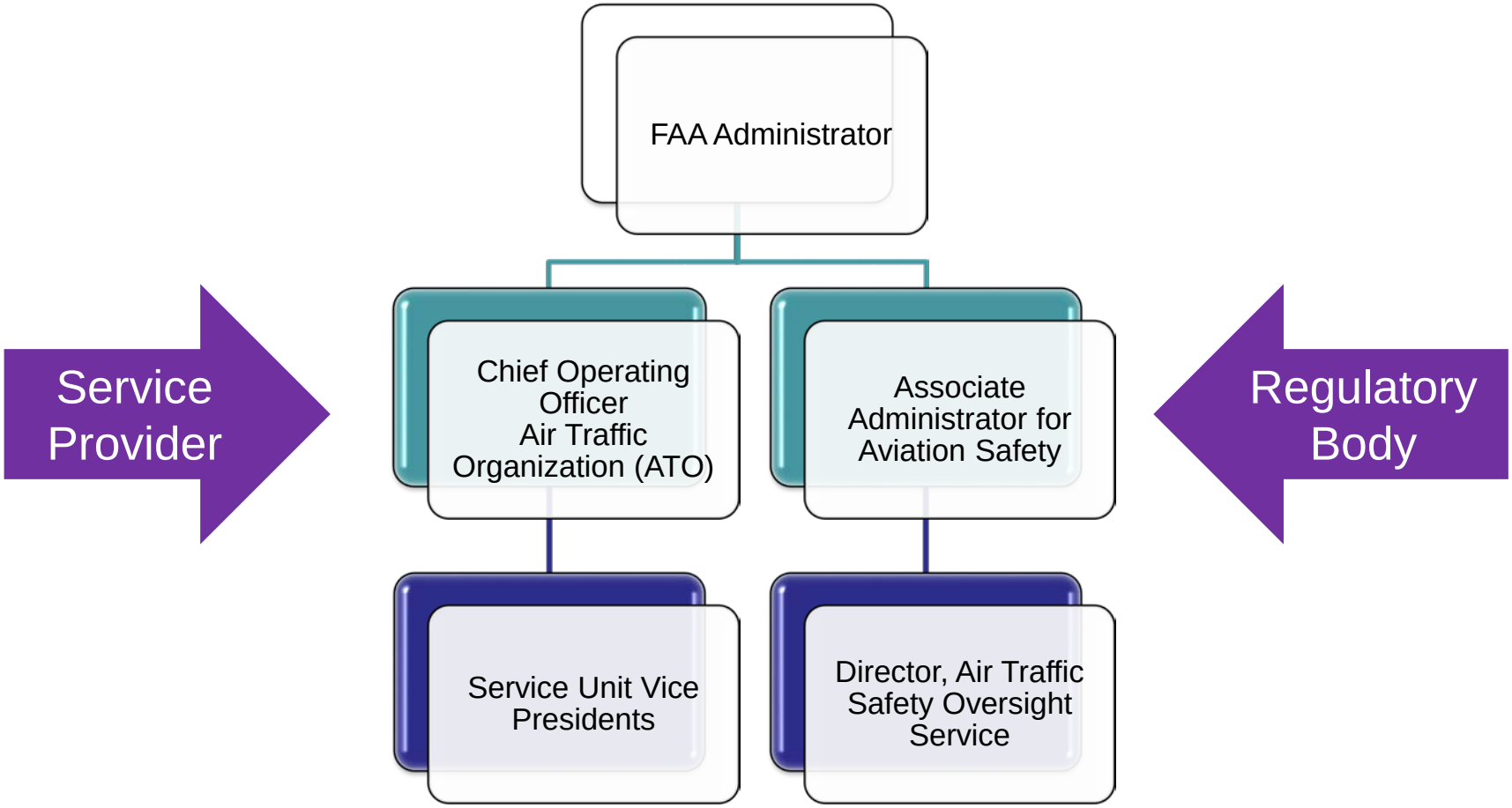
PQ 7.003 Example



Example: FAA Authority

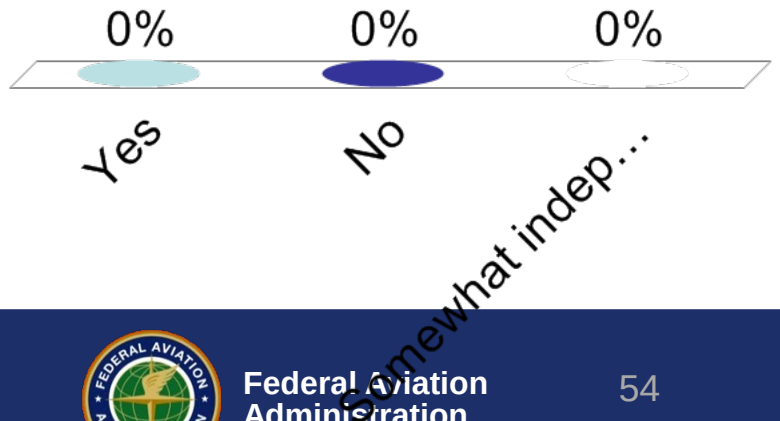
- **FAA Order 1100.161** separates oversight functions from the Air Traffic Organization (ATO – service provider), and grants authority to the Air Traffic Safety Oversight Service for the independent safety oversight of the ATO
- The Air Traffic Safety Oversight Service also has the authority to train and credential Air Traffic Safety Inspectors

Example: FAA Regulator-Service Provider Relationship



Do you feel that the oversight organization in your State is independent?

A. Yes
B. No
C. Somewhat independent



What are some of the challenges and/or opportunities in your organization in maintaining independent oversight ?

Establishing a New Oversight Organization

- **Determine a system baseline to begin oversight**
  - Accept documented legacy processes as part of the baseline
  - Set a starting point from which to begin deliberately tracking and documenting changes to the system
- **Transfer responsibilities from the existing service provider(s) to the oversight organization to avoid disruption**
- **Train personnel on new requirements and responsibilities**

Example: FAA Baseline

- **FAA Order 1100.161 accepted the status of the U.S. National Airspace System (NAS) as the baseline as of March 2005**
  - This means that the existing system was accepted as the starting point for oversight of safety in the NAS
  - Further guidance is provided in FAA Safety Oversight Circular (SOC) 07-01

Critical Element 2

- **Specific Operating Regulations**
  - The provision of adequate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation and providing for standardized operational procedures, equipment and infrastructures (including safety management and training systems), in conformance with the Standards and Recommended Practices (SARPs) contained in the Annexes to the Chicago Convention.

Applying CE 2 to ANS Oversight

- **ICAO has developed Sample Civil Aviation Regulations for Air Navigation Services, which address the following:**
  - Air Traffic Services
  - Safety Management Systems
  - Instrument Flight Procedure Design Service
  - Aeronautical Information Service
  - Aeronautical Telecommunication
  - Aeronautical Meteorology Services
- **The Sample Regulations are based on ICAO Standards**

Establishing Operating Regulations

- Key topics to consider when developing operating regulations for service providers:
  - Exemptions, take into account safety considerations
  - Safety Management System requirements, subject to approval by the oversight authority
  - Civil-military coordination
  - Service provision requirements, such as airspace classification and high seas airspace
  - Search and rescue responsibilities
  - Other applicable requirements, such as ICAO Doc 4444
  - Changes to service provision or procedures
  - Safety reporting

CE-2 USOAP PQs

Has the State promulgated specific operating regulations regarding:

- **the interception of civil aircraft above its territory? (7.007)**
- **the provision of data link services, if provided? (7.160)**
- **the establishment of a runway safety program and has such a program been implemented? (7.189)**
- **procedure design in accordance with ICAO PANS-OPS provisions? (7.201)**
- **air-ground radio communications failure? (7.157)**

CE-2 USOAP PQs

Has the State promulgated specific SMS operating regulations requiring:

- **ATS providers to implement an SMS that is acceptable to the State responsible for the provider's designation? (7.167)**
- **Has the State established and implemented a mechanism for the periodic review of the SMS requirements to ensure that they remain relevant and appropriate to the ATS providers? (7.191)**

CE-2 USOAP PQs

- **Has the State established an acceptable level of safety performance to be achieved in the provision of Air Traffic Services (ATS) (7.173)**
- **Does the State permit, subject to such conditions as may be prescribed by its own authorities, entry into its territory of SAR units of other States for the purpose of searching for the site of aircraft accidents and rescuing survivors of such accidents? (7.519)**

CE-2 USOAP PQs

How does the State ensure compliance with relevant ICAO SARPs?

- **Has the State promulgated ANS specific operating regulations to transpose the provisions of the ANS-related Annexes into its own legislation? (7.009)**
- **Has the State implemented procedures for amending its ANS specific regulations as well as for identifying and notifying differences, taking into consideration ICAO provisions and their amendments? (7.011)**
- **If the State has adopted ANS specific operating regulations from another State/organization, has it implemented a procedure for ensuring that these regulations comply with relevant Annexes initially and on an ongoing basis subsequent to an Annex amendment or an amendment by the originating State? (7.015)**

FAA Example: Operating Regulations

- **FAA Order 1100.161 assigns the Air Traffic Organization the following responsibility:**
  - Maintain and adhere to a system of FAA directives, manuals, and orders that document the specifications, processes, and procedures that are used to operate and maintain the National Airspace System
- **AOV has delegated the responsibility, to maintain operating regulations, to the ATO**
  - AOV must approve any proposed changes
- **Operating regulations include:**
  - Air Traffic Control (FAA Order JO 7110.65)
  - Facility Operation and Administration (FAA Order JO 7210.3)
  - Air Traffic Technical Training (FAA Order JO 3120.4)

Example: FAA Exemptions

- **U.S. Code of Federal Regulations (CFR) (14 CFR part 11) contains specific requirements for requesting exemptions to regulations, including:**
  - Why granting the request would be in the public interest (how it would benefit the public as a whole)
  - Why granting the exemption would not adversely affect safety, or provide a level of safety at least equal to that provided by the existing rule
  - Any additional information, views or arguments available to support the request
- **The FAA invites public comment on petitions for exemptions on new topics (no prior precedent)**

References

- **ICAO Sample Civil Aviation Regulations for Air Navigation Services (ANS)**
- **FAA Order 1100.161**
- **FAA Safety Oversight Circular 07-01**
- **FAA Order VS 8000.366**
- **ICAO Circular 330: Civil/Military Cooperation in Air Traffic Management**

Critical Element 3

Safety Oversight System and Functions

- **State Civil Aviation System and Safety Oversight Functions**
  - The establishment of a Civil Aviation Authority (CAA) and/or other relevant authorities or government agencies, headed by a Chief Executive Officer, supported by the appropriate and adequate technical and non-technical staff and provided with adequate financial resources.
  - The State authority must have stated safety regulatory functions, objectives, and safety policies.

Applying CE 3 to ANS Oversight

- **Consider size and complexity of aviation activity in the organization structure**
  - No “one size fits all” approach
  - Create regional offices as needed
- **Structure the organization around essential responsibilities**
- **Implement processes to ensure effective management and communication between regional offices and the main/headquarters office**
- **Determine the ideal ratio of oversight personnel to service provider personnel**
- **Ensure inspectors are appropriately credentialed**

CE-3: State Aviation System and Safety Oversight Functions

Has the State established/designated:

- **an organizational structure for the safety oversight of air navigation service providers? (7.031)**
- **Is there a distinct separation between the regulatory and the service provision functions for all fields in ANS? (7.051)**

CE-3: State Aviation System and Safety Oversight Functions

Has the State established/designated:

- **If the State has delegated to another Contracting State or entity the responsibility for provision of the air traffic service (ATS) over its territory and/or any airspace over the high seas, is there appropriate documentation to support the delegation? (7.107)**
- **An oversight authority responsible for ensuring that the CNS systems and facilities are maintained and operated in accordance with the Standards in Annex 10? (7.371)**

CE-3: State Aviation System and Safety Oversight Functions

Has the State established/designated:

- **an office or entity to oversee the process of the development and maintenance of visual and instrument flight procedures? (7.221)**
  - If the answer to 7.221 is NO, then has the State delegated the responsibility for oversight of the process of the development and maintenance of visual and instrument flight procedures to an agency, another Contracting State or a group of States? (7.223)
- **an AIS office or entity? (7.261)**
  - If the State has not established an AIS, has it made agreement with other Contracting States on the provision of a joint service or delegated the authority for the provision of the service to a non- governmental agency? (7.263)

CE-3: State Aviation System and Safety Oversight Functions

Delegation of Authority:

- **Has the State designated a meteorological authority to provide or made arrangements for the provision of MET services by a non-governmental agency or another State? (7.412)**
- **Does the State ensure the availability of charts either by producing the charts itself or by arranging for its production by another Contracting State or by an agency? (7.321)**

CE-3: State Aviation System and Safety Oversight Functions

- **an entity which provides, on a 24-hour basis, SAR services and a joint rescue coordinator center (RCC) (7.481/ 7.511)**
  - If the State has not established a SAR entity to provide 24-hour services, has the State arranged with another Contracting State or group of States to provide such SAR services? (7.483)
  - Other applicable PQs associated with SAR functions: 7.513, 7.515, 7.517, 7.521, 7.523, 7.525, 7.539.

CE-3: State Aviation System and Safety Oversight Functions

Does the State employ a sufficient number of qualified technical staff, and job descriptions, to carry out its safety oversight tasks and regulatory functions for:

- **ATS (7.061/ 7.057)**
- **PANS-OPS (7.209/ 7.205)**
- **AIS (7.269/ 7.273)**
- **Cartographic (7.325/ 7.329)**
- **CNS (7.373/ 7.377)**
- **MET (7.417/ 7.421)**
- **SAR (7.487/ 7.491)**

What is Organizational Structure?

- **Structure ensures an organization will function as intended**
- **Points to consider:**
  - Organizational structure should grow and change as the organization grows and changes
  - Structure should support the organization in achieving its objectives
  - Structure should facilitate decision-making

Community Tool Box (http://ctb.ku.edu/en/table-of-contents/structure/organizational-structure/overview/main)

Strategies for Structuring an Oversight Organization

- Consider the service provider's organization in designing the oversight authority's organization structure
- Document roles and responsibilities – regulator and service provider
- Use standardized methodologies and tools as guides
  - Look for examples from other States
- Assess staffing needs

Strategies for Structuring an Oversight Organization

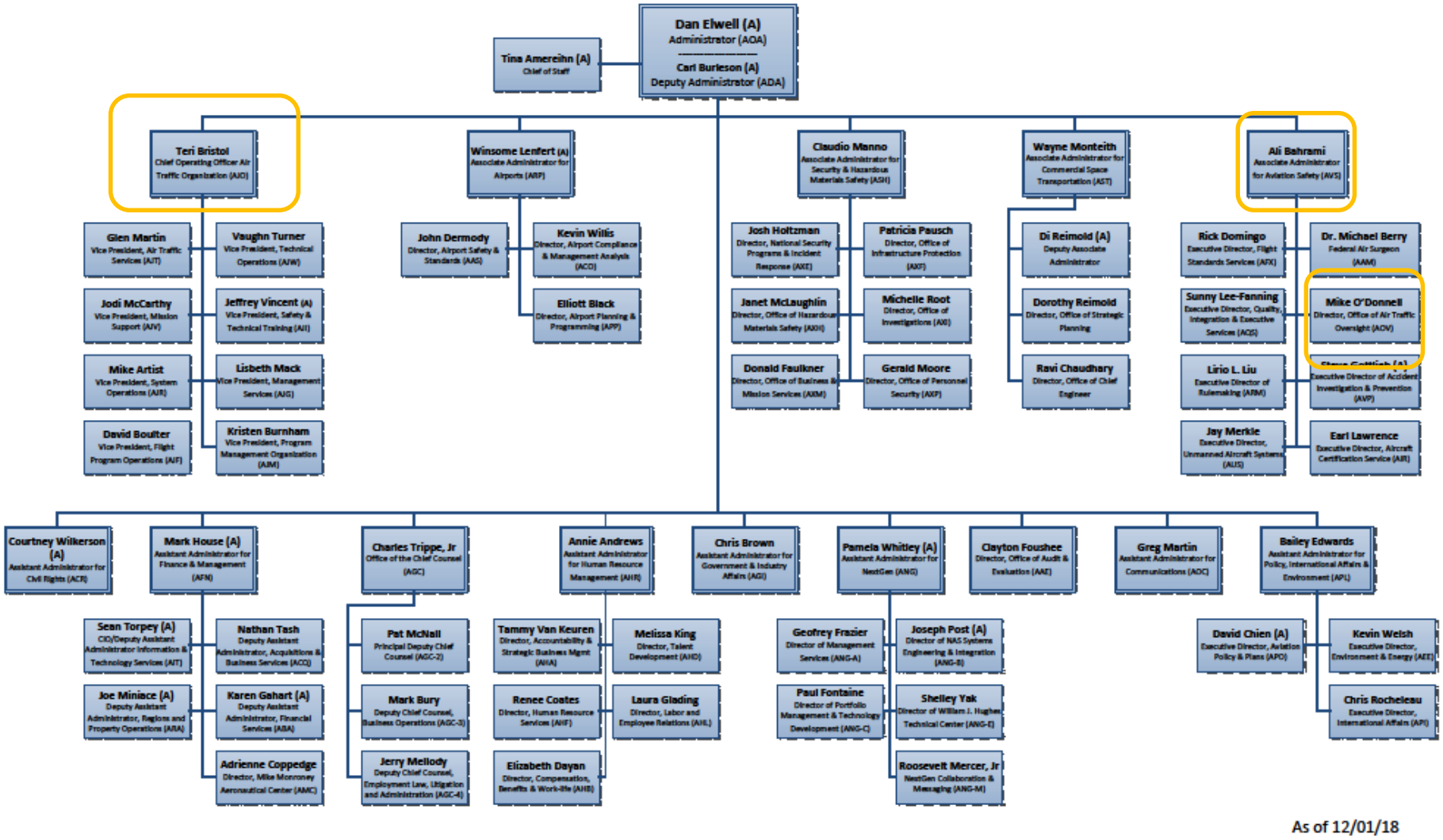
- Leverage regional and bilateral relationships with other oversight authorities
  - Consider developing agreements with other national authorities within the State and with other States for data and personnel exchange, conduct of studies and other services, and reimbursement for services rendered
  - Contribute occurrence reports to the ICAO Regional Monitoring Agency
  - Participate in ICAO PIRGs and RASGs
- Make improvements to processes and tools on a regular, recurring basis*

* Discussed in CE 5

Organizational Constructs

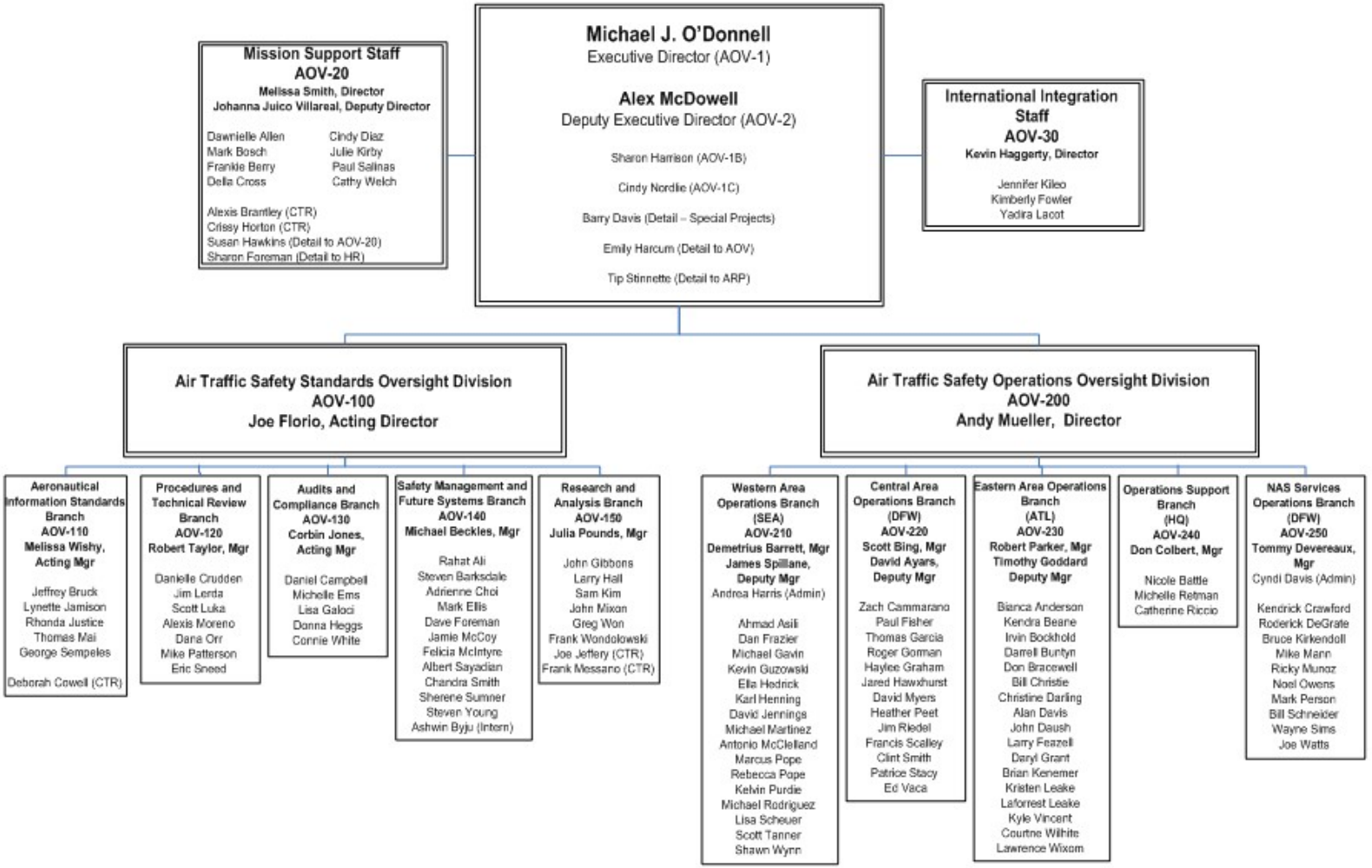
- **Consider cooperative inspection arrangements with neighboring States**
  - Part-time personnel from other States to perform specialized tasks
- **Use personnel (designees) from the service provider to carry out certain responsibilities**
  - Licensing, inspections, evaluations, etc.
  - These personnel must be kept under the technical and supervisory control of the oversight authority
- **Employ a contractor to supply personnel for inspection functions**
- **Commercialize regulatory functions (fee-for-service model)**

Federal Aviation Administration



As of 12/01/18

Air Traffic Safety Oversight Service



July 7, 2019

What areas of your ANS oversight organization could use improvement ?

FAA Example: Roles and Responsibilities

- The FAA Air Traffic Organization (ANSP) is responsible for operating a safe and efficient airspace system
- The FAA Air Traffic Safety Oversight Service (regulator) is responsible for the independent safety oversight of the ATO (U.S. ANSP)

FAA Example: ATO Responsibilities

- **Operate the U.S. National Airspace System (NAS) at the highest practicable level of safety**
  - The *primary responsibility* for the safety of the NAS rests with the ATO!
- **Develop an internal safety culture to ensure accountability for safety**
- **Develop and maintain an SMS and submit any changes to AOV for approval**

FAA Example: ATO Responsibilities (cont'd)

- Comply with established safety standards, the SMS, and personnel licensing requirements
- Maintain and adhere to a system of FAA directives, manuals, and orders that document the specifications, processes, and procedures that are used to operate and maintain the NAS and train personnel
- Develop and maintain a hazard tracking database *and provide AOV access to this database*
- Report safety data to AOV

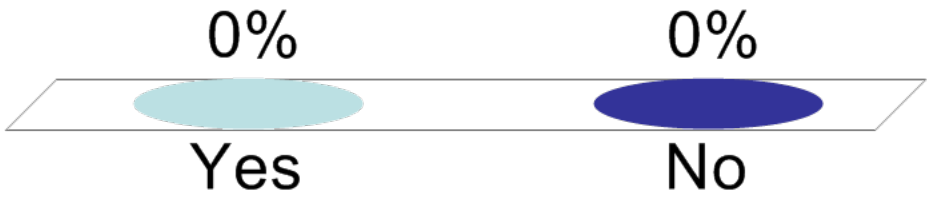
FAA Example: AOV Responsibilities

- **Establish, approve, and accept standards for Air Traffic Services and Safety Personnel**
- **License personnel (ATCO, AIS, ATSEP)**
  - ATO personnel who perform direct safety-related air traffic control services, and/or certification on certifiable systems/subsystems/equipment or services in support of the NAS
- **Issue safety directives and guidance**
- **Conduct monitoring and surveillance activities to determine compliance and assess risk**

Are your State's roles and responsibilities for regulator and ANSP clearly defined?

A. Yes

B. No



FAA Example: AOV Functions

Independent Oversight of FAA ATO's Provision of Air Traffic Services

Establish, Approve, Accept Safety Standards

Establish Requirements for ATO Safety Management System

Monitor ATO Compliance with Safety Standards

Approve High Risk Mitigations, Changes Pertaining to Separation Minima and NAS Equipment Availability Program

Staffing Strategies

- **Strategies for successful staffing:**
  - Develop a workforce plan
  - Calculate staffing needs
  - Create a recruitment and retention plan*

* Discussed in CE 4

Develop a Workforce Plan[1]

- **Identify critical job roles**
- **Establish a baseline staffing level**
  - Absence of which staff members would have a significant impact?
- **Perform a gap analysis**
  - Are critical needs not being met?
  - Can gaps be filled with internal personnel transfers?
- **Forecast future staffing needs**
  - Compare staffing plan to strategic plan
  - Analyze industry characteristics and trends
  - Plan for attrition, retirement, and external fiscal pressures
- **Develop recruitment plans**

[1] How to Create a Staffing Model Plan (http://smallbusiness.chron.com/create-staffing-model-plan-14521.html)

Calculate Staffing Needs

- **Key questions to consider:**
  - How many inspectors?
  - What types of inspectors?
    - Operations – Tower, En-route, Radar
    - Maintenance
  - How many safety engineers?
  - Can you rely on your neighbor for expertise to fill gaps?
  - How many support staff?
  - What types of support staff?
    - Training
    - Administrative
    - Strategic planning
    - Technical writer(s)
    - Mathematicians
    - Data Analysts
  - Can you employ contract support services?
  - How many managers?
    - Manager – staff ratio?

Calculate Staffing Needs

- **Methods to calculate staffing needs[1]:**
  - "Rule of Thumb": based on general organizational structure
    - Maintain ratio of management to staff in short and long-term
  - Delphi Technique: forecasting based on expert analysis
    - Facilitator-led panel of anonymous experts answer questionnaires and review response data
    - Experts can be senior managers, outside consultants, etc.

[1] Formula for Calculating Staffing Needs (http://smallbusiness.chron.com/formula-calculating-staffing-needs-12759.html)

Calculate Staffing Needs

- **Methods to calculate staffing needs:**
  - Ratio: predict hiring needs based on staffing or productivity ratios
    - Staffing ratio is used to predict hiring need based on organizational form
    - Productivity ratios use estimates of units produced per employee to forecast hiring needs
  - Statistical Regression Analysis: compare historical data to forecast staffing needs
    - Example: analyze gross sales per year over the past five years and staffing during that time

Formula for Calculating Staffing Needs (http://smallbusiness.chron.com/formula-calculating-staffing-needs-12759.html)

ICAO Example: Productivity Ratio

- **ICAO references a staffing model similar to the productivity ratio calculation:**
  - Identify inspector tasks (e.g., number of inspections/audits to be performed, reports written, etc.)
    - Use identifiers to describe tasks, e.g. A-K
  - Calculate number of hours it will take an inspector to complete each task

TASK C-Audits for 6 stations

Station	No. of audits	No. of days/audit	Total Hours
JKIA	1	3	24
MIA	1	2	16
EIA	1	2	16
KIA	1	2	16
WILSON	1	2	16
MALINDI	1	2	16
TOTAL	6	13	104

ICAO Example: Productivity Ratio

- Add the number of hours required to complete each task
  - A+B+C….+K = **3313 hours**
- Calculate the number of hours available to an inspector per year
  - 52 weeks X 5 days X 8 hours = **2080 hours**
- Calculate number of inspectors needed
  - Divide total number of hours to complete tasks by number of inspector hours available in one year
  - 3313 / 2080 = **2 Inspectors** (1.59278846)

How does your organization determine staffing needs?

FAA Example: Aviation Safety Staffing Model

- **Aviation Safety (AVS) Staffing Tool and Reporting System – ASTARS**
  - Safety critical operational positions are determined by the ASTARS model
    - Forecasts generated by applying projected growth of specific demand (for example: fleet, repair station personnel)
  - Macro-level resource guidance
    - Final staffing decisions also reflect expertise and judgment from managers, executive management, and subject matter experts
  - Safety technical specialist and operational support workforce are forecast using historic staffing ratios that compare managers and administrative support personnel to safety critical staff requirements
    - Ratio driven based on ASTARS outputs

FAA Example: Air Traffic Safety Oversight Staffing

- **The Air Traffic Safety Oversight Service compared the ANSP to a major certificate holder (airline) regulated by the Flight Standards Service**
  - Considered number of facilities within responsibility and analyzed risk factors associated with those facilities
    - 55 airports and associated facilities handled approximately 95% of passenger traffic
  - Developed an optimum audit schedule for an oversight activity pertaining to each of the facilities at least once per four-year period
    - This approach requires 150 people
    - Optimum staffing level of 200 personnel allows sufficient resources for oversight duties in addition to audits

FAA Example: Aviation Safety Workforce

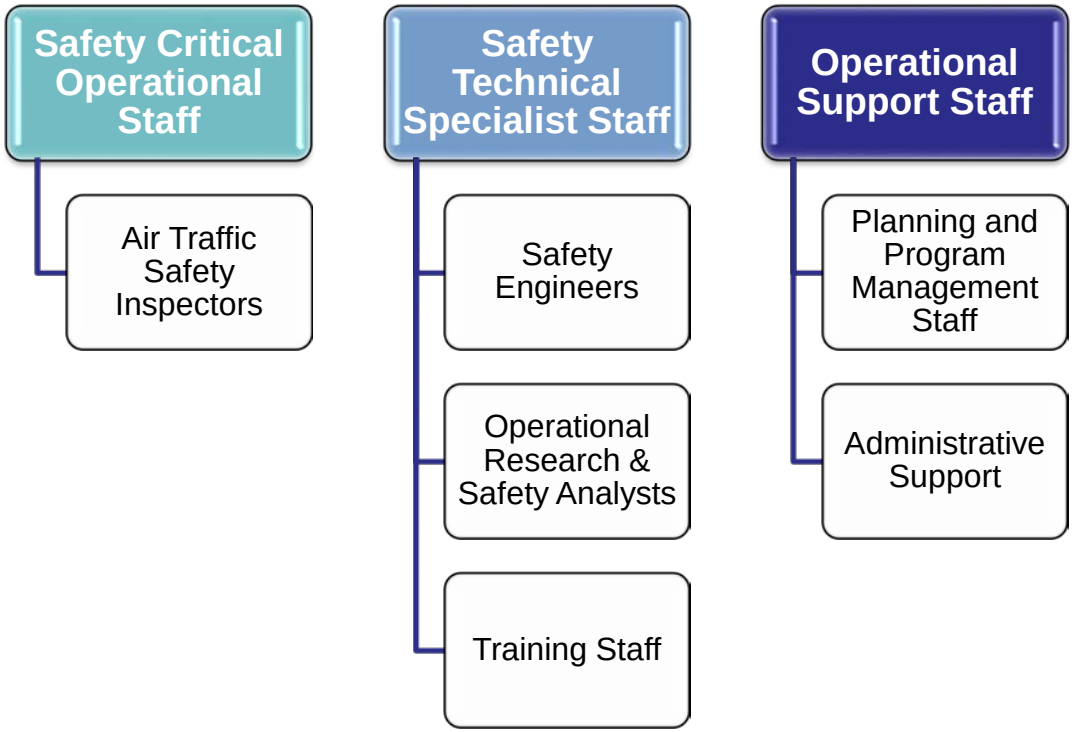
- **The FAA Aviation Safety Workforce Plan identifies three staffing categories:**

FAA Example: Aviation Safety Workforce

- **Safety Critical Operational Staff** have a direct operational impact on the safety mission
  - Certification, monitoring, enforcement, and accident investigation
- **Safety Technical Specialist Staff** provide support for safety critical operational staff to efficiently and effectively do their jobs
  - Maintain aircraft/airman registries, design technical training for safety personnel, oversee designee programs
- **Operational Support Staff** perform planning, finance, and administration functions
  - All functions *not* classified as safety critical operational staff or safety technical specialist staff

FAA Example: Air Traffic Safety Oversight Staff

- **Air Traffic Safety Oversight Service staff include:**



Credentialing Safety Inspectors

- All State technical personnel authorized to perform licensing, certification, approval and/or surveillance functions, as applicable, need to possess appropriate credentials (with the empowering legislation indicated) identifying them as technical experts employed by the State authorities, with the right to unlimited and unrestricted access to **aircraft, aviation-related documents, aerodromes, ATS and other relevant facilities and the associated inspection powers, as applicable and as provided by the State's primary legislation**.

Credentialing Safety Inspectors

- **Issuing credentials to Air Traffic Safety Inspectors:**
  - Authorizes the holder to perform inspections, investigations, and audits
  - Guarantees free and uninterrupted access to facilities, records, data, and restricted areas
  - Documents successful completion of required inspector training and evaluation*
  - Supports oversight and supervision of designees responsible for credentialing ANSP personnel

* Discussed in CE 4

Strategies for Successful Credentialing

- **Document rules related to credentialing inspectors**
- **Utilize an approval process for issuing credentials**
- **Ensure that credentialed inspectors understand the authorities and limitations associated with the credential**
  - Require inspectors to sign acknowledgment before receiving credential

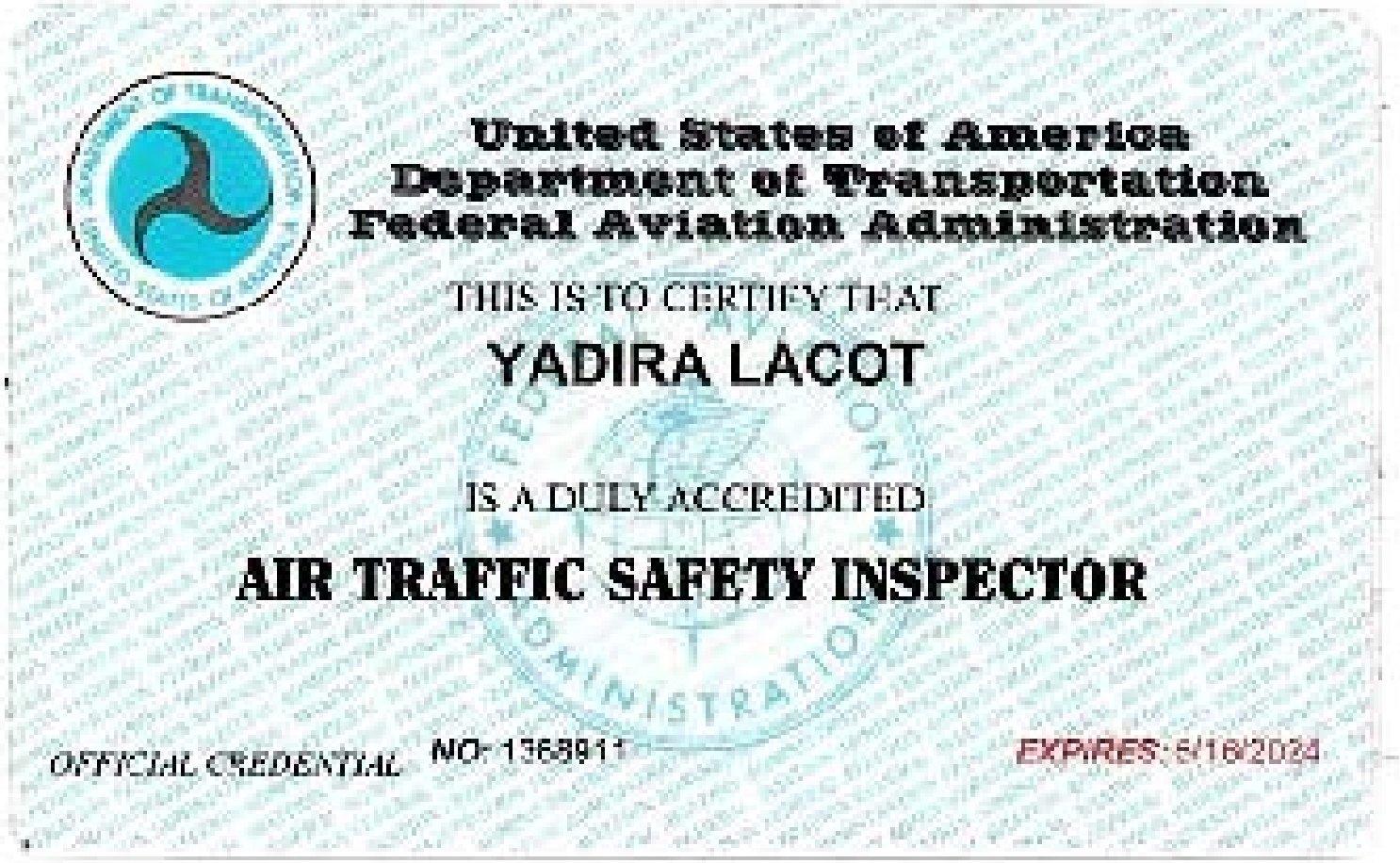
FAA Example: ATSI Credential

- **Air Traffic Safety Inspector credentialing requirements are documented in FAA Orders**
  - Available to all FAA employees for reference
- **Air Traffic Safety Oversight Service managers determine when a credential can be issued to an Air Traffic Safety Inspector**
- **Candidate inspectors must meet eligibility criteria to receive a credential**
- **Inspectors must carry the credential during inspections, investigations, and audits**
  - Inspectors must also comply with basic guidance on the use of credentials
  - Inspectors must surrender credential upon separation from Air Traffic Safety Oversight Service

FAA Example: ATSI Credential

- **Credential eligibility requirements:**
  - Satisfactorily complete initial training
    - Formal audit training
    - Quality Management System training
  - Complete recurring training every 24 calendar months
    - Review of previous audits, investigations inspections, results, recommendations, and documentation procedures
    - Review of Air Traffic Safety Oversight Service compliance process as it pertains to findings during an audit, investigation, and inspection
    - Review FAA documentation (Order VS 8000.366), pertaining to facility access identification credentials for Air Traffic Safety Inspectors

FAA ATSI Credential



FAA ATSI Credential

This Inspector is authorized under provisions of 49 USC 40103 and 40113 to perform inspections, investigations, and audits to determine compliance with FAA Orders. In the performance of official duties under these provisions, free uninterrupted access must be provided to FAA facilities, records, data and their restricted areas governed by the Federal Aviation Regulations

Signature of Inspector

Director, Air Traffic Safety Oversight Service

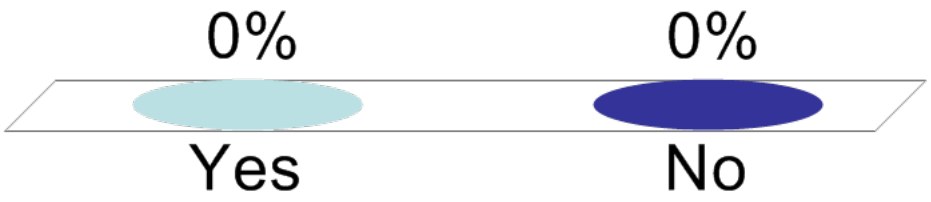
CREDENTIAL NO: 1358911

EXPIRES: 5/16/2024

Does the ANS oversight organization in your State issue credentials to air traffic safety inspectors?

A. Yes

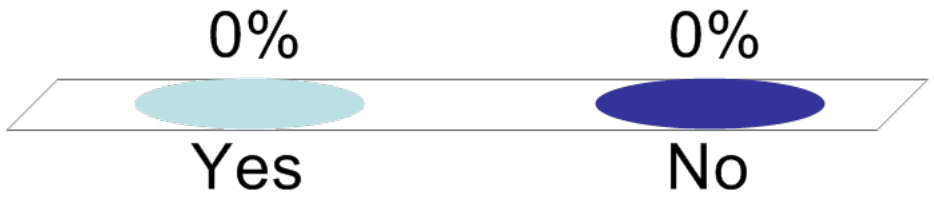
B. No



Does the ANS oversight organization in your State issue credentials to air traffic safety inspectors?

A. Yes

B. No



References

- **ICAO Safety Oversight Manual**
- **FAA Order 1100.161**
- **FAA Aviation Safety Workforce Plan**
- **FAA Order VS 8000.366**

Questions about today's material or activities?

Questions?