

# Building Effective Safety Oversight of AIS and AIM



Federal Aviation  
Administration



Day 2: Surveillance Activities



# Objectives



## Day 1 Recap

- Essential responsibilities of safety oversight
- ICAO Annex 15
- Aeronautical data source management
- AIS data chain
- SMS concepts
- Safety risk and the AIS information factory

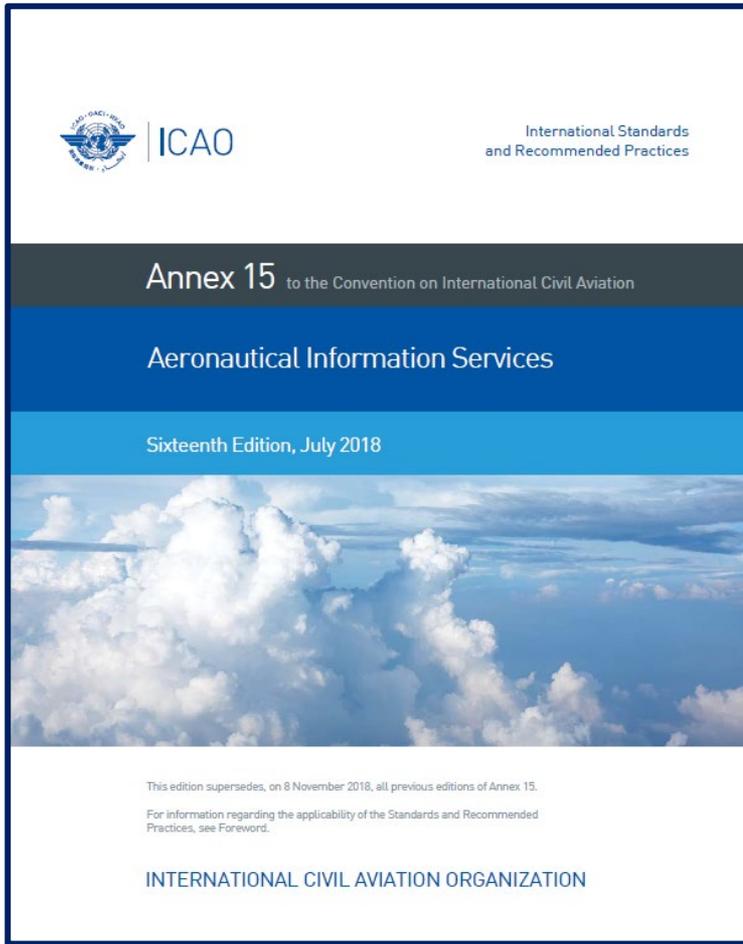
Introduce today's topics...

# Essential Responsibilities of Safety Oversight Review

- Establish rules
- Perform surveillance
- Resolve safety concerns



# ICAO Annex 15 Review



- AIS/AIM
- Roles & responsibilities
- Oversight areas
  - Requirements
  - Products and services
  - Data and information

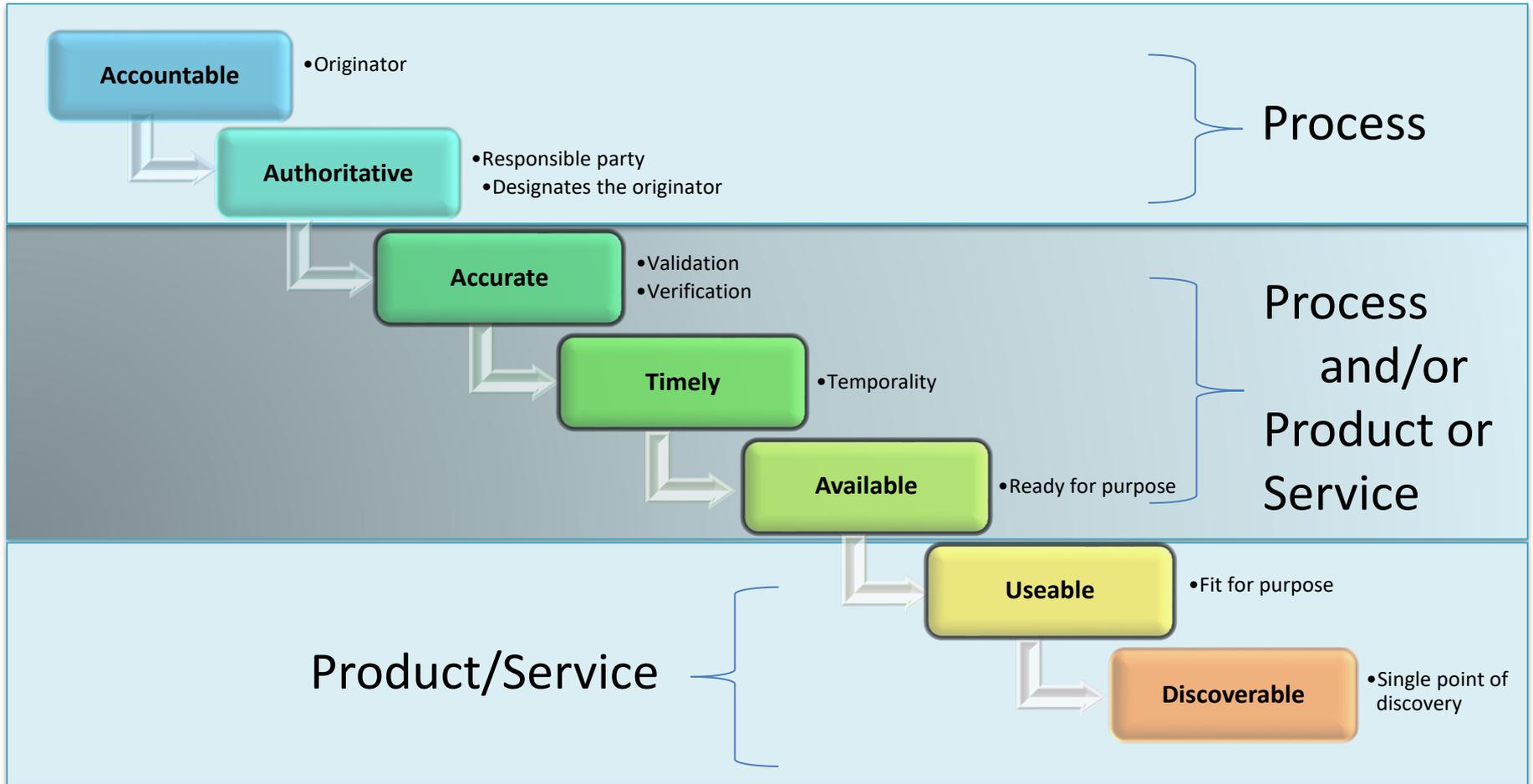
# Aeronautical Data Source Management

- Aeronautical Information Publication (AIP)
- AIP amendments and supplements
- Aeronautical information circulars
- NOTAMs
- Pre and post flight information
- Distribution

## Product and service quality

- Timely
- Synchronized
- Usable
- Accurate
- Complete

# AIS Data Chain Review



# SRM Concepts Review



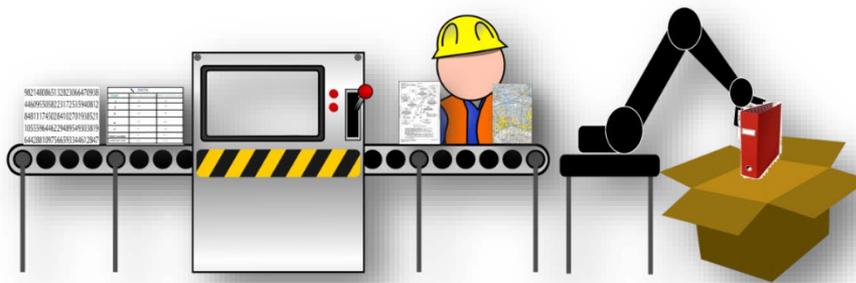
# Importance of SRM Review

- Ensure processes, procedures and behaviors related to data and information management do not negatively impact safety
- Safety-related systems are becoming more data-intensive and data-centric
  - ...useful as decision support or advisory systems
  - ...complex processes with a large volume of data increases likelihood a user recognizes data errors



# Hazards and Risk in the AIS Information Factory Review

- What can go wrong?
- What risk looks like?
- What processes and systems are in place to prevent things from going wrong?
- Are controls working?



# Open Discussion

Thoughts or questions from yesterday?



# Day 2 Agenda



- State safety oversight surveillance activities
- Develop an AIS audit
- Develop an audit proposal exercise
- Build a requirements checklist exercise



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# State Safety Oversight Surveillance Activities



# Module Objectives



- Roles and Responsibilities
- Review USOAP CE 7 and CE 8
- Understand common surveillance techniques
- Identify safety oversight surveillance topics in ICAO Annex 15 requirements

# Roles and Responsibilities

## State

Surveillance activities are conducted to meet oversight responsibilities to determine compliance with ICAO Standards and Recommended Practices (SARPS), State regulations, orders, policies and directives

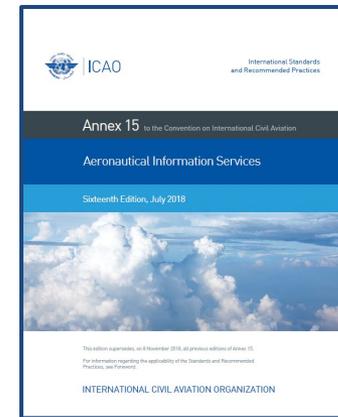
- Identify safety concerns and deficiencies
- Include regular monitoring of activities
- Ensure level of competency and safety



# Roles and Responsibilities (continued)

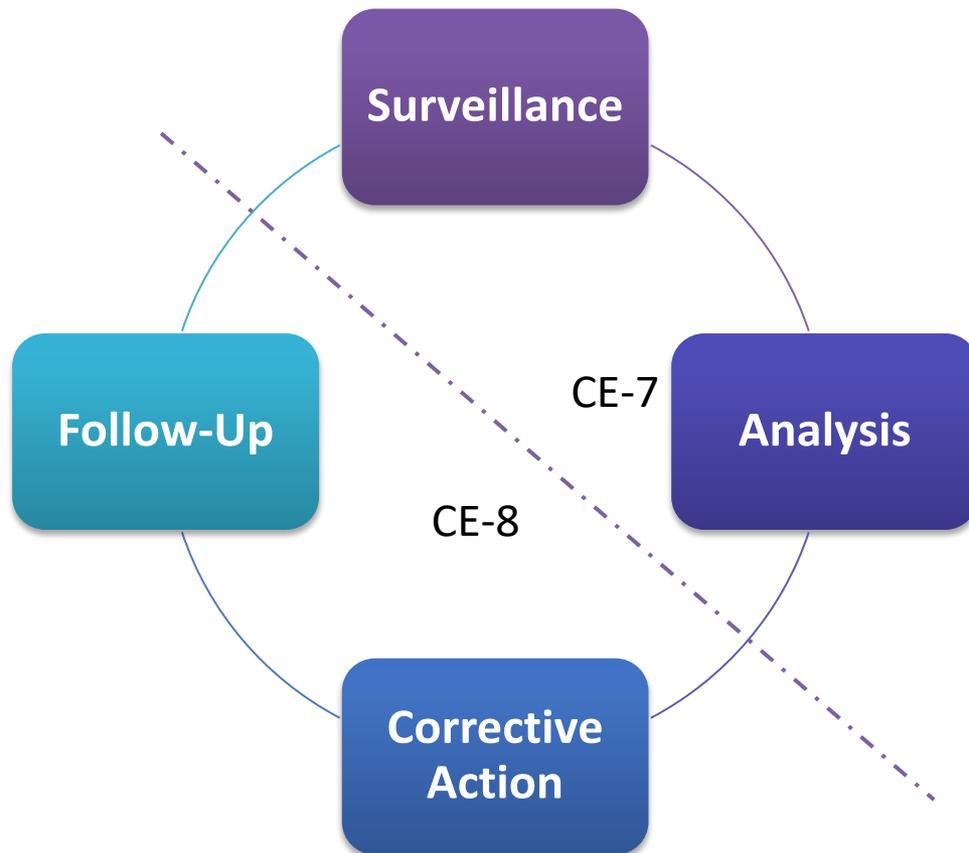
## AIS

Responsible for quality assurance, control and management of its products and services, including compliance with applicable ICAO Annex 15 requirements



# Surveillance Program Components

## CEs 7 and 8



### CE-7 Surveillance Obligations

- Surveillance
  - Collect operational data
- Analysis
  - Review data to measure the degree of compliance

### CE-8 Resolution of Safety Concerns

- Corrective Action
  - Develop, implement, and monitor corrective action(s)
- Follow-Up
  - Ensure corrective action(s) have been implemented

Source: FAA/DOT Continuing Analysis and Surveillance System (CASS) Description and Models (<http://www.tc.faa.gov/its/worldpac/techrpt/ar03-70.pdf>)

# Surveillance Obligations

- The regulatory authority must develop a continuous surveillance program
- Surveillance of AISs should be appropriate for the size and complexity of the aviation system



# CE-7 Surveillance

A system to ensure:

- Competency of:
  - Organizations
  - Individuals
- Maintaining continued safe and regular operations



Source: Concepts discussed in ICAO Safety Oversight Manual, Doc 9734-A

# Surveillance (continued)



- Be continual
- Be thorough
- Ensure an ANSP's capability and competency, including a comprehensive assessment of competencies
- Require that ANSP's demonstrate their ability to conduct operations and maintenance in accordance with requirements

Resource: Concepts discussed in ICAO Safety Oversight Manual, Doc 9734-A

# Surveillance Techniques

Common techniques include:

- Investigations
- Inspections
- Audits
- Assessments
- Continuous monitoring



# Surveillance Techniques (continued)

## Investigate

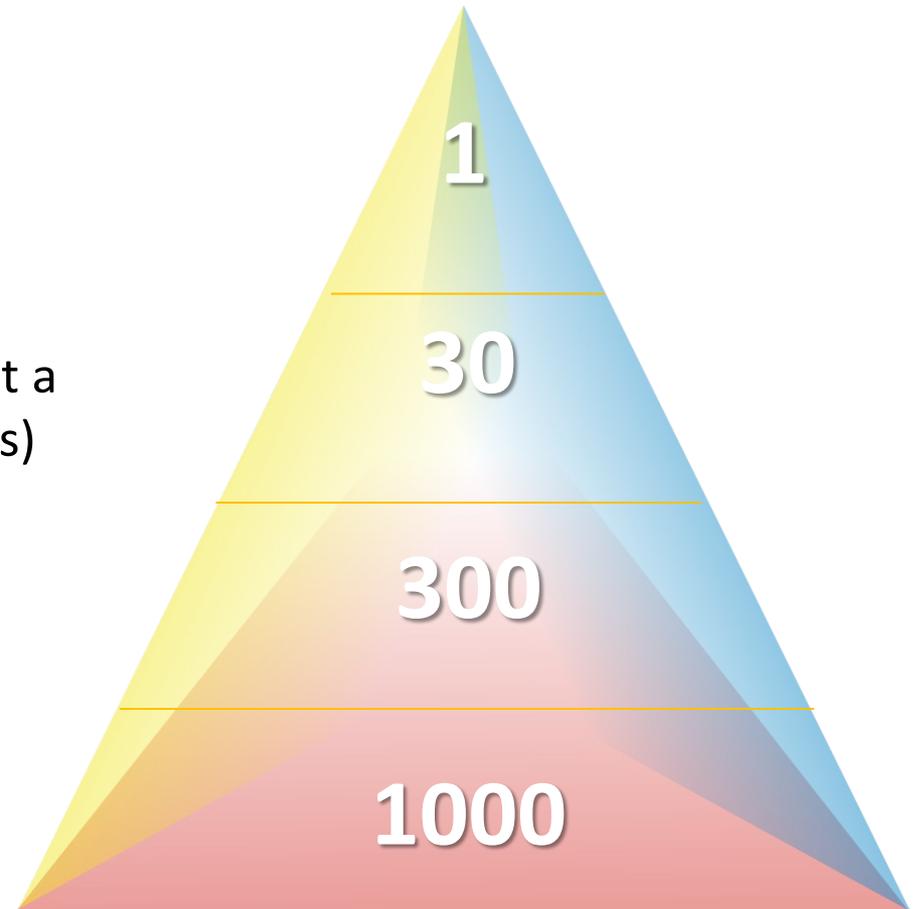
Cause(s) of a single safety occurrence

## Inspect

Compliance with a specific standard(s) at a single facility (or small group of facilities)

## Audit/Assessment/ Continuous Monitoring

Systemic evaluation of compliance to requirements



Source: Heinrich's Triangle

# Surveillance Techniques (continued)

## Investigations

To determine the cause(s) of a safety occurrence. The objective is to prevent future occurrences.

Investigations may:

- Help understand the events leading to an occurrence
- Be used to make safety recommendations



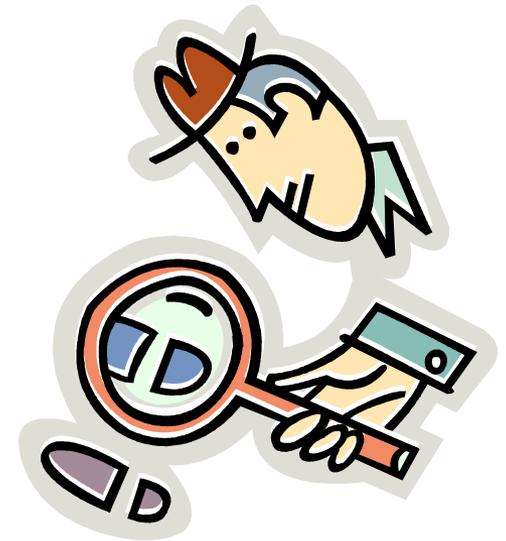
Resource: SKYbrary: Safety Occurrence Investigation ([http://www.skybrary.aero/index.php/Safety\\_Occurrence\\_Investigation](http://www.skybrary.aero/index.php/Safety_Occurrence_Investigation))

# Surveillance Techniques (continued)

## Inspections

To evaluate compliance with a specific standard(s)

- May be shorter and less complex than audits



Resource: SKYbrary: Safety Occurrence Investigation ([http://www.skybrary.aero/index.php/Safety\\_Occurrence\\_Investigation](http://www.skybrary.aero/index.php/Safety_Occurrence_Investigation))

# Surveillance Techniques (continued)

## Audits

To determine the degree of compliance with applicable safety regulatory requirements and procedural provisions of a safety management system



Resource: SKYbrary: Safety Audits ([http://www.skybrary.aero/index.php/Safety\\_Audits](http://www.skybrary.aero/index.php/Safety_Audits))

# Surveillance Techniques (continued)

## Assessments

Results from the identification of weak requirements and data, variations or gaps in safety controls

Start with Type of Control:	A: STRONG CONTROL	B: WEAK CONTROL
Continue with the Type of Data:		
1: STRONG DATA	A1 Oversight Audit	B1 Oversight Assessment
2: WEAK DATA	A2 Oversight Assessment	B2 Oversight Assessment

Resource: SKYbrary: Safety Audits ([http://www.skybrary.aero/index.php/Safety\\_Audits](http://www.skybrary.aero/index.php/Safety_Audits))

# Surveillance Techniques (continued)

## Continuous monitoring

- Follow-up on resolution of identified compliance issues
- Identify changes or inconsistencies in AIS activities or processes
- Determine future risk-based surveillance activities

# AIS Surveillance Objective

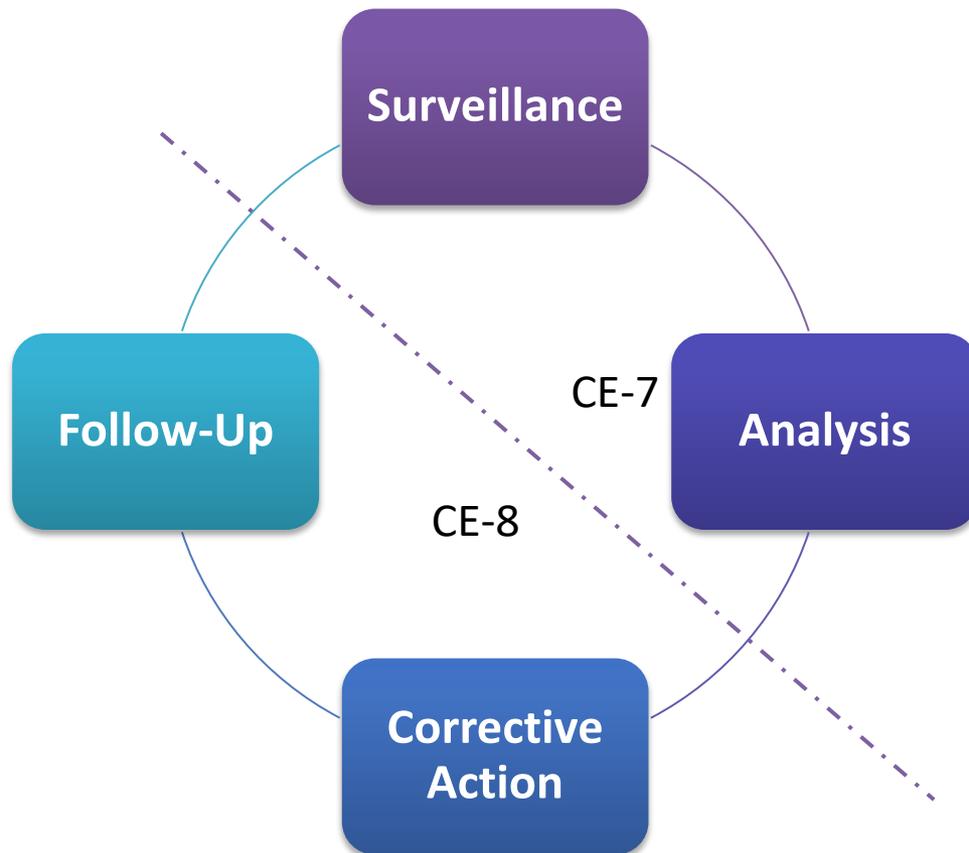
Safety oversight establishes a program of ongoing surveillance to determine compliance with aeronautical data and information requirements

- Identify safety concerns and deficiencies
- Include regular monitoring of AIS activities



# Surveillance Program Components

## CEs 7 and 8



### CE-7 Surveillance Obligations

- Surveillance
  - Collect operational data
- Analysis
  - Review data to measure the degree of compliance

### CE-8 Resolution of Safety Concerns

- Corrective Action
  - Develop, implement, and monitor corrective action(s)
- Follow-Up
  - Ensure corrective action(s) have been implemented

Source: FAA/DOT Continuing Analysis and Surveillance System (CASS) Description and Models (<http://www.tc.faa.gov/its/worldpac/techrpt/ar03-70.pdf>)

# CE-7 Analysis

Safety risk analysis determines shortfalls in AIS processes through the review of data and objective evidence



# CE-8 Corrective Action

## Corrective action

The responsibility of the AIS, not safety oversight. AIS maintains the effectiveness of its programs by developing and implementing corrective action(s) as a result of surveillance findings and analysis.



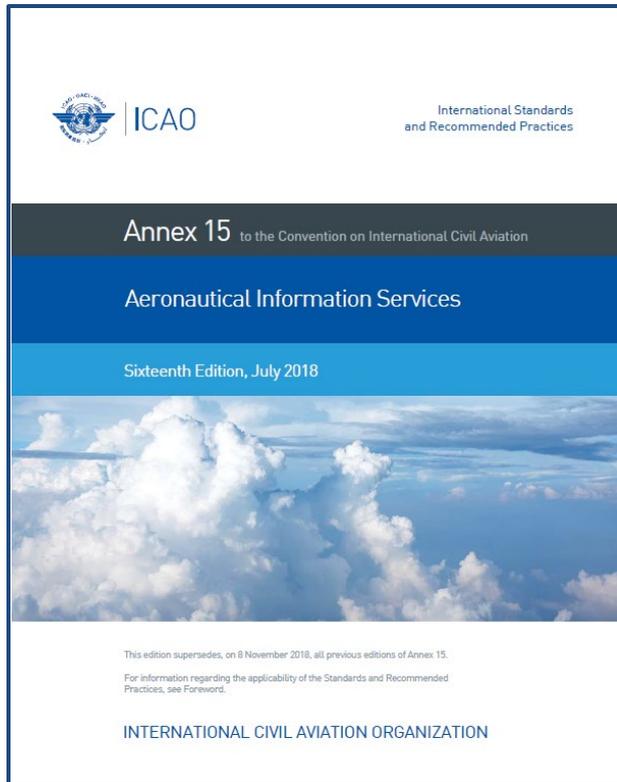
# CE-8 Follow-Up

## Follow-up

Safety oversight should follow-up on the corrective action(s) to surveillance finding(s). This ensures corrective action(s) have been effectively implemented.



# ICAO Annex 15 Oversight



## Areas:

- Requirements
- Products of an AIS
- Services of an AIS
- Data and information

# ICAO Annex 15 Requirements

## Surveillance areas:

- Information management
- Data quality
- Validation and verification
- Data error detection
- Automation
- Quality management
- Human factors
- AIRAC



# ICAO Annex 15 Products and Services

## Products

- Aeronautical Information Publication (AIP)
  - AIP amendments and supplements
- Aeronautical information circulars
- Data sets
- Aeronautical charts

## Services

- Pre and post flight information
- NOTAMs
- Distribution



# ICAO Annex 15 Data and Information

- Terrain and obstacles
- Aerodrome and heliport
- Navigational Aids
- Airspace
- Routes
- Points
- Terminal procedures



# Thoughts...

Safety oversight surveillance activities include oversight of AIS requirements, products and services and data and information

Surveillance activities should:

- Be continuous
- Be data and objective evidence-based
- Identify and address safety risks



CE 7 and CE 8

# Questions and Discussion



# References

- ICAO Annex 15
- ICAO Safety Oversight Manual, Doc 9734-A
- FAA/DOT Continuing Analysis and Surveillance System (CASS) Description and Models SKYbrary: Safety Occurrence Investigation  
([http://www.skybrary.aero/index.php/Safety Occurrence Inv estigation](http://www.skybrary.aero/index.php/Safety_Occurrence_Inv estigation))
- (<http://www.tc.faa.gov/its/worldpac/techrpt/ar03-70.pdf>)
- SKYbrary: Safety Audits  
([http://www.skybrary.aero/index.php/Safety Audits](http://www.skybrary.aero/index.php/Safety_Audits))
- Heinrich's Triangle
  - The Accident Pyramid, July 22, 2008 By: James Roughton Category: Culture, Leadership, Management, Motivation

# Develop an AIS Audit



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Auditing an Aeronautical Information Service  
or Air Navigation Service Provider

# Module Objective

Understand the process used by the FAA Oversight Service to develop an AIS audit



# Audit

## Safety Audit

A risk- based, systematic, independent and documented and repeatable process for obtaining information and evidence and evaluating it objectively to determine the extent to which requirements and standards are fulfilled.

# Types of Audits

Conducted as on-site or desk

- New
  - Initial
- Replication
  - Re-creates or modifies a previous audit
- Follow-up
  - Addresses a compliance issue or condition noted in an observation
- Location specific
  - Facility



# Roles and Responsibilities

## State regulators:

- Develop, conduct and document audits
- Identify data and information and collect objective evidence
- Notify the AIS of an upcoming audit



# Roles and Responsibilities

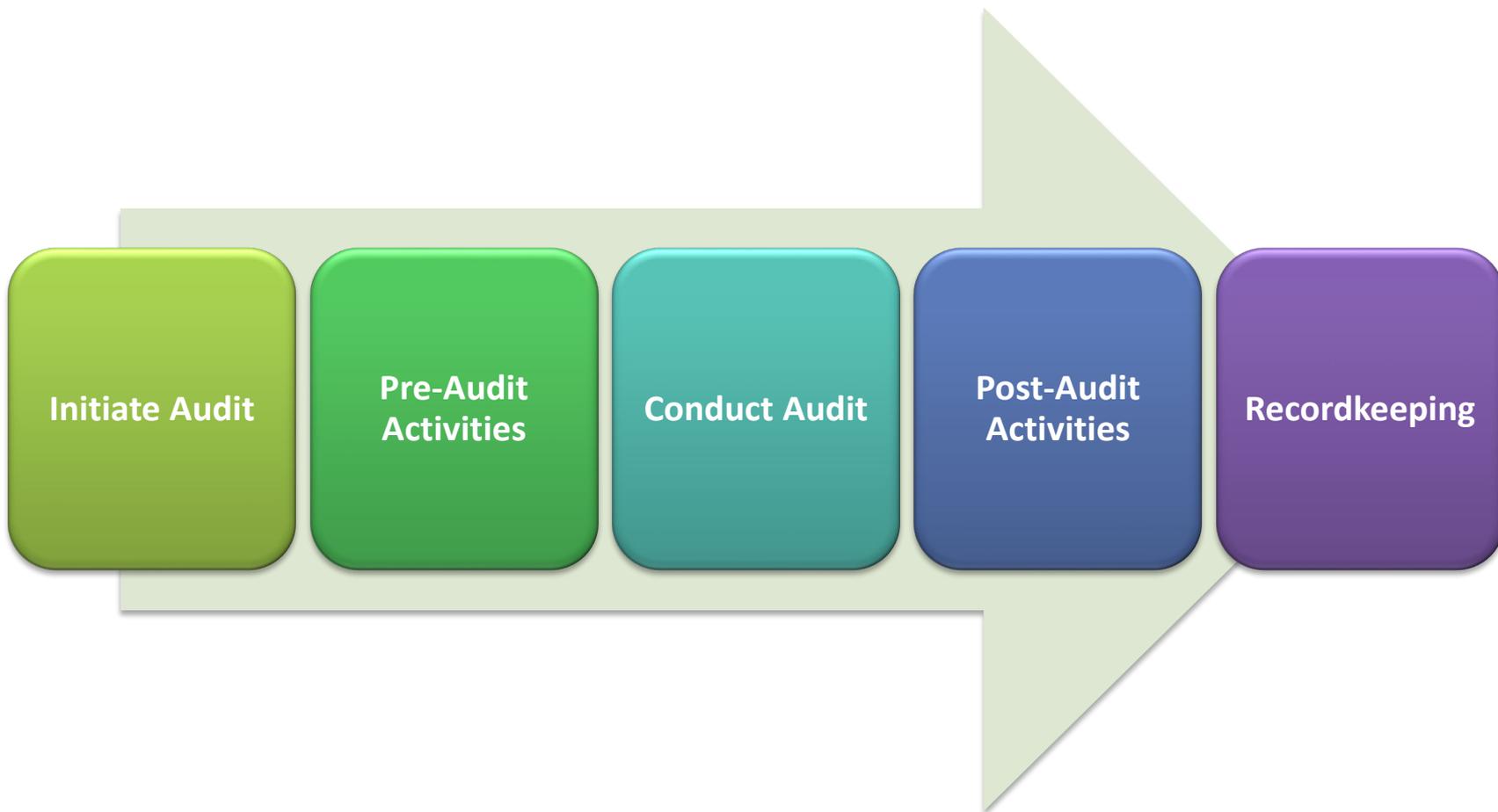
## AIS:

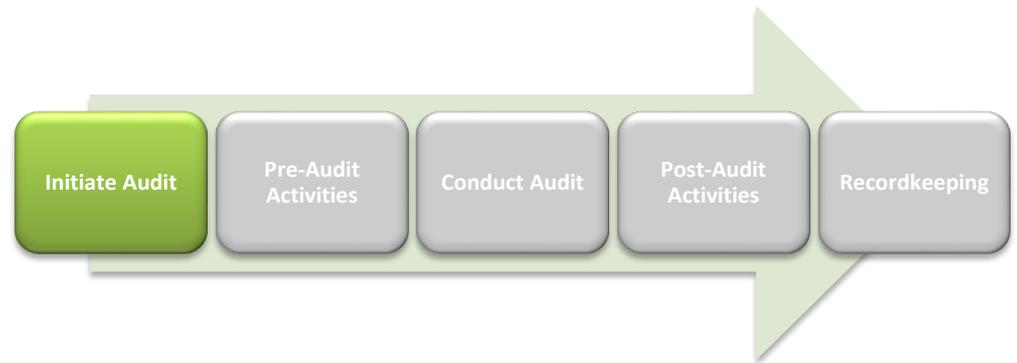
- Provides the requested data and information as evidence and allow access to facilities
- Takes corrective action to address identified safety concerns



# Audit Process

In depth audit process and related artifacts





Phases of audit process

# INITIATE AUDIT - DETAILS

# Initiate Audit



- Develop topic
- Develop proposal
- Create timeline
- Determine team composition
- Determine locations

# Audit Topic

- Can be done at any time
- Prompted by:
  - Accident, incident, or investigation
  - Routine surveillance
  - Changes to requirements
  - Non-compliance
  - Risk-based determinations



# Accident Example

**“Pilot killed in plane crash was sent to defunct runway, authorities say”**

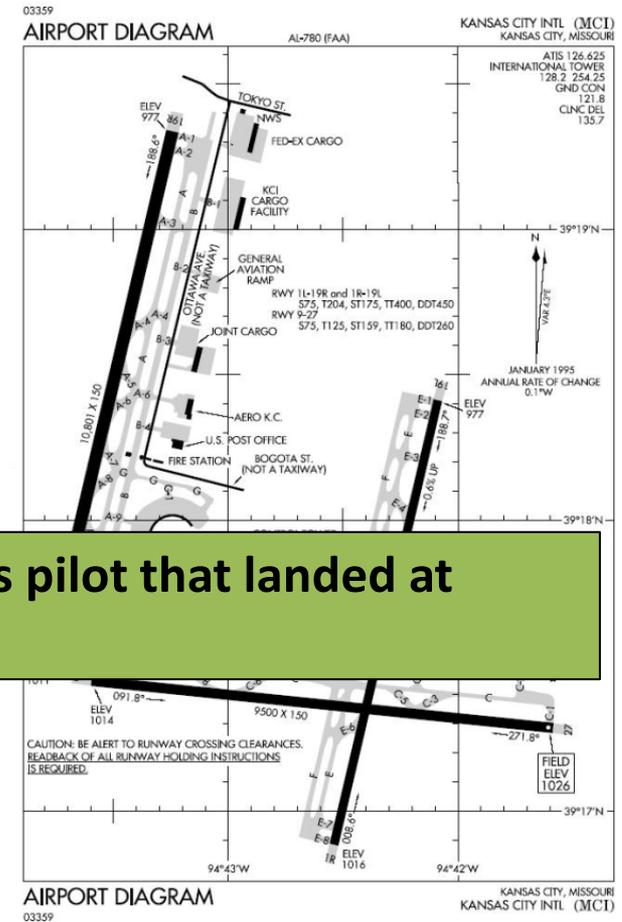


# Incident Example

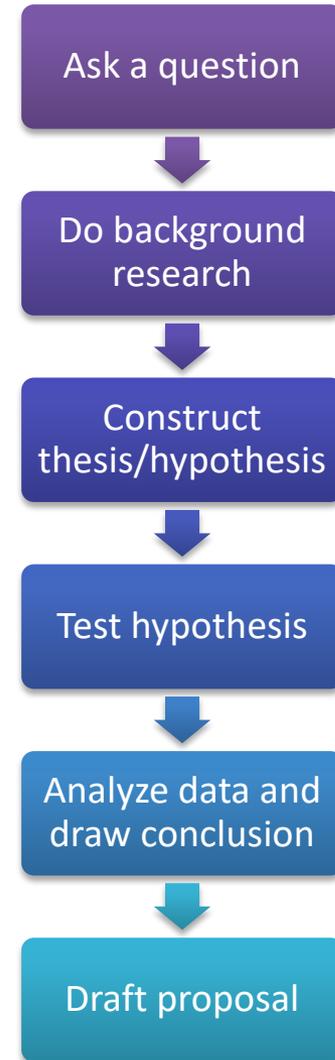
**Boeing 747  
mistakenly lands  
at wrong airport**



**'Are you kidding?' controller asks pilot that landed at  
wrong airport**



# Develop Audit Topic



# Draft the Audit Proposal Outline

Title	<ul style="list-style-type: none"><li>• What is the topic?</li></ul>
Activity Type	<ul style="list-style-type: none"><li>• Is it a new audit? Replication? Follow-up?</li><li>• Will it be an onsite or desk audit?</li></ul>
Category	<ul style="list-style-type: none"><li>• What domain (i.e. air traffic control, AIS, technical operations)?</li></ul>
Objective	<ul style="list-style-type: none"><li>• What are the controls the auditors plan to examine</li></ul>
Scope	<ul style="list-style-type: none"><li>• What are the specific procedures to surveil during the audit?</li></ul>
Focus	<ul style="list-style-type: none"><li>• What are the main topics to be audited?</li></ul>
Background	<ul style="list-style-type: none"><li>• Why conduct this audit? Have there been related audits in the past?</li></ul>
Methodology	<ul style="list-style-type: none"><li>• How will the audit be conducted?</li></ul>
Controls	<ul style="list-style-type: none"><li>• Which requirements will be audited against?</li></ul>

# Develop Audit Proposal

- Objective and Scope
- Focus Areas
- Methodology
- Requirement(s)
- Management review approval

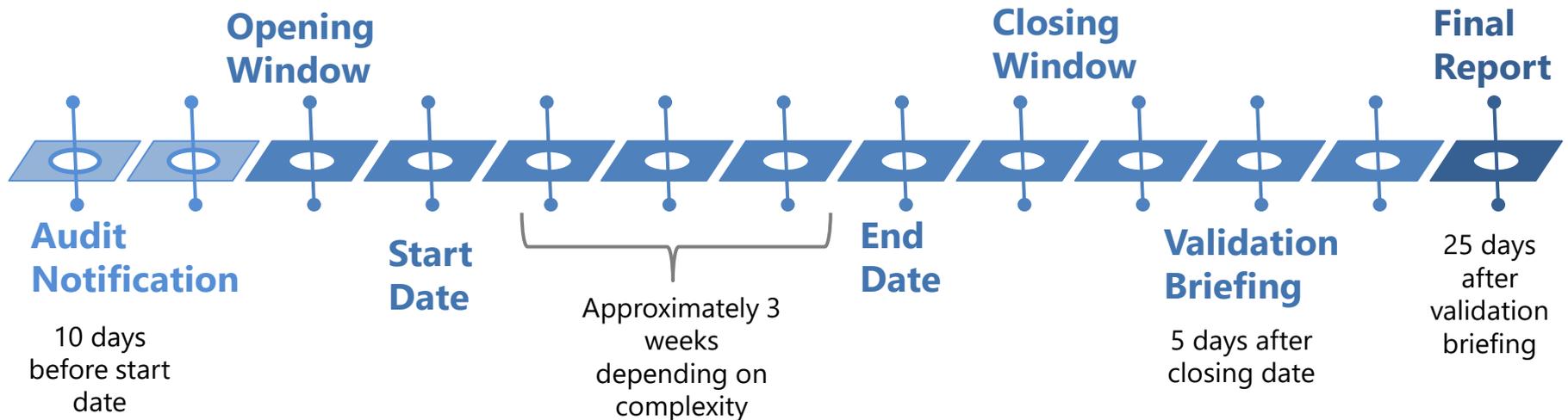
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PROPOSAL FOR OVERSIGHT ACTIVITY				
Title				
Activity Type Check all that apply Definitions in Work Instructions.	Audit <input type="checkbox"/>	Assessment <input type="checkbox"/>	SEI <input type="checkbox"/> Special emphasis item	SERFI <input type="checkbox"/> Special emphasis request for information
	Initial <input type="checkbox"/>	Replication <input type="checkbox"/>	Modified Replication <input type="checkbox"/>	Follow-up: <input type="checkbox"/> Addresses a compliance issue or condition noted in an observation.
	On-site <input type="checkbox"/>	Desk <input type="checkbox"/>		
Category	<input type="checkbox"/> ATC <input type="checkbox"/> Tech Ops <input type="checkbox"/> AIS <input type="checkbox"/> QA <input type="checkbox"/> QC <input type="checkbox"/> Other _____			
Submitter(s) / Branch(s)				
Safety Issues Statement	This is the expectation for safety when controls and/or mitigations are effective. Example: ATO's compliance with Order 8000.90C for Credentialing and Control Tower Operator Certifications Programs reduces risk to the NAS by ensuring properly trained and qualified personnel are providing control guidance.			
Potential Risk to the NAS	This is your concern about what potential risk could be introduced into the system based on your due diligent research of the topic. Example: Inconsistent application of the 8000.90C guidance could result in inconsistently trained or unqualified personnel, introducing risk into ATC operations.			
Purpose Statement (Focus of the Activity)	What controls will the activity focus on to collect data? Example: This proposed activity will examine ATO management process controls and management controls for access to the credentialing system.			
Background	Include any relevant results from your research on this topic. Format as bullets, not as paragraphs of text.  <u>Past AOV activities</u> , include any that directly relate to the topic, e.g., audits, compliance items, etc. with brief summary conclusions for each. If no AOV activities, include that also.  <u>Related AOV activities</u> , include any that indirectly relate to the topic, e.g., audits, compliance items, etc. with brief summary conclusions for each.  Example: DSK-FY12-002: Controllers failing to vector aircraft to final with the appropriate final intercept angles and distances; failures to utilize appropriate verbiage with control actions related to final (i.e. vectors across). COMP-FY12-09 ATO Corrective Action Plan for MBI completed, closed.  <u>Other information</u>  What else that you want the reviewers to know about the topic.			

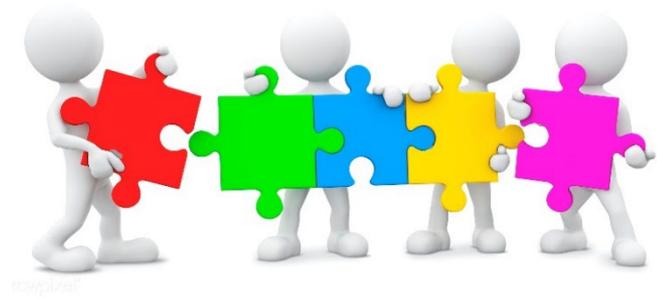
# Create Audit Timeline

- Ensures transparency and accountability
- May be adjusted as the audit proceeds



# Determine Audit Team Composition

- Familiar with the topic and applicable requirements
  - Multi-disciplinary team with varying knowledge, skills and abilities
  - Subject matter experts
- Avoid conflicts of interest
- Team(s) structure
  - Single team
  - Multiple teams



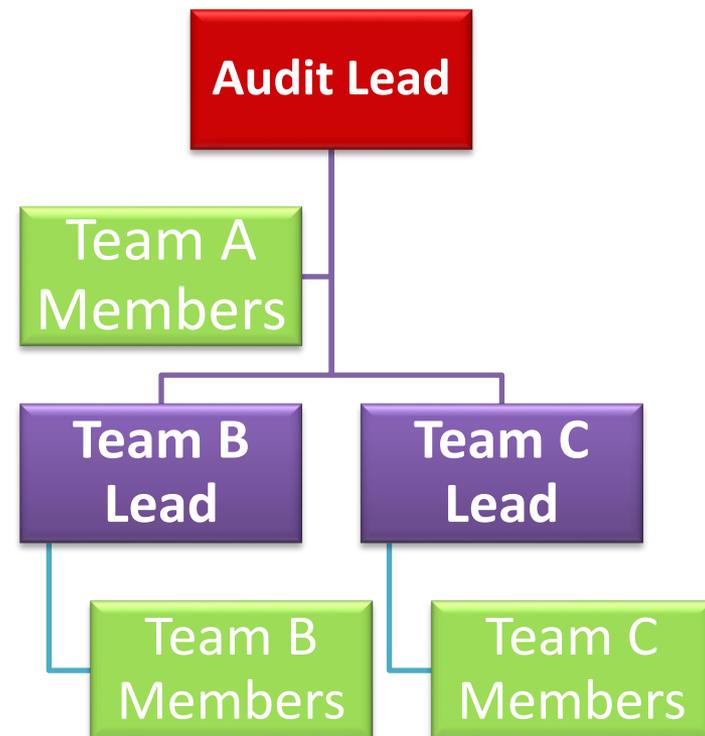
# Determine Audit Team Structure

Audit teams may be structured accordingly by the Project Manager:

## Single Team



## Multiple Teams

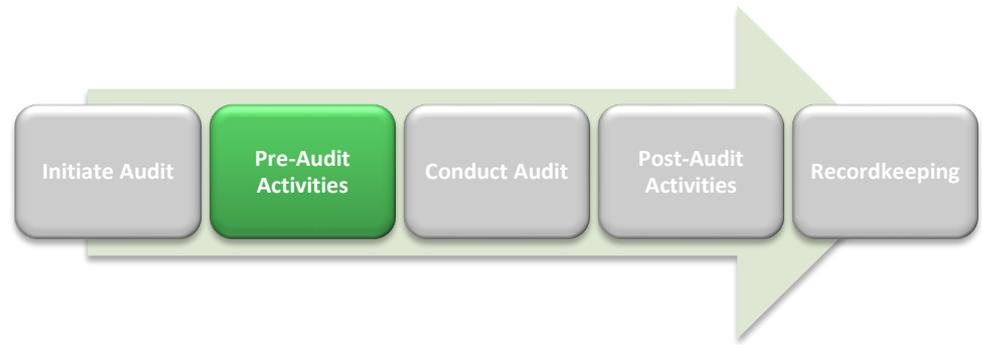


# Determine Audit Locations



## Sample questions:

- Where are aeronautical products and services developed?
- Which products and services are developed at what locations?
- Is there staff with specific AIS competencies?
- Are there safety concerns or identified hazards with the data and information throughout the lifecycle?



Phases of audit process

# PRE-AUDIT ACTIVITIES - DETAILS

# Pre-Audit Activities

- Conduct research and identify requirements
- Develop objective, scope and focus areas
- Develop plan, checklist(s), data sheets and interview questions
- Confirm schedule
- Conduct team meetings
- Confirm team roles and responsibilities
- Conduct briefings with management
- Transmit notification



# Conduct Audit Research

## Key considerations:

- Audit prompts
- Relevant past or related activities
- Corrective action(s)
- Current conditions (operational or procedural) related to topic
- Applicable requirements
- Safety risk



# Develop Audit Objective, Scope and Focus Areas

- Objective describes the controls to be examined
- Scope describes the specific procedure(s) to be surveilled
- Focus areas concentrate on the specific topics



# Objective and Scope Example (continued)

**“Pilot killed in plane crash was sent to defunct runway, authorities say”**



# Accident Example

- Safety Issues to determine compliance with requirements relating to radar video maps
- Potential Risk will examine processes pertaining to the verification and validation of data displayed on radar video maps
- Focus area will address management control(s)



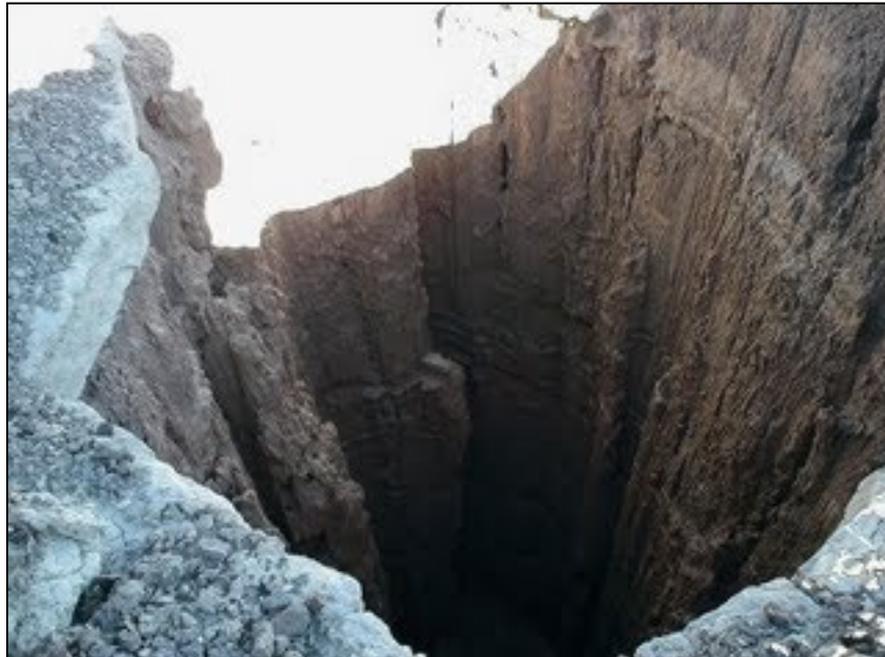
# Objective and Scope Example (continued)



## Radar Video Map

# Pitfalls to Avoid

Scope too  
broad



Hearsay

Preconceived ideas

# Develop Audit Plan

## Summary information about the audit:

- Objective, scope and focus area(s)
- Requirement(s)
- Justification
- Schedule
- Resources
- Locations
- Approval

ANS Oversight Organization  
**Audit Plan**

---

**Audit of**

**Audit Number**

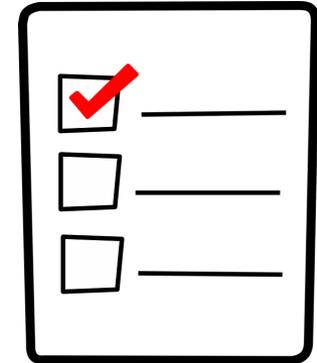
**Executive Sponsor**

**Audit Team**

<b>Audit Schedule</b> <small>(anticipated)</small>	Notification due to the ANSP	
	Audit start date	
	Audit end date	
	Estimated validation date <small>(5 business days after audit end date)</small>	
	Final report due to ANSP Safety Service <small>(15 business days after validation date)</small>	

# Audit Questions



Audit Questions are:

- Developed for AIS staff audit interviews
- Based on the AIS requirements and procedures
- Concern the successful performance of critical activities Organized by focus area
- Used as a real-time compliance verification tool
- Compiled into an **Audit Checklist**

# Develop Audit Checklist Questions

- Identify requirement (regulation or directive)
- Write the requirement into the checklist (with reference to the requirement)
- Turn requirement into a question
  - Address one issue per question
  - Each question answerable in “Yes/No” format
  - What do you need to ask in order to get an answer?



# Importance of Audit Checklists

- Standardize results when human factors are a source of variation
- Ensure activities are accomplished
- Reduce inadvertent errors
- Useful when observing or reviewing processes that are complex or involve repetitive tasks
- Reference applicable requirements



# Sample Audit Checklist

Requirement:		
Checklist Questions	Compliance verified? (yes or no)	Evidence and/or Observations
1.		
2.		
3.		
4.		
5.		
<b>Audit Sampling Methods</b> (where to look and how many to look at, find, discuss or interview)		
<b>Additional Comments</b> (use additional pages as needed)		

# ICAO Annex 15 Checklist Example

3.3.2 An AIS shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements are met.



<b>Requirement:</b>		
<b>Checklist Questions</b>	<b>Compliance verified? (yes or no)</b>	<b>Evidence and/or Observations</b>
1. Have validation procedures been established?		
2. Have verification procedures been established?		
3.		
4.		
5.		
<b>Audit Sampling Methods</b> (where to look and how many to look at, find, discuss or interview)		
<b>Additional Comments</b> (use additional pages as needed)		



# Develop Datasheets

Designed to ensure enough information is collected during the audit to answer checklist questions

- Consider each checklist question individually
  - What do you need to ask/observe/read/review to answer?
- Collect metrics
  - Example: number of instrument flight procedures
- Review data collected

# ICAO Annex 15 Sample Datasheet

3.3.2 An AIS shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements are met.



Location	Have verification procedures been established?		Have validation procedures been established?	
	Yes	No	Yes	No
Office A	√		√	
Office B	√		√	
Office C	√			√



# Develop Interview Questions

Designed to facilitate a discussion

- Checklist questions are turned into conversational questions to go beyond a yes/no answer
- Creating an environment to enhance responses where the conversation may prompt additional clarifying questions



# Interview Questions Example

INTERVIEW QUESTIONS – Annex 15	
Office Symbol	Name
<ol style="list-style-type: none"><li>1. Has your organization developed procedures to verify data included on radar video maps?</li><li>2. If yes, can you show me a copy of these procedures?</li><li>3. If yes, can you walk me through your verification process?</li><li>4. If yes, can I get a copy of these procedures?</li></ol> <p>(Checklist 1, question 1)</p>	
<ol style="list-style-type: none"><li>1. Has your organization developed procedures to validate data included on radar video maps?</li><li>2. If yes, can you show me a copy of these procedures?</li><li>3. If yes, can you walk me through your validation process?</li><li>4. If yes, can I get a copy of these procedures?</li></ol> <p>(Checklist 1, question 2)</p>	

# Confirm Audit Schedule



Item	Date
Audit Notification	At least 10 business days prior to audit start date
Opening Window Date	Determined by oversight management
Start Date	Begin collecting data, observation(s), and conducting interviews
End Date	Complete data collection, observation(s), and interviews
Closing Window Date	Approximately ends the third week following the opening date
Estimated Validation Briefing	Approximately 5 business days after the audit closing date
Final Report/Transmittal Letter	Scheduled for 25 business days after the validation briefing

# Conduct Audit Team Meetings

## Meet regularly

- Exchange information
- Ensure understanding of objective, scope and focus area(s)
- Review methodology
- Confirm timeframe and location(s)



# Conduct Pre-departure Meeting

Discuss the following:

- Protection of materials and documents
  - Maintain sensitive materials in a secure area and never leave material unattended
  - Do not remove original documents from a location
- Recording observation(s)
  - Take detailed notes throughout the audit
- Leave the location as you found it



# Conduct Pre-departure Meeting (continued)

## Address professionalism:

- Dress appropriately
- Act professionally



## Do not disturb operational staff

- Do not distract others by personal interactions or communications on laptops and phones
- Avoid confrontations

# Audit Team Roles and Responsibilities

- **Audit Lead**

- Ensure completion of all phases of the audit
- Collect, compile, and prepare all documentation
- Brief management as applicable

- **Team Lead\***

- Lead team as directed by Audit Lead
- Conduct opening and closing meetings with AIS

\*If there are multiple teams

- **Team Member**

- Follow direction of lead
- Collect, verify data, and document observation(s)
- Keep lead informed and offer assistance
- Be present at opening and closing meetings



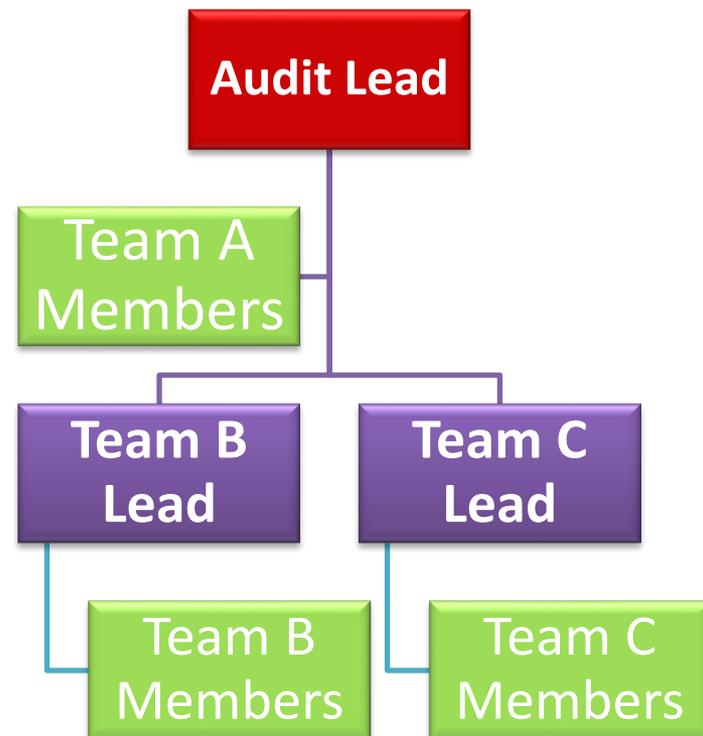
# Determine Audit Team Structure

Audit teams may be structured accordingly by the Project Manager:

**Single Team**



**Multiple Teams**



# Conduct Briefings with Management

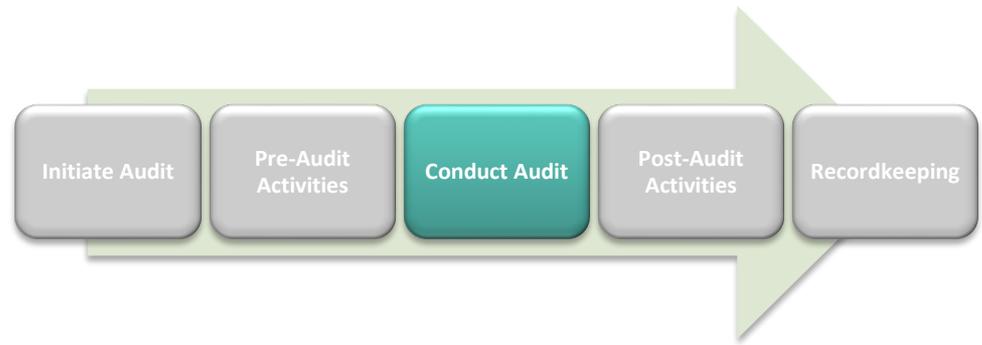
- Status – to allow oversight management opportunities to verify and provide additional guidance to the team
- Pre-Audit – to obtain oversight management approval of the audit plan, notification and checklist(s)



# Transmit Notification



- A memorandum or letter containing audit dates, topic, and location(s)
  - Sent at least 10 business days before start date
  - May include request for data
  - Request a point of contact at each location
- Notification is not required for unscheduled audits



Phases of audit process

# CONDUCT AUDIT - DETAILS

# Conduct the Audit

- Initial contact with location(s)
- Conduct opening meeting
- Collect and verify requested data, information and objective evidence
- Compile observation(s)
- Conduct closing meeting

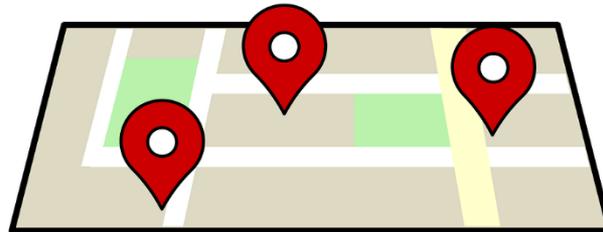


# Initial Contact With Location(s)

Audit Lead to contact point of contacts

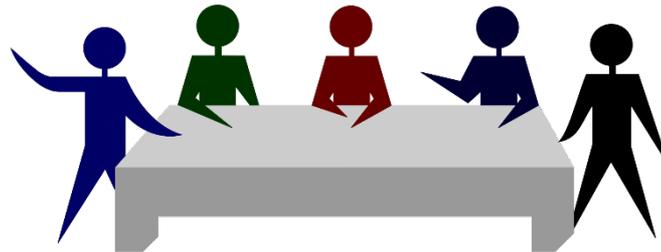
Convey the following:

- Arrival, opening and closing meeting times
- Logistics (i.e. room locations, technical support, equipment, parking, security, general protocols, etc.)
- Access to appropriate facility personnel



# Conduct Opening Meeting

- Introduce team
  - Ensure everyone signs attendance log
- Restate objective and scope
- Discuss process
  - Review requirement(s), conduct interviews, make observation(s), take notes and gather objective evidence



# Conduct Opening Meeting (continued)

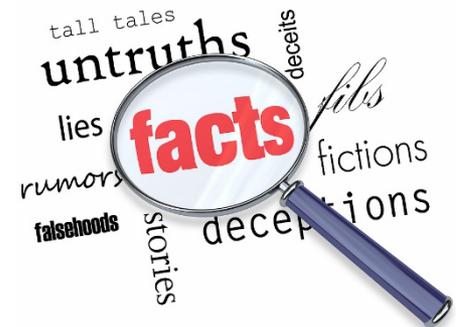
- Address location specific results at the closing meeting
- Inform that safety critical observation(s) will be immediately elevated
- Confirm timeline and other logistics
- Confirm POCs
- Confirm safety and security procedures
- Share checklist(s), if requested



# Collect and Verify Requested Data and Information

Use checklist(s) and interview questions to collect and record data, information and objective evidence

- Observe operations
- Conduct management interviews
- Review documentation
- Take notes



# Compile Observation(s)

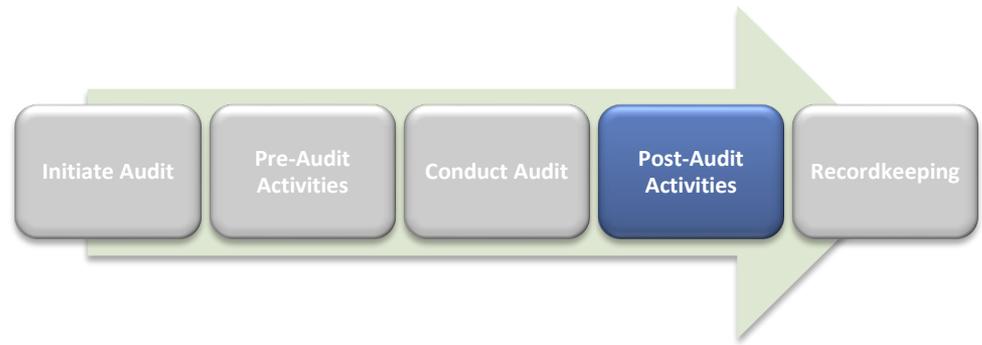
- Positive aspects
- Location specific observation(s) or safety critical issues
  - Suspected safety critical observation(s) will be elevated immediately
- Observation(s) that may be included in the report
- Data from location(s) will be consolidated



# Conduct Closing Meeting

- Express appreciation
- Ensure everyone signs attendance log
- Reiterate objective and scope
- Describe methodology used
- Review results and observation(s)
- Provide estimated report date
- Close out security or logistics items
- Stress that facilities will not be individually mentioned in the report





Phases of audit process

# POST-AUDIT ACTIVITIES - DETAILS

# Post-Audit Activities

- Final data and information review
- Observation(s) and validation
- Prepare report and transmittal
- Final activities



# Final Data and Information Review

Compile, review and analyze the data and information

- Ensure there is information to complete the data sheets and answer checklist question(s)
- Obtain additional information as needed



# Observation(s) and Validation

## Key questions:

- Does the data and information reveal **systemic** issues or concerns?
- Are there recommendations for the following for inclusion in the report?
  - Observation(s) of non-compliance?
  - Observation(s) of potential adverse safety impact?
  - Comments?



# Observation(s) and Validation (continued)

FAA uses the following framework to address compliance issues

Compliance Level	Description	Action
0	Low-risk, non-repeat observation	AIS notified informally
1	Low-risk, repeat observation	AIS notified and requested to take steps to bring the issue into compliance
2	Medium-risk	AIS to submit Corrective Action Plan (CAP) to bring issue into compliance <i>and</i> prevent recurrence
3	High-risk	AIS to submit the CAP Oversight required to verify the effectiveness of the CAP

# Observation(s) and Validation (continued)

## Observation(s) of potential adverse safety impact:

- Observation(s) that may have a potential adverse safety impact on the airspace system
- Examples may include:
  - Break in continuity of management controls or requirements (weak controls – should or may)
  - Discrepancy in procedures (Is this a discrepancy of how procedures are implemented?) – inconsistent application of controls across the NAS
  - Research work instructions for revisions to this slide

# Observation(s) and Validation (continued)

Schedule a validation briefing to oversight management

- Typically 5 business days after the audit closing date
- Present observation(s), finding(s) and comment(s)
- Upon management approval, determine which observations are to be included in the final report



# Prepare Report

- Executive Summary
- Overview
  - Background
  - Objective, scope and focus areas
  - Dates and locations
  - Requirements and methodology
- Result of observation(s) and comment(s)
  - Noncompliance
  - Potential adverse safety impact
- Appendix
  - List of auditors
  - Requirement(s) checklist



# Prepare Report (continued)

## Communicate results

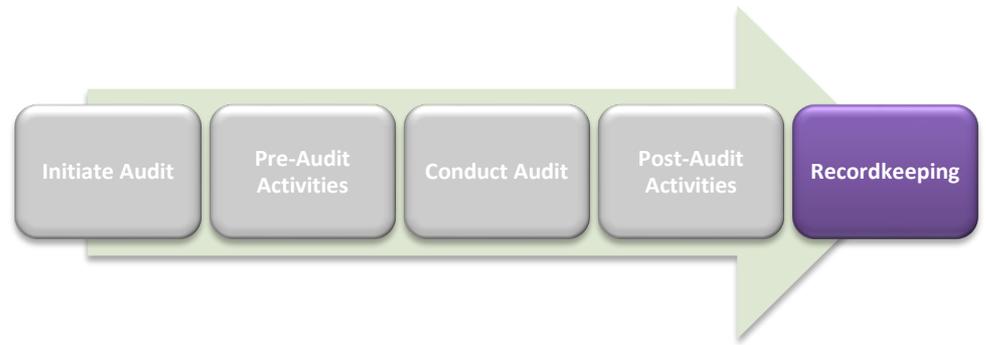
- Write from a risk-based perspective
- Convey important information first
- Include details in the body of the report
- Use objective evidence to support conclusion(s), observation(s) and comment(s)
- Be clear, accurate, concise and consistent
- Receive manager approval
- Release report to audited party and others, as applicable



# Post-Audit Activities

- Encourage feedback on the content report
- Finalize records
- Discuss lessons learned
- Monitor and track
  - Observation(s)
  - Finding(s)
  - Corrective action(s)
- Follow-up actions





Phases of audit process

# RECORD KEEPING - DETAILS

# Recordkeeping

- Audit portfolio
- Records management



# Audit Portfolio

- Records are established and maintained throughout the audit
- Pertinent records:
  - Audit proposal
  - Audit plan and checklist(s)
  - Audit notification
  - Audit report
  - Corrective action plan



# Records Management

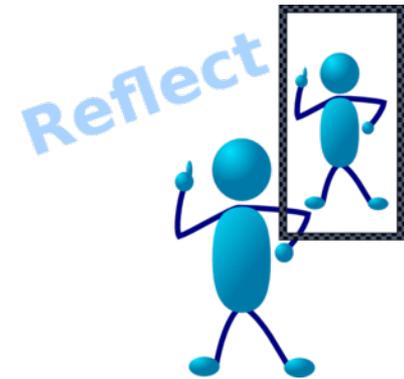
Final records are archived according to a retention schedule

- Audit plan
- Audit notification
- Checklist(s)
- Audit report



# Thoughts...

- Think critically
- Communicate effectively
- Build cohesive teams
- Be professional
- Adhere to the audit timeline
- Be comfortable to ask questions
- Keep management informed



# Questions and Discussion



# References

- ICAO Annex 15
- FAA AOV Audit and Assessment Work Instruction, AOV-002-001-W1 (2022)

# Document Definitions

- Audit Proposal
  - A form to submit a proposed audit topic for management review and to record decisions about a proposed audit topic after it is submitted
- Audit Plan/Checklist(s)
  - Describes what will be audited and which facilities will be visited
- Audit Notification
  - Memo or letter advising ANSP of the audit dates and facility location(s)
- Audit Report
  - Shared with ANSP and audited facilities
- Corrective Action Plan
  - To be completed by ANSP in response to compliance issues identified during the audit



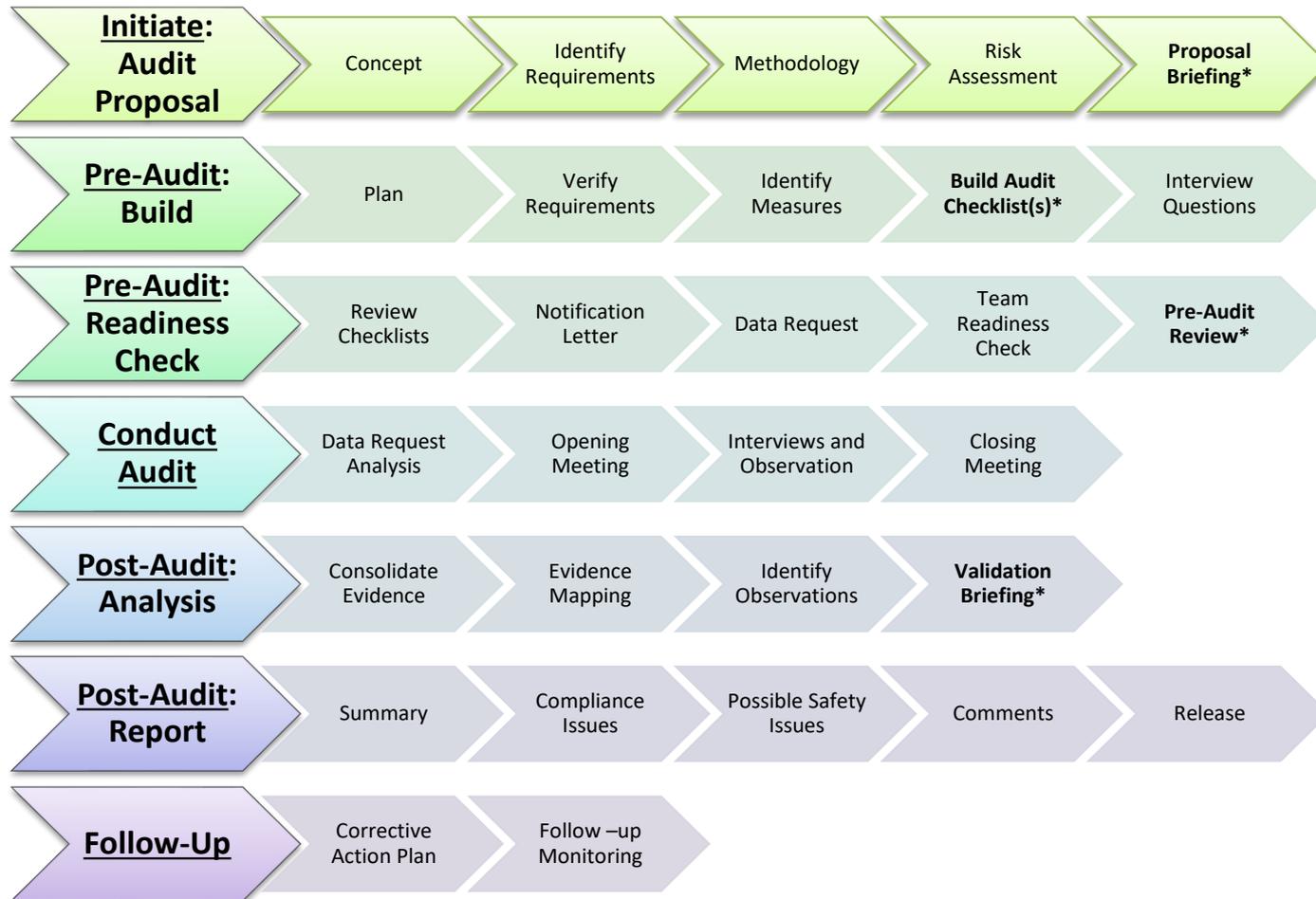
Federal Aviation  
Administration

# Workshop Exercise #1



Building an Audit Proposal

# Developing an AIS/AIM Audit



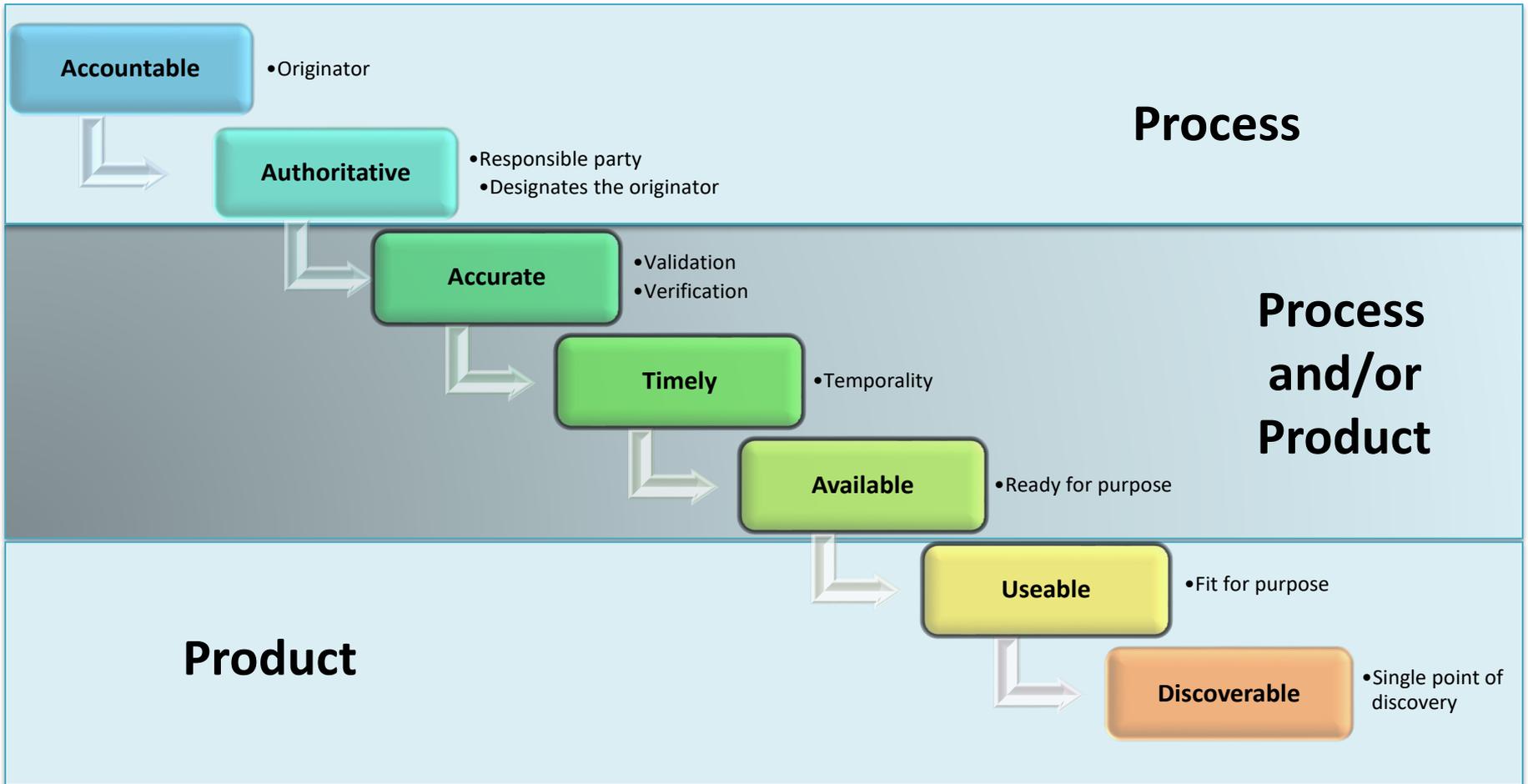
# What Can Be Audited?

- Product and Services
  - Format
  - Content
- Process
  - Risk controls
    - How are products prepared and maintained?
    - By whom?



# Potential Audit Prompts

## A breakdown in...



# Audit Proposal Outline

## Title

- What is the topic of your audit?

## Type of Activity

- Is this a new audit, or a follow-up?
- Will it be onsite, or a desk audit?

## Safety Issues

- What is the expected system state, assuming controls are effective?

## Potential Risk

- What is the potential risk, if controls are not effective (or not followed)?

## Background

- Why do you think this audit should be conducted?
- Have related audits been conducted in the past?

## Methodology

- How will you conduct the audit?

## Controls

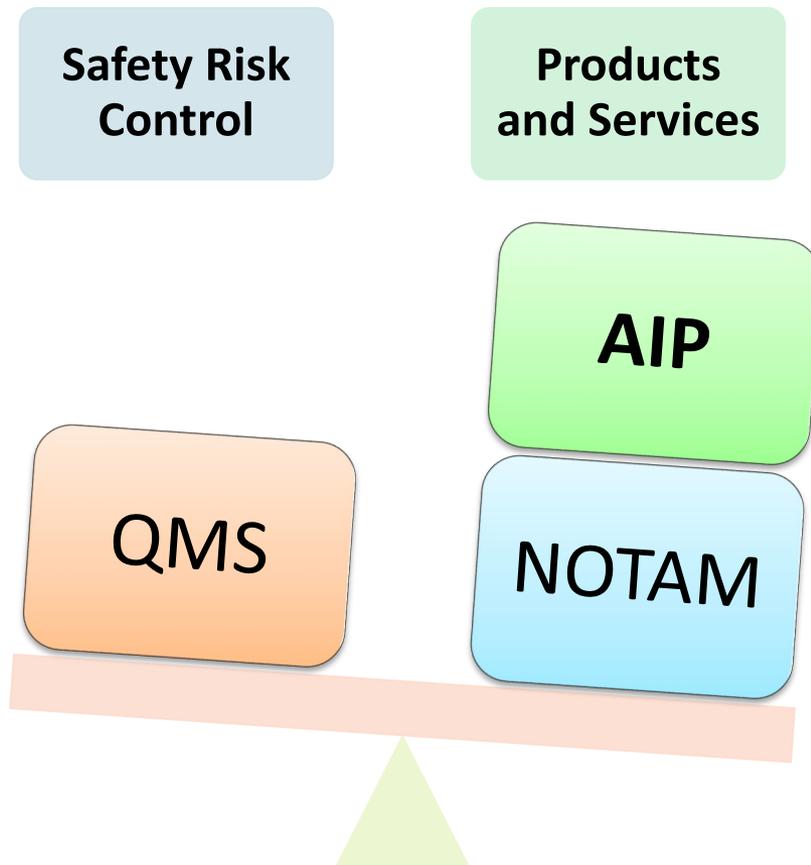
- Which requirements will you audit?



Develop the Audit Proposal

# EXERCISE

# Instructions: Build an Audit Proposal



## In your teams:

- Access the **Audit Proposal** file in the **Activities > AIP Audit** folder on the ICAO WACAF website
- Review the **Polaris AIP** in the **Activities > AIP Audit** folder *or* your State AIP
- Develop an AIP Audit Proposal
  - Consider requirements (Annex 15)
  - What problems exist in the AIP?
  - What will you audit to identify the root cause(s) of the problems?
- Present proposals for discussion

# Instructions: Briefing Audit Topic

- **Key Points:**
  - What is the topic?
  - Why is it important?
  - How will the audit be conducted?





# Questions and Discussion





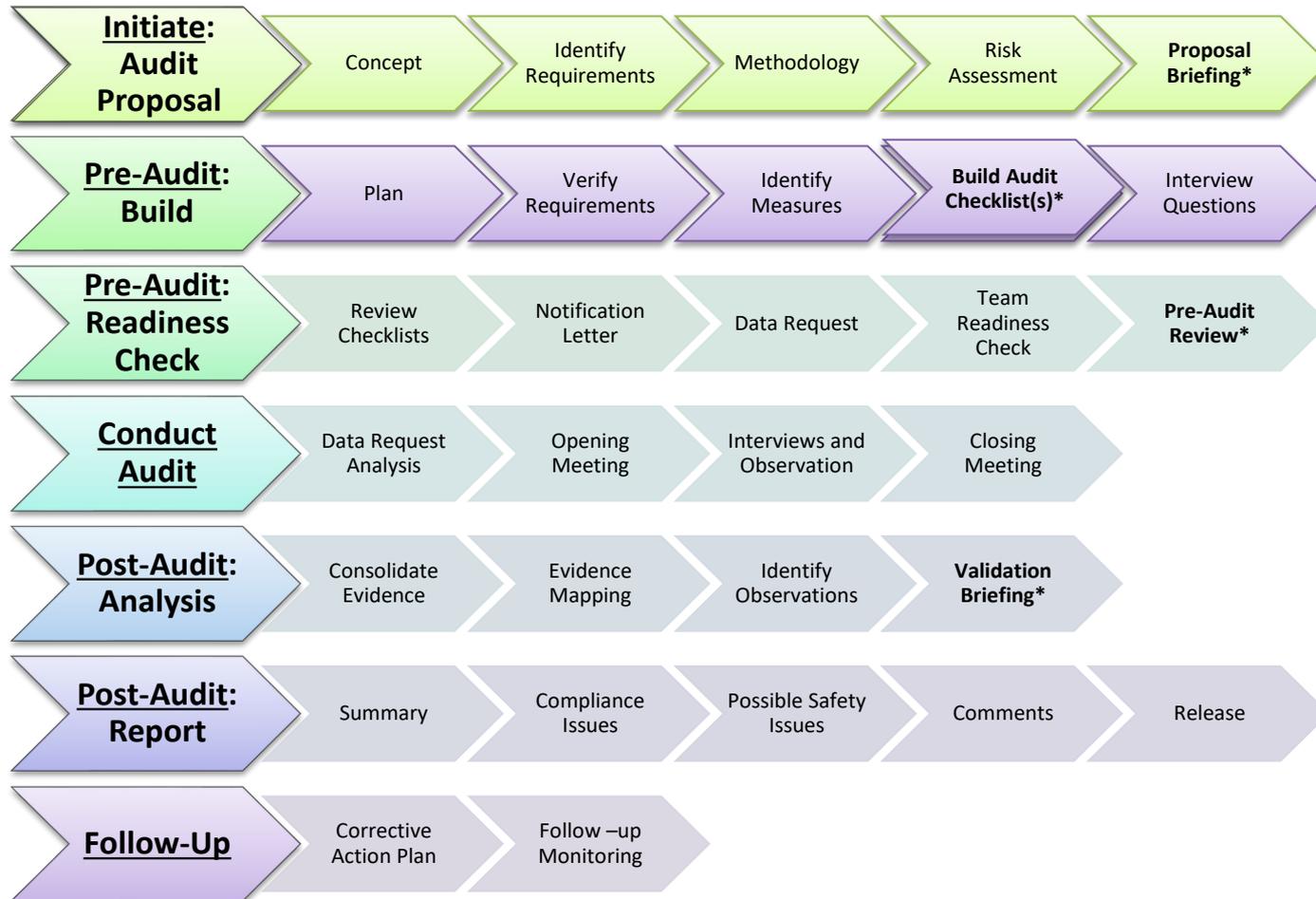
Federal Aviation  
Administration

# Workshop Exercise #2



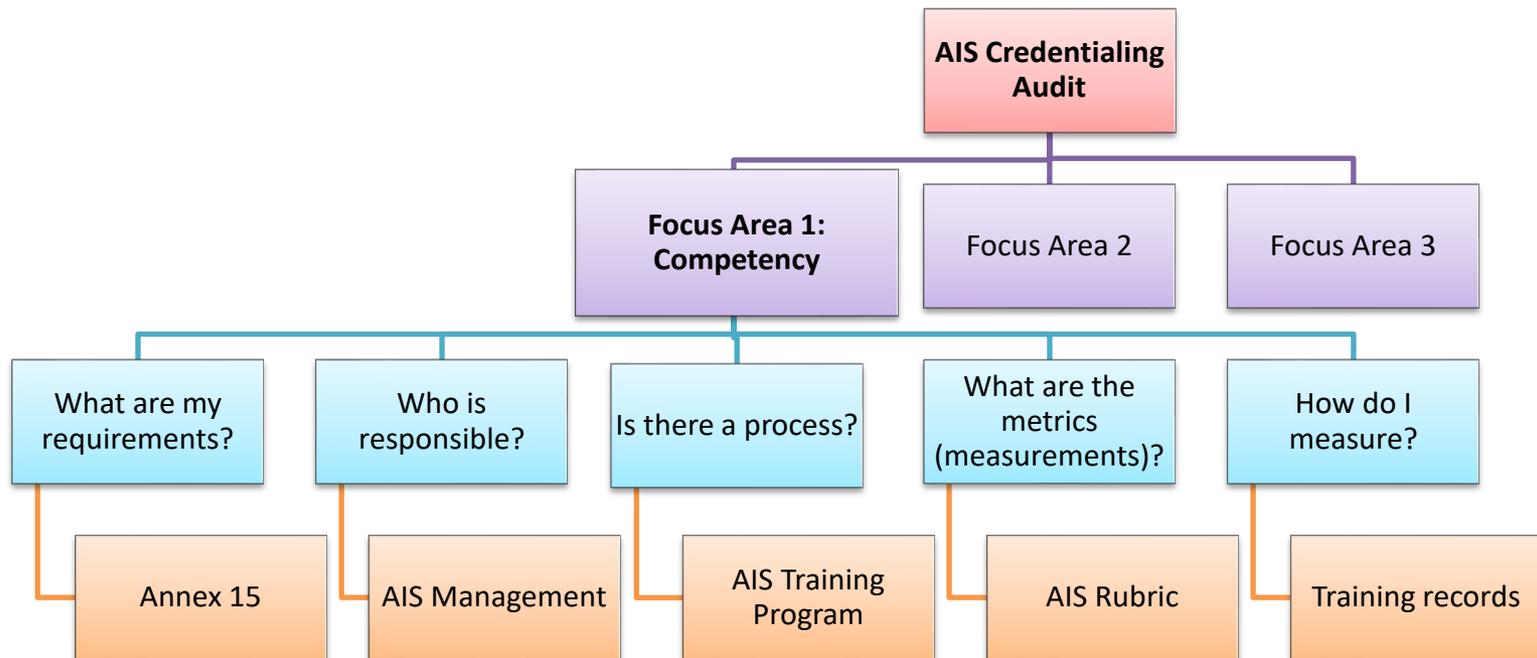
Building Audit Checklists

# Developing an AIS/AIM Audit



# Developing Audit Checklists

Checklists relate to Objective, Scope, and Focus Areas



# Developing Audit Checklists

## Steps to create a checklist:

1. Locate the requirement(s)
  1. Regulation, Directive, Order, etc.
2. Copy the requirement(s), and it's source, into the checklist
3. Turn the requirement(s) into a question
4. Address one issue per question
5. Break requirement(s) into separate questions if needed
6. Questions should be answerable in "Yes/No" format

# Sample Requirement

- All steak must be broiled and basted to an internal temperature of 66°C in a convection oven.
- Requirements:
  - Broiled
  - Basted
  - Internal temperature of 66°C
  - Convection oven

# Sample Checklist

<p><b>Requirement:</b>  <b>All steak must be broiled and basted to an internal temperature of 66° in a convection oven.</b></p>		
Checklist Questions	Compliance verified? (yes or no)	Evidence and/or Observations
1. Is there objective evidence that all steaks were broiled?		
2. Is there objective evidence that all steaks were basted?		
3. Can you think of additional questions?		
4.		
5.		
<p><b>Audit Sampling Methods</b> (where to look and how many to look at, find, discuss or interview)</p>		
<p><b>Additional Comments</b> (use additional pages as needed)</p>		



Build the Audit Checklist(s)

# EXERCISE

# Instructions: Create an Audit Checklist

## Objective

The Air Traffic Safety Oversight Service (AOV) will conduct this audit to determine Air Traffic Organization (ATO) compliance with FAA Orders 7930.2P Notices to Airmen, 1370.92A Password and PIN Management, 1370.82A Information Systems Security Program, and ICAO Annex 15 Aeronautical Information Management

## Scope

The audit will examine ATO quality management controls associated with roles and responsibilities, secure access, and validation and verification process in the execution of FAA Orders 7930.2P, 1370.92A, 1370.82A, and ICAO Annex 15

## Focus Areas

### Roles and Responsibilities

- Defined roles and responsibilities of all personnel supporting the NOTAM system
- The authorization of official "NOTAM originators" and "Certified Sources"
- Ensuring the criterion for responsibilities are met

### Access Controls

- NOTAM information security
- Authorization for personnel originating NOTAMS
- Implementation of FAA information security protocols

### Verification and Validation Controls

- Verification and validation of NOTAM information
- NOTAM error identification and correction
- Establishing and maintaining NOTAM currency

## Methodology

The audit team will interview ATO personnel, collect data and review evidential documents. We plan to demonstrate the ATO's current state of NOTAM quality management control implementation and identify any resulting control gaps or weaknesses that affect the safety of the NAS.

## Applicable Regulations

The audit team will determine ATO compliance with the following requirements:

- ICAO Annex 15 Chapter 3 Aeronautical Information Management
- FAA Order 7930.2P Chapter 3-1-2 NOTAM Responsibilities, 4-1-2 National NOTAM Office Relationships
- FAA Order 1370.92A Password and PIN Management
- FAA Order 1370.82A Information Systems Security Program

- In your teams:
  - Review Audit Proposal and update as necessary
  - Access the **Audit Checklist** file in the **Activities > AIP Audit** folder on the ICAO WACAF website
  - Develop audit questions based on the controls identified in the Audit Proposal
    - Questions should be answerable in YES/NO format
    - Evidence: how will you determine compliance?



# Questions and Discussion

