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U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Air Traffic Safety Oversight Service

800 Independence Avenue, S.W.
Washington, D.C. 20591

July 27, 2017

Re: Freedom of Information Act (FOIA) request 2017-008584

This letter responds to your July 19, 2017 Freedom of Information Act (FOIA) request seeking, via electronic/digital format, copies of FAA Safety Oversight Circulars (SOC) published by the Air Traffic Safety Oversight Service on the internal FAA website address: *https://employees.faa.gov/org/linebusiness/avs/offices/AOV*. They are:

SOC 07-01	SOC 07-02
SOC 07-03	SOC 07-04
SOC 07-05A	SOC 08-07
SOC 09-08	SOC 09-11
SOC-13-13A	

No fees were incurred in processing this request.

You have the right to seek assistance from the FAA FOIA Public Liaison via phone (202-267-7799) or email (7-AWA-ARC-FOIA@faa.gov) noting FOIA Public Liaison in the Subject.

Sincerely,

Julie H. Doherty

Julie Doherty
Manager, Planning and Program Management Staff/
FOIA Coordinator
Air Traffic Safety Oversight Service

Attachments

Listing of Safety Oversight Circulars published by the Air Traffic Safety Oversight Service

- SOC 07-01 Acceptance of the Air Traffic Organization (ATO) Baseline
- SOC 07-02 AOV Concurrence/Approval at Various Phases of Safety Risk Management
- SOC 07-03 Approval of Return-to-Duty (RTD) Plans
- SOC 07-04 Aviation Safety Action Program
- SOC 07-05A AOV Guidance on Safety Risk Modeling of High-Risk Hazards
- SOC 08-07 Guidance Regarding the Validation and Verification of the ATO Safety Management System
- SOC 09-08B Guidance Regarding the AOV Voluntary Disclosure Policy
- SOC 09-11 Safety Oversight Standards
- SOC 13-13A Corrective Action Plan Development and Acceptance in Response to Safety Compliance Issues

U.S. Department
of Transportation
**Federal Aviation
Administration**

SOC

Safety Oversight Circular

SOC **07-01**
DATE: June 1, 2007

**Air Traffic Safety
Oversight Service (AOV)**

Subject: Acceptance of the Air Traffic Organization (ATO) Baseline

1. PURPOSE: This safety oversight circular (SOC) provides information on what is meant by the Air Traffic Safety Oversight Service's (AOV) acceptance of the National Airspace System (NAS) Baseline. Additionally, it provides guidance on defining the March 14, 2005, baseline with regards to managing NAS changes.

2. BACKGROUND: FAA Order 1100.161, Air Traffic Safety Oversight, Paragraph 5-1, states that "At the time of original implementation of this order [March 14, 2005], the current status of the National Airspace System (NAS) was accepted as the baseline." Divergent interpretations of this section have been raised by those working on changes to the NAS. This SOC provides guidance on how to interpret what constitutes the accepted baseline. It also provides guidance on how to manage future changes to the NAS during the transition period and thereafter.

3. DISCUSSION:

a. On March 14, 2005, FAA Order 1100.161 accepted the NAS as the baseline for safety oversight. The following items were considered part of that acceptance: all safety standards contained in written orders, directives, and procedures; airspace, and surface areas under the control of Air Traffic Organization (ATO), and current navigational and air traffic control systems. Acceptance of the baseline did not imply or state that the NAS was or was not inherently safe as configured on that date, nor did it imply that the NAS had no existing high risks. The acceptance of the baseline simply meant that, henceforth, compliance witb the Safety Management System (SMS) is required for all changes to the NAS. Thus, from that point forward, the use of Safety Risk Management (SRM) to assess all changes to the NAS was established, with the goal of full SMS implementation by March 14, 2010.

b. The intent of the order was to set a starting point from which to begin deliberately tracking and documenting cbanges to the NAS. From a practical standpoint, it was not feasible for AOV to inventory or assess each item, area, or element of the NAS for risk. The magnitude of such an effort would have overwbelmed ATO and AOV and might never have been possible. However, FAA Order 1100.161 directs AOV and the ATO to make and approve changes to the baseline on the basis of an approved SMS. Documented legacy processes were accepted during the transition, as part of the baseline, with the understanding that once SRM training had taken

place[1], personnel involved with NAS changes would make subsequent changes using the documented SRM processes approved in the ATO SMS. This means that hazards contained within the March 14, 2005, accepted baseline are not grandfathered in any way and, if detected or identified as high risk, must be mitigated to an acceptable level[2] and as low a level as reasonably possible in accordance with SMS requirements.

4. DISPOSITION: This guidance does not constitute a change to any requirement contained in FAA orders, manuals, etc. However, appropriate standard operating procedures should be changed to reflect the processes defined in this SOC. Adherence to this guidance will facilitate AOV approvals.

5. GUIDANCE:

a. Baseline The acceptance of the baseline did not imply or state that the NAS was or was not inherently safe as configured on March 14, 2005, nor did it imply that the NAS had no existing high risks. The baseline for oversight simply indicated that, thereafter, changes to the NAS would need to be SMS-compliant. Thus, the use of SMS to assess all changes to the NAS was established, with the goal of full SMS implementation by March 14, 2010.

b. NAS Changes

(1) For major and infrequent changes to the NAS, follow the SRM process in the approved SMS manual.

(2) For NAS changes that are frequent and already described in applicable directives (e.g., yearly air show waivers, routine maintenance, etc.), it may or may not be practical to undergo the full SRM process for each change. In those instances, the ATO may, prior to March 14, 2010, perform the following:

(a) Ensure that directives concerning changes to procedures, airspace, waivers, and the like are revised to include a chapter or section on how to make changes to those processes and ensure that safety risk is meaningfully considered in accordance with the requirements in the approved ATO SMS manual. Once the revision is approved, as long as the process is followed, there is no need for a Safety Risk Management Document (SRMD) or Safety Risk Management Document Memorandum (SRMDM) for each individual change. Instead, the basic directive needs to go through the SRM process and a determination made that the order is SMS-complaint. Thereafter, so long as the order is followed for each change and approved controls to known hazards are implemented as necessary, those changes are considered SMS-compliant and do not require additional documentation.

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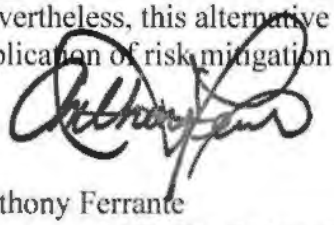
[1] This training should be provided as soon as possible to enable all of ATO to fully implement SMS by March 2010.
[2] Nothing is this statement changes the requirements in the AOV-approved ATO SMS manual for SRM documentation to identify and evaluate hazards and for the appropriate authority to accept any residual risk.

(b) Such approved directives constitute an extension of ATO's approved SMS program and require AOV approval for initial compliance and all subsequent changes. Nevertheless, this alternative can significantly enhance efficiency and ensure consistent application of risk mitigation across the NAS.



Anthony Ferrante
Director, Air Traffic Safety Oversight Service

U.S. Department
of Transportation
**Federal Aviation
Administration**

SOC

Safety Oversight Circular

SOC **07- 03**
DATE: July 30, 2007

Air Traffic Safety
Oversight Service (AOV)

Subject: Approval of Return-to-Duty (RTD) Plans

1. PURPOSE. This Air Traffic Safety Oversight Service (AOV) Safety Oversight Circular (SOC) provides guidance to the Air Traffic Organization (ATO) concerning:

a. Approval of Air Traffic Control Specialist (ATCS) Return-To-Duty (RTD) Plans and Airway Transportation System Specialist (ATSS) Approval Requests as required by FAA Order 8000.90, AOV Credentialing and Control Tower Operator Certification Programs, chapter 6.

b. How to identify operational error (OE) causal and contributory factors by utilizing root cause analysis and associate the identified OE causal and contributory factors to appropriate actions as part of the RTD approval request.

c. The use of a checklist to facilitate compliance with AOV RTD requirements.

2. WHERE I CAN FIND THIS SOC. This SOC is located on the following AOV Web site: http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aov/policies_forms/

3. AUTHORITY. Under FAA Order 8000.90, the ATO is required to obtain AOV approval for the RTD of credentialed ATO safety personnel under the following conditions:

a. An AOV credential holder is determined to be primary and or contributory to more than two previous operational errors within 30 months that resulted in a final severity classification of A or B; or the equivalent Oceanic, Non-Radar, Surface, Minimum Vectoring Altitude/Obstruction OEs, or at those facilities where radar data is not available and less than 80 percent of the separation minima was maintained.

b. An AOV credential holder is decertified or had their certification authority revoked for performance.

c. When a determination is made that an AOV credential holder has contributed to the cause of an aircraft or air traffic incident or accident or whose performance is determined to have been egregious.[1]

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[1] As stated in FAA Order 8000.90, chapter 6, section 6-3.n.

d. At other times when notified by AOV.

4. DISPOSITION. This guidance does not constitute a change to any requirements contained in FAA orders, manuals, etc. However, appropriate standard operating procedures should be changed to reflect the processes defined in this circular.

5. BACKGROUND.

a. AOV analysis indicates that the likelihood of a controller being involved in multiple errors during a 30-month period is affected by the nature of actions taken after each OE. In particular, lower error rates are typically associated with facilities that appeared to have more detailed examinations of human factors and other operational causal factors (e.g., obtaining better data about the circumstances surrounding OEs, improving methods for identifying individual, supervisory/managerial, and organizational causal factors; and implementing processes for measuring the effectiveness of actions taken).

b. AOV also studied different OE analysis methods and found that existing techniques are primarily and often exclusively focused on the actions of individual controllers. Complex interrelationships between system elements and controllers are difficult to identify, thus resulting in system vulnerabilities not being addressed. Recent changes to the OE, investigation, and severity policies were developed to address this issue. This SOC provides guidance on how ATO facilities and Service Units may capitalize on the new OE classification process, required analysis, and follow-up actions to prepare requests for AOV RTD approvals. Adherence to this guidance will facilitate RTD approvals as well as the development of effective mitigation strategies that reduce the likelihood of error recurrences[2].

c. Data concerning loss of certification authority by ATSSs was not available in a sufficient sample size to withdraw specific conclusions. However, the philosophy of a safety management system supports the need for analysis of causal factors, corrective actions, and follow-up activities to ensure the validity of intervention strategies. In that light, this SOC outlines a similar process for an ATSS approval request.

6. RTD GUIDELINES OVERVIEW.

a. AOV RTD approval request process is outlined in Figure 1 below. This SOC provides guidance on how to prepare RTD approval requests when required by AOV. Such requests must contain objective evidence[3] that ATO did the following:

(1) Identified and analyzed the error(s)[4] causal and contributory factors;

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[2] Approximately 20% of all controller losses of separation in the ATC system are the result of controllers who have had more than one operational error and/or operational deviation.

[3] Objective Evidence. Verifiable information or records pertaining to the quality of an item or service or to the existence of a quality system element that is based on observation, measurement or test.

[4] Only those errors meeting the criteria of FAA Order 8000.90, Chapter 6-3n.

(2) Correlated the identified factors into corrective action plans; and

(3) Developed a mechanism to monitor and measure the effectiveness of the corrective action plans.

b. AOV is prepared to respond to ATO RTD approval requests on a 24-hour basis. Adherence to the guidance in this SOC will enable AOV to respond to such requests within hours. If a request requires additional documentation or consultation, AOV will provide a written request to the ATO within 24 hours. AOV responses to RTD approval requests will be provided to the ATO via official memoranda.

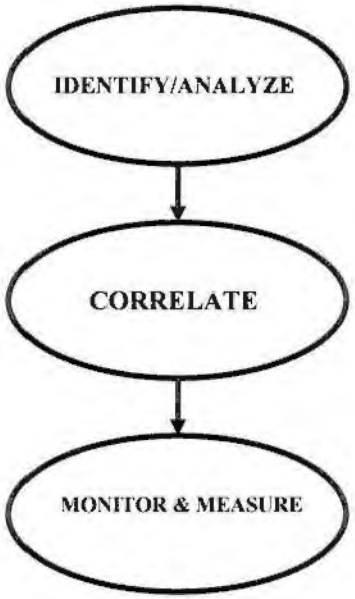

Figure 1: Flow Chart of Basic RTD Safety Order Requirements

c. The RTD request and associated documentation (including the RTD Plan) must follow the guidelines in appendix 2 and 3. Sample checklists are included in appendix 4 and 5.

7. REQUIRED SUPERVISORY ACTIONS AND DOCUMENTATION FOR ATCS REQUESTS.

(1) Summarize current (triggering) event for RTD request.

(2) Include event timeline in chronological sequence.

(3) If this event was similar to previous events by the individual(s) involved, describe whether previous corrective actions were or should have been effective in preventing this event.

(4) Summarize previous operational error(s) (regardless of severity) and any decertification(s) within the last 30 months.

(5) Describe actions taken to address the causal and contributory factors associated with those previous events.

(6) Identify the causal and contributory factors from the current OE.

(7) Describe detailed actions ATO will take to address the causal and contributory factors identified in the current OE. Causal and contributory factors should correlate to an intervention strategy (i.e., action plan).

(8) Identify what actions ATO will take to monitor, measure, and track the effectiveness of the action plan(s).

(9) Identify system level causal and contributory factors (other than controller actions), describe what they were, and indicate whether an action plan has been developed and entered into the Facility Safety Assessment System (FSAS).

REQUIRED ATTACHMENTS FOR ATCS RTD REQUESTS:

(1) Preliminary and/or Final OE report.

(2) Name of file and site location containing the event replay.

(3) Proposed employee RTD plan.

(4) Objective evidence supporting RTD Approval Request (if requested by AOV).

8. REQUIRED SUPERVISORY ACTIONS AND DOCUMENTATION FOR ATSS REQUESTS.

(1) Provide descriptive summary of current (triggering) event.

(2) Include event timeline in chronological sequence.

(3) If this event was similar to previous events by the individual(s) involved, describe whether previous corrective actions were or should have been effective in preventing this event. **Format According to 6030.41G (Notification Plan For Unscheduled Facility and Service Interruptions and Other Significant Events).**

(4) Summarize previous decertification(s) within the last 30 months.

(5) Describe actions taken to address the causal and contributory factors associated with those previous events.

(6) Identify the causal and contributory factors from the current event.

(7) Describe detailed actions the supervisor will take to address the causal and contributory factors identified in the current event. Causal and contributory factors should correlate to an intervention strategy (i.e. action plan).

(8) Identify what actions the supervisor will take to monitor and measure the effectiveness of the action plan(s) in accordance with FAA Order 3400.3H, paragraph 37b.

(9) Identify system level causal and contributory factors (other than ATSS actions), describe what they were, and indicate whether an action plan has been developed.

REQUIRED ATTACHMENTS FOR ATSS APPROVAL REQUESTS:

(1) Preliminary and/or Final Event Report.

(2) Proposed employee Approval Request action plan.

(3) Objective Evidence (if requested by AOV).

9. SUBMISSION PROCESS.

a. Required Actions for ATCS RTD approval requests involving OE/OD/Decertification[5]:

(1) Prepare RTD approval request for submission to AOV in the format outlined in appendix 2 (Appendix 2-1 provides guidance and an example. Additionally, appendix 4 contains a checklist to facilitate the process of event analysis).

(2) Submit signed RTD approval request via electronic or written means to AOV. (Email: 9-awa-avs-aov-credentials/awa/faa; Fax: 202-267-9133).

(3) Notify AOV that an RTD approval request has been submitted, in the following manner:

(a) During normal duty hours (Monday-Friday 0730-1600 EST), contact AOV duty officer through AOV listed phone number.

(b) After normal duty hours, contact AOV duty officer through Washington Operations Command Center (WOCC).

b. Required Actions for ATSS action plan Approval Requests involving egregious errors or loss of certification authority[6].

[5] As required by FAA Order 8000.90, Para 6-3n

(1) Conduct Performance Analysis.

(2) Review of ATO Certification Responsibility.

(3) Identify system level causes and apply Safety Management System (SMS) to mitigate the risk of future occurrences.

(4) Formal examination of ability to perform designated procedures, adjustments, and/or informal review by observation of OJT performance.

(5) OJT as required by the certification program.

(6) Performance examinations.

(7) Prepare ATSS Approval Requests for submission to AOV in accordance with appendix 3.

(8) Submit ATSS Approval Request to AOV (mail: 9-awa-avs-aov-credentials/awa/faa; Fax: 202-267-9133)

(9) Notify AOV that an ATSS Approval Request has been submitted, in the following manner:

(a) During normal duty hours (Monday-Friday 0730-1600 EST), contact AOV duty officer through AOV listed phone number.

(b) After normal duty hours, contact AOV duty officer through Washington Operations Command Center (WOCC).

Anthony Ferrante
Director, Air Traffic Safety Oversight Service

[6] As required by FAA Order 8000.90, Para 6-3n

APPENDIX TABLE OF CONTENTS

APPENDIX 1: DEFINITIONS

1. ATO Safety Personnel. 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. Aviation flight inspectors are not included in this definition.

2. Causal Factors. Primary and/or contributing causes of human and/or operational errors identified during operational error investigation or analysis.

3. Causal and Contributory Factors Analysis. Technique that aids users in identifying and classifying causal factors in ATC system errors. The structure and method of analysis permit analysts to look at operational error data for complex relationships between factors. Causal factors analysis, sometimes referred to as a root-causes analysis (RCA), is a process that uncovers underlying factors and latent vulnerabilities in controller operational errors.

4, Controllers with Multiple Errors (CME). A certified professional controller (CPC) or developmental controller that has had two or more operational errors or deviations within the previous 30 months.

5. Critical Point. A "critical point" is defined as "an action or inaction by the ATCS who was working traffic at the time of the OE. That is, at what points could the controller have done something differently to change the outcome?"

6. Documentation. Information or meaningful data and its supporting medium (e.g., paper, electronic, etc.). In this context, it is distinct from records because documentation is the written description of policies, processes, procedures, objectives, requirements, authorities, responsibilities, or work instructions.

7. Facility Safety Assessment System (FSAS). A facility evaluation process developed by ATO Safety Evaluations that includes an independent audit process. The process consists of annual Internal Facility Evaluations and periodic Audits conducted by Safety Evaluations (ATO-S).

8. Knowledge-Based Training. A training approach that is designed to provide the employee with information to be memorized with existing knowledge for application.

9. Objective Evidence. Verifiable information or records pertaining to the quality of an item or service or to the existence of a quality system element that is based on observation, measurement or test.

10. Return to Duty (RTD) Requirements. A set of requirements that must be met before a controller resumes operational duties in a safety critical position.

11. Safety Management System (SMS). A systematic approach to managing safety risks. The SMS includes organizational structures, systems to ensure accountability, policies, and procedures. SMS recognizes that safety risks may be related to the organizational environment,

workplace conditions, and latent conditions, in addition to active failures on the part of individual controllers. Management of risk in a SMS involves having processes in place to identify and track hazards to ensure that hazards are appropriately controlled.

12. Skills-Based Performance Training - An experiential training approach that was designed to put the controller in situations requiring knowledge application to solve problems related to successful task accomplishment. For example, some of the functions addressed by training programs such as National Air Traffic Professionalism (NATPRO) include attention processes, concentration, multitasking, memory improvement, listening skills, and readback/hearback processes.

13. Systems Approach. The systems approach focuses on systems taken as a whole, not on the parts taken separately. It assumes that some properties of systems can only be treated adequately in their entirety, taking into account all facets and relating the social to the technical aspects. Accident models based on a systems approach takes a broader view of what went wrong with the system's operation or organization to allow the accident or incident to take place. Using a systems approach in accident causation allows examination of more complex relationships between events.

APPENDIX 2: ATCS RTD APPROVAL REQUEST AND GUIDELINES

Federal Aviation Administration

Memorandum

Date: [Type date here]

To: Manager, Operational Safety Branch, AOV-120

From: [Type name of Air Traffic Facility Manager here]

Prepared by: [Type who prepared memo here]

Subject: Return-To-Duty (RTD) Approval Request for Credential Holder Number #########., concerning event *##*##*### (If appropriate/available).

PART A: **(1)** Summarize current (triggering) event for RTD approval request.
(2) Include event timeline in chronological order.
(3) If this event was similar to previous events by the individual(s) involved, describe whether previous corrective actions were effective or should have been effective in preventing this event.

PART B: **(1)** Summarize previous operational error(s) (regardless of severity) and any decertification(s) within the last 30 months.
(2) Describe actions taken to address the causal and contributory factors associated with those previous events.

PART C: **(1)** Identify the causal and contributory factors from the current OE.
(2) Describe detailed actions ATO will take to address the causal and contributory factors identified in the current OE. Causal and contributory factors should correlate to an intervention strategy (i.e. action plan).
(3) Identify what actions ATO will take to monitor, measure, and track the effectiveness of the action plan(s).
(4) Identify system level causal and contributory factors (other than controller actions), describe what they were, and indicate whether an action plan has been developed and entered into the Facility Safety Assessment System (FSAS).

PART D: **REQUIRED ATTACHMENTS:**
(1) Preliminary and/or Final OE report.
(2) Name of file and site location containing the event replay.
(3) Proposed employee RTD plan.
(4) Objective evidence supporting RTD Approval Request (if requested by AOV).

APPENDIX 2-1: SAMPLE COMPLETED ATCS RTD APPROVAL REQUEST

Federal Aviation Administration

Memorandum

Date: [Type date here]

To: Manager, Operational Safety Branch, AOV-120

From: [Front Line Manager/ATO Manager here]

Prepared by: [Type who prepared memo here]

Subject: Return-To-Duty (RTD) approval request for credential holder Number 060600010 concerning event C00-R-00-E-019.

PART A: (1) Summarize triggering event for RTD request

Aircraft 1 was a MDW departure routed over BAE (A fix north of ORD), and departed MDW on an assigned heading of 250 degrees, climbing to 3000.

At 18:06:05Z, The sector X controller pointed out Aircraft 1 to the south departure controller, since Aircraft 1 intended route would take him through the south departure area. South departure advised sector X that he would stay at 5000 with Aircraft 2, an ORD southbound departure, as he was unable to climb Aircraft 2 higher due to other traffic. South departure tells sector X it is OK to climb Aircraft 1 due to these circumstances. Note: The CPC Stated that Aircraft 1 did not climb as well as expected.

(2) Include event timeline in chronological sequence.

18:06:05.	Sector X controller pointed out Aircraft 1 to south departure controller, advises climb approved reference N345D at 5000.
18:06:18.	Sector X turns Aircraft 1 heading 290 and climb to 6000. At this point the aircraft are on intersecting flight paths and 13 miles apart.
18:07:00.	Sector X climbs Aircraft 1 to 13000. Aircraft 1 and 2 are 9.41 miles apart. Aircraft 1 leaving 3500.
18:07:37.	Sector X receives request from another aircraft. Aircraft are 5.25 miles apart, Aircraft 1 is at 4500.
18:07:42.	Sector X realizes potential conflict exists, and asks Aircraft 1 to "hurry out of 7000 and turn left heading 250". Aircraft are 3.25 nm apart, Aircraft 1 at 4700.
18:08.00.	Separation lost: 2.7 nm, 00 vertical.
18:08:05.	Sector X calls traffic Aircraft 1, gets visual separation. Aircraft 1 and 2 are 2.29 nm apart. Aircraft 1 at 5200.

(3) If this event was similar to previous events by the individual(s) involved, describe whether previous corrective actions were effective or should have been effective in preventing this event.

The current and previous errors had similarities. The previous corrective actions should have been effective in preventing this event. However, at the time, facility XYZ did not have a method to determine the effectiveness of the intervention strategy.

PART B: **(1) Summarize previous operational error(s) (regardless of severity) and any decertification(s) within the last 30 months.**

Previous OE (C00-R-00-E-009): Aircraft 1 was sequenced to follow Aircraft 2 to an ILS 27L. Both aircraft were assigned 170 knots, however Aircraft 1 (lead aircraft) ground speed indicated 10 knots slower. From an initial spacing of 3.34 nm when the aircraft were cleared for the approach—this deteriorated to 2.7 nm prior to both aircraft being inside the parameters when reduced separation (2.5 nm) becomes legal. The CPC was unaware of the incident at the time of the occurrence.

(2) Describe actions taken to address the causal and contributory factors associated with those <u>previous</u> events.

The Controller A assigned the following:

- CBI's: Sitiuational Awareness
- Preventing/Reducing OE's
- ATC Memory Guide
- NATPRO: Series 1
- Videos: Back to Basics and ATC Scanning
- Review: Order 7110.65, chapter 5
- OJT – 5 hr with supervisor
- Certification Skills Check

PART C: **(1) Identify the causal and contributory factors from the <u>current</u> OE.**

- Insufficient Planning
- Radio/Telephone Communications and Instructions
- Wrong Action on Right Object
- Omission
- Not Detected, Not Corrected
- Misjudged Aircraft Projection
- Incorrect Assumption
- No Detection of Visual Information
- Monitoring Failure
- Complex Traffic Sequence
- Training and Experience
- Traffic management Initiatives

(2) Describe detailed actions ATO will take to address the causal and contributory factors identified in the current OE. Causal and contributory factors should correlate to an intervention strategy (i.e. action plan).

ID	Identified Causal and Contributory Factors	Intervention Strategy (Action Plan)	Method To Determine Effectiveness	Output to
Individual (controller A)	▪ Insufficient Planning ▪ Radio/Telephone Communications and Instructions ▪ Wrong Action on Right Object	Completion of CBI #57054 (Reducing Operational Errors)	A score of 80% or above)	Provided to the employee's Front Line Manager (FLM)
Individual (controller A)	▪ Complex Traffic Sequence	RTD Skills Check / follow-up Skills Check within 30 days.	Skills Checks indicated that identified causal elements were "Satisfactory."	Documented on form 3120-25.
Individual (controller A)	▪ Training and Experience	1 Hour of OJT on the Arrival Position	Skill Check prior to RTD, then at 30 days	RTD Plan
Supervisory/Management	▪ Complex Traffic Sequence ▪ Training and Experience	All supervisory personnel were briefed face-to-face on the requirement to actively monitor spacing on final, and make on the spot corrections when needed.	These expectations were included on their TTDs.	FSAS
Organizational	▪ Traffic Management Initiatives	"actions to be taken" identified in the previous OE were entered into FSAS (Items E-081 and E-130).	The results of FSAS items E-081 and E-130 indicate facility 90% compliant as of today's date.	Operations Manager

(3) Identify what actions ATO will take to monitor, measure, and track the effectiveness of the action plan(s).

The ATO will take the following actions to monitor, measure, and track the effectiveness of the action plan for OE C00-R-00-E-019: Pre and Post Testing, Random Tape Reviews, Random Skill Checks, TTDs, QARs, FSAS, all with significant focus on the identified causal factors.

Factor Type	Identified Causal Factor	Action Plan	Method To Determine Effectiveness	Output to
Individual (controller A)	Planning and Decision Making Misjudged Aircraft Projection	OJT	The ATO will take the following actions to monitor, measure, and track the effectiveness of the selected actions to be taken for OE C00-R-00-E-019: Pre and Post Testing, Random Tape Reviews, Random Skill Checks, TTDs, QARs, FSAS, all with significant focus on the identified causal factors .	RTDP
Individual (controller A)	Planning and Decision Making Incorrect Assumption	OJT		RTDP
Individual (controller A)	Perception and Vigilance No Detection of Visual Information	OJT		RTDP
Individual (controller A)	Perception and Vigilance Monitoring Failure	OJT		RTDP

(4) Identify system level causal and contributory factors (other than controller actions), describe what they were, and indicate whether an action plan has been developed and entered into the Facility Safety Assessment System (FSAS).

Supervisory/Management				FSAS
Organizational				FSAS

PART D: REQUIRED ATTACHMENTS:

(1) Preliminary and/or Final OE report.

FAA Form 7210-3, 7210-2

(2) Name of file and site location containing the event replay.

The name of file site location containing the event replay (alternatively, a copy of the electronic files may be emailed directly to 9-awa-avs-aov-credentials/awa/faa). Acceptable formats event replays are: SATORI XP (Must include data file [.Satori] or associated ACES Input Data, SAR file, and voice recording), RAPTOR (Must include map [.ini], data files [.dat], and voice files in digital format with time track), etc.

(3) Proposed employee RTD plan

RTD Plan developed in accordance with FAAO 7210.56 , 3120.4 and the guidance in this SOC.

(4) Objective evidence supporting RTD Approval Request (if requested by AOV)

Objective evidence may include the following: Process utilized in the determination of the causal and contributory factors, Involved employee(s) Proficiency Training, Technical Appraisal(s), Quality Assurance Reviews (QAR), Supervisory Notes, and any other performance documentation from the previous 30 months.

APPENDIX 3: ATSS APPROVAL REQUEST AND GUIDELINES

Federal Aviation Administration

Memorandum

Date: [Type date here]

To: Manager, Systems Reliability Branch, AOV-130

From: [Type name of Facility Manager here]

Prepared by: [Type who prepared memo here]

Subject: Air Transportation System Specialist (ATSS) Approval Request for Credential Holder Number #########., concerning event *##*##*###.

PART A: **(1)** Provide descriptive summary of current (triggering) event.
(2) Include event timeline in chronological sequence.
(3) If this event was similar to previous events by the individual(s) involved, describe whether previous corrective actions were effective or should have been effective in preventing this event. **Format According to 6030.41G (Notification Plan For Unscheduled Facility and Service Interruptions and Other Significant Events).**

PART B: **(1)** Summarize previous decertification(s) within the last 30 months.
(2) Describe actions taken to address the causal and contributory factors associated with those previous events.

PART C: **(1)** Identify the causal and contributory factors from the current event.
(2) Describe detailed actions the supervisor will take to address the causal and contributory factors identified in the current event. Causal and contributory factors should correlate to an intervention strategy (i.e. action plan).
(3) Identify what actions the supervisor will take to monitor and measure the effectiveness of the action plan(s) in accordance with FAA Order 3400.3H, paragraph 37b.

PART D: **(1)** Identify system level causal and contributory factors (other than ATSS actions), describe what they were, and indicate whether an action plan has been developed.

PART E: **REQUIRED ATTACHMENTS:**
(1) Preliminary and/or Final Event Report
(2) Proposed employee Approval Request action plan
(3) Objective Evidence (if requested by AOV)

APPENDIX 4. CHECKLIST FOR PREPARATION OF RTD REQUESTS

Checklist Question:	Completed?	Instructions:
1. Did you analyze OE so that causal and contributory factors could be determined?		Analyze CME OE to a sufficient level of detail and fidelity so that any individual, supervisory, and organizational factors can be determined.
a. If yes, how did you do this (what method was used)?		
b.		
2. Did you list the identified causal and contributory factors?		Identify individual, supervisory, and/or organizational factors and correlate organizational factors to FSAS items.
a. Individual Factors		
b. Supervisory/Managerial Factors		
c. Organizational Factors		
3. Did you identify which components of the submitted RTD correlate to the identified factors?		Indicate how Action Plans in the RTD Plan correlate to causal factors identified from the event analysis.
a. To Individual Factors		
b. To Supervisory/Managerial Factors		
c. To Organizational Factors		
4. Did you ensure that the submitted Action Plan(s) is/are relevant to the identified causal factors?		Indicate how the submitted intervention or training has significant focus on the factors identified.
a. To Individual Factors		
b. To Supervisory/Managerial Factors		
c. To Organizational Factors		
7. Did you indicate how the effectiveness of the actions to be taken will be determined?		
a. For Individual Factors		
b. For Supervisory/Managerial Factors		
c. For Organizational Factors		
8. Did you indicate method to be used to determine the effectiveness of the [overall] RTD plan?		
9. Did you indicate the follow-up processes or mechanisms?		
a. For Individual Factors		
b. For Supervisory/Managerial Factors		
c. For Organizational Factors		
10. If OJT and/or Performance Skills Checks are to be used as a follow-up mechanism, have you indicated how specifically [skill checks] correlate to the causal and contributory factor(s) identified in the incident?		
11. Have you determined how the effectiveness of the RTD will be monitored/tracked/reported by ATO?		

APPENDIX 4-1. PROCESS/AUDIT CHECKLIST FOR RTD APPROVAL REQUESTS

Checklist Question:	Compliance Verified? (Yes or No)	Comments/Objective Evidence Provided:
Was a detailed description of the employee's involvement in previous OE/ODs during the past 30 months included with the submission, with all performance-related documentation? That is, all performance data must be included in the RTD plan concerning any documented performance activities (both positive and negative) including any previous operational errors, skills checks, Technical Training Discussions (TTDs), Quality Assurance Reviews (QARs), Operational Deviations, Technical Violations, Performance Reviews, Tape-Talks, and any other supporting documentation[7].		Questions: o Does this data correlate to the OE causal factors identified through causal factors analysis? o Has causal factors analysis been performed during any of these data generating activities? o Any mitigations or strategies applied? o Method(s) utilized to determine if these mitigations were effective?
2. Was the operational error analyzed into causal and contributory factors?		Analyze CME OE to a sufficient level of detail and fidelity so that any individual, supervisory, and organizational factors could be determined?
d. If yes, what method was used?		
e. If yes, were multiple [human] errors identified from a single event or session?		
3. What factors were identified?		Identified individual, supervisory, and/or organizational factors.
a. Individual Factors		
b. Supervisory/Managerial Factors		
f. Organizational Factors		
5. Which components of the submitted RTD plan correlated to the identified causal and contributory factors?		Showed how actions to be taken on the RTD Plan correlated to causal and contributory factors identified from the event analysis.
a. To Individual Factors		
b. To Supervisory/Managerial Factors		
c. To Organizational Factors		
6. Was the intervention or training relevant to the identified causal and contributory factors?		Showed the intervention or training focused on the identified causal and contributory factors.
a. To Individual Factors		
b. To Supervisory/Managerial Factors		
c. To Organizational Factors		
7. Was the RTD individualized to the specific needs of the controller or was it "boilerplate"?		Do all controllers receive the same interventions (i.e., the same CBIs) regardless of the identified causal and contributory factors?
8. How was the effectiveness of the actions to be taken determined?		
a. For Individual Factors		
b. For Supervisory/Managerial Factors		
c. For Organizational Factors		

[7] If requested by AOV

Checklist Question:	Compliance Verified? (Yes or No)	Comments/Objective Evidence Provided:
9. What method was used to determine the effectiveness of the overall RTD plan?		
10. What was the follow-up process or mechanism?		
a. For Individual Factors		
b. For Supervisory/Managerial Factors		
c. For Organizational Factors		
11. Did the controller receive knowledge-based and/or skill-based training?		
12. If OJT and/or Performance Skills Checks were used as a follow-up mechanism, how specifically was proficiency correlated to the identified causal factors of the incident?		Note: Provide objective evidence.
13. Was the effectiveness of the RTD tracked/reported by ATO?		
14. What were the facilities actions regarding the RTD and how was the effectiveness determined?		
15. How many CMEs under the same supervisor/FLM on duty or supervisor/FLM of record (FLM Front Line manager)?		
Checklist Sampling Methods (Where to look/find, discuss or interview)		
Additional Comments and Observations: (Use additional pages as needed)		

APPENDIX 5: GUIDANCE FOR EVENT ANALYSIS

The following is a narrative description of procedures and tools for retrospective analysis to identify causal, contributory, and human factors in ATC system errors. The analysis is based on methods and techniques developed by FAA and EUROCONTROL.

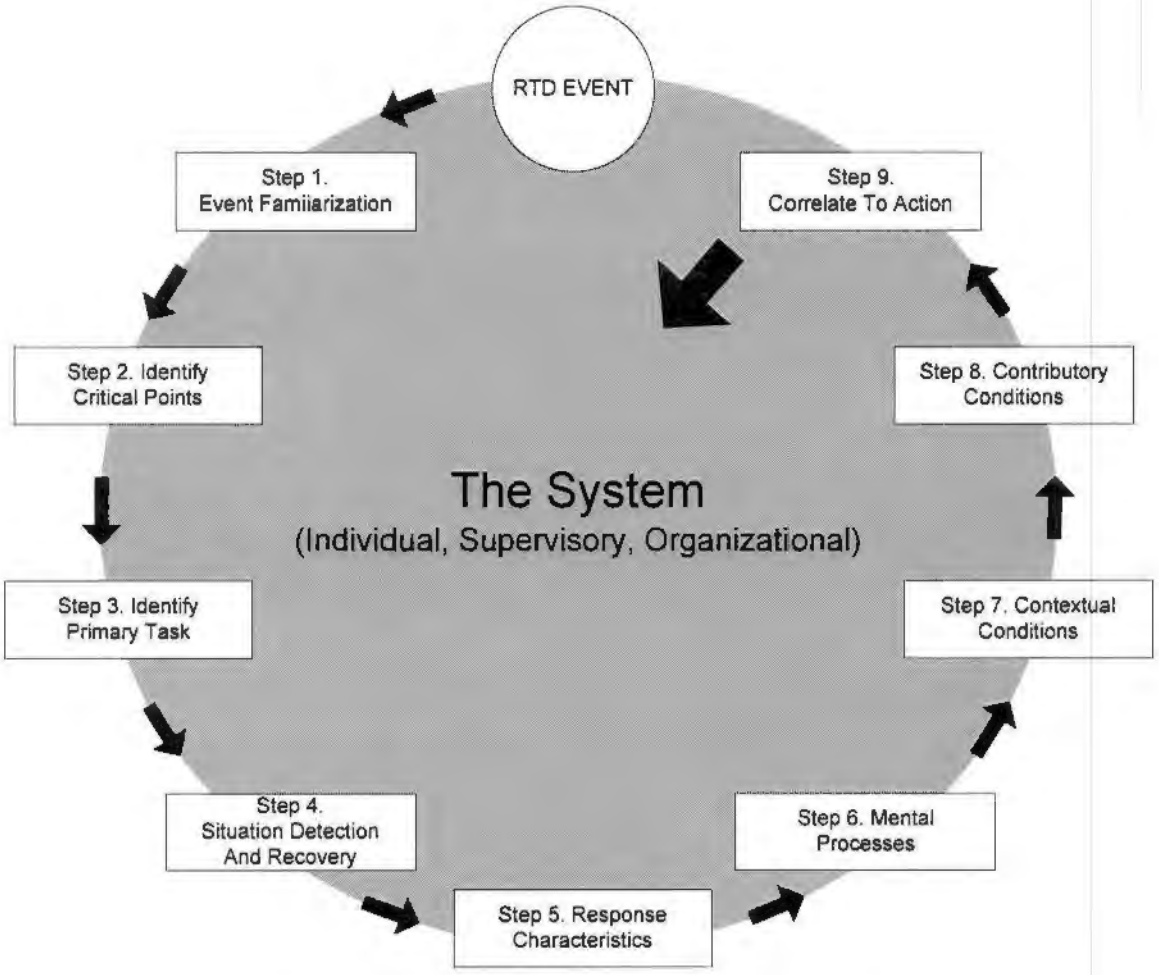

Figure 3: Flowchart of OE Causal Factor Analysis

STEP 1. Obtain the following information to facilitate the analysis of events:

- Comprehensive incident report for the case to be analyzed
- Clear timeline of the sequence of events.
- Additional factual information[8], such as:
  - Map printouts
  - Weather conditions at the time of the OE
  - Traffic conditions
  - Traffic Management Initiatives[9]
  - Voice Tapes
  - SATORI, RAPTOR, Etc.

STEP 2. **Identify Critical Points (CP).** A *Critical Point* is defined as an action or inaction by an ATO individual at the time of an event; i.e., points at which an ATCS could have done something to change the outcome. Actions taken by individual who are not ATO employees, (e.g., pilots, visitors, etc.) are captured in other parts of the decomposition analysis.

STEP 3. **Assign Critical Points to a Task**. Each CP is then assigned to a task category that describes what the ATO employee was doing at the time of the CP. Staff is often engaged in more than one task; select the primary task being performed and its subcategory if applicable. Task categories and subcategories are shown in Appendix 10-1.

STEP 4. **Establish Critical Point Situation Detection and Recovery**. If the CP was identified as a problem, then the analysis should document:

- Who detected the problem?
- If detected, by what means?
- If corrected, who corrected the problem?
- If corrected, by what means?

Situation Detection and Recovery for each Critical Point from Step 2.

STEP 5. **Define Critical Point Response Act Characteristics**. In this step, each CP is associated with a response that falls into one of the following categories.

- ATC1 Timing of Action
- ATC1 Selection of Actions
- Information Quality

[8] In addition to the requirements specified in Order 7210.56.

[9] Obtain applicable Traffic Management Initiatives and Strategic Plan of Operations from facility TMU, the ATCSCC, or http://www.atcscc.faa.gov/index.html.

STEP 6. **Categorize Critical Point Mental Processes.** In this framework, each CP is categorized by a *mental process*. Initially, CPs are classified in one of four broad groups: [10]

Mental Process Classifications

- Perception and Vigilance
- Memory
- Planning and Decision-making
- Response Execution

STEP 7. **Associate Critical Point with Contextual Conditions.** In this step, each CP is associated with contextual conditions—conditions that influenced the critical point. The analysis should identify all contextual conditions that apply at the most detailed level possible. Broad contextual condition categories are listed below. While contextual conditions do not, for the most part, affect the correlation **(step 9)**, analysis of these factors is recommended. Analysis of systemic factors that affect controller performance could help to identify additional actions to be taken, outside the scope of this Safety Oversight Circular, that could reduce errors.

- Traffic
- Airspace/Surface
- Pilot-Controller Communications
- Pilot Actions
- Weather
- Procedures
- Documents and Materials
- Training and Experience
- Environment

STEP 8. **Identify Contributory Conditions.** At the event level, the analysis should identify additional contributory factors may have influenced the employee's actions. Generally, these fall into five categories:

- Individual/Personal
- Interpersonal
- Team (controller-to-controller teams)
- Supervisory
- Organizational

STEP 9: **Correlate to Action Plan.**

[10] If the response is "none of the above" then reexamine the critical point. It may be too inclusive and may be a combination of two CPs. In this case, split the CPs if appropriate. Otherwise, for this CP, this step is skipped.

APPENDIX 6. SAMPLE EVENT ANALYSIS

STEP 1. Obtain information to facilitate the analysis of events:

Aircraft 1 was a MDW departure routed over BAE (A fix north of ORD), and departed MDW on an assigned heading of 250 degrees, climbing to 3000.

At 18:06:05Z, the sector X controller pointed out Aircraft 1 to the south departure controller, since Aircraft 1 intended route would take him through the south departure area. South departure advised sector X that he will stay at 5000 with N345D, an ORD southbound departure, as he is unable to climb N345D higher due to other traffic. South departure tells sector X it is OK to climb Aircraft 1 due to these circumstances.

18:06:05. Sector X controller pointed out Aircraft 1 to south departure controller, advises climb approved reference N345D at 5000.

18:06:18. Sector X turns Aircraft 1 heading 290 and climb to 6000. At this point the aircraft are on intersecting flight paths and 13 miles apart.

18:07:00. Sector X climbs Aircraft 1 to 13000. Aircraft 1 and 2 are 9.41 miles apart. Aircraft 1 leaving 3500.

18:07:37. Sector X receives request from another aircraft. Aircraft are 5.25 miles apart, Aircraft 1 is at 4500.

18:07:42. Sector X realizes potential conflict exists, and asks Aircraft 1 to "hurry out of 7000 and turn left heading 250". Aircraft are 3.25 nm apart, Aircraft 1 at 4700.

18:08.00. Separation lost: 2.7 nm, 00 vertical.

18:08:05. Sector X calls traffic Aircraft 1, gets visual separation. Aircraft 1 and 2 are 2.29 nm apart. Aircraft 1 at 5200.

NOTE: The CPC Stated that Aircraft 1 did not climb as well as expected.

STEP 2. Identify Critical Points (CP). (Identified using timeline from STEP 1 above)

(1) **CP 1** - 18:06:18. Sector X turns Aircraft 1 heading 290 and climb to 6000.
(2) **CP 2** - 18:07:00. Sector X climbs Aircraft 1 to 13000.
(3) **CP 3** - 18:07:42. Sector X realizes potential conflict, asks Aircraft 1 to hurry out of 7000.

STEP 3. Assign Critical Points to a Task.

Task Categories identified (identified by Event Analysis Step 3 and Appendix 9-1):

- CP 1 – Planning
- CP 2 – R/T (Radio Telephone) Communication and Instructions

TASK categories from example critical points.

(1) **CP 1** - Planning.

(2) **CP 2** - Radar monitoring.
(3) **CP 3** - Radio / Telephone communications.

(1) **CP 1** - Not detected, not corrected.
(2) **CP 2** - Not detected, not corrected.
(3) **CP 3** - Detected by ATC1. Corrected by other means (visual separation).

STEP 4. Establish Critical Point Situation Detection and Recovery.

- **Situation Detection and Recovery** (identified by Event Analysis Step 4 and Appendix 12, Figure 2):
  - Detection:
  - Recovery:

STEP 5. Define Critical Point Response Act Characteristics.

- **Response Act Characteristics** (identified by Event Analysis Step 5 and Appendix 12, Figure 3):
  - CP 1 – Wrong Action on Right Object
  - CP 2 – Omission

Response characteristics for example critical points.

(1) **CP 1** - Action in wrong direction.
(2) **CP 2** - Wrong action on right aircraft.
(3) **CP 3** - Action too late.

STEP 6. Categorize Critical Point Mental Processes.

- **Mental Processes** (identified by Event Analysis Step 6 and Appendix 12, Figure 4):
  - CP 1 – Planning and Decision Making
    - Level 1 – Misjudged Aircraft Projection
    - Level 2 – Incorrect Assumption
  - CP 2 – Perception and Vigilance
    - Level 1 – No Detection of Visual Information
    - Level 2 – Monitoring Failure

Mental process classifications for example critical points:
(1) **CP 1** - Planning and decision-making.
(2) **CP 2** - Planning and decision-making.
(3) **CP 3** - Planning and decision-making.

Tbe mental process classifications are further analyzed into two additional levels of detail: Level 1 and Level 2.

Level 1 Mental process classifications for example critical points:

(1) **CP 1** - Planning and decision-making; Incorrect Decision/Planning.
(2) **CP 2** - Planning and decision-making; Misjudged Aircraft Projection.
(3) **CP 3** - Planning and decision-making; late decision/plan.

Level 2 Mental process classifications for example critical points:

(1) **CP 1** - Planning and decision-making; lack of knowledge.
(2) **CP 2** - Planning and decision-making; fixation.
(3) **CP 3** - Planning and decision-making; lack of knowledge.

STEP 7. Associate Critical Point with Contextual Conditions.

Critical Point Contextual Conditions.

(1) **CP 1** - Traffic, training and experience.
(2) **CP 2** - Traffic, training and experience.
(3) **CP 3** - Traffic, training and experience.

STEP 8. Identify Contributory Conditions.

- **Contextual and Contributing Conditions**
  - CP 1 and 2
    - Complex Traffic Mix
    - Training and Experience
    - Traffic management Initiatives (Airport Acceptance Rate)

STEP 9. Correlate to Action Plan.

Air Traffic Safety Oversight Service

SOC

Safety Oversight Circular

U.S. Department of Transportation
Federal Aviation Administration

SOC: 07-05A

DATE: Feb 14, 2013

Subject: Guidance on Safety Risk Modeling and Simulation of Hazards and Mitigations

1. Purpose: To clarify expectations concerning Modeling and Simulation (M&S) studies submitted with safety risk management documents (SRMD).

2. Audience: All elements of ATO involved in the Safety Risk Management (SRM) process.

3. Where Can I Find this SOC:
http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aov/policies_forms/

4. Background:

a. FAA Order 1100.161, Chg. 1 defines AOV responsibilities regarding safety oversight of the ATO. These responsibilities include monitoring compliance with safety standards and the ATO SMS; approving controls for initial or current High Risk Hazards (HRH) changes to the National Airspace System (NAS), and waivers or changes to handbooks, orders, and documents when those pertain to separation minima.

b. ATO requests AOV approval or acceptance of NAS changes through Safety Risk Management Documents (SRMD). These SRMDs may include M&S results as part of the safety case supporting the change. Often, unclear documentation compels AOV to request supporting information and can result in delays in processing the ATO request. The choice of a particular analytical approach will be determined by the unique conditions associated with each particular NAS change. Therefore, proactive early and continuing communication with AOV about planned M&S activities is essential, particularly when an initial HRH mitigation is involved.

5. Guidance: Risk is usually conditional on factors or conditions particular to the location(s) and situation(s) where a change is desired. Modeling and simulation can provide information to decision makers about the risks associated with possible adverse outcomes associated with a proposed change to the NAS.

This requires a commitment of time and resources for each request by both ATO and AOV. Similar to the process described in SOC 07-02, ATO may obtain agreement at specified phases

of the modeling process before submission of a completed SRMD. It is assumed that if ATO seeks AOV agreement with respect to the M&S development, then ATO also will seek agreement with respect to the SRM process as a whole. In the context of an SRMD, the primary objective of the M&S activity is to provide information concerning the risks of adverse outcomes associated with the proposed change, conditional on factors or conditions that apply at locations where the change is being implemented. AOV is prepared to provide agreement at the conclusion of each of the following identified M&S steps. AOV recognizes that the actual M&S process may not be in the order described below, so the sequence of agreements may require consultation between AOV and ATO.

6. Modeling and Simulation Considerations:

a. **Components**: A model is a construct distinct from its simulation. As defined, a model is a symbolic representation of a system; simulation is a manipulation of the model. Considering them separately increases the clarity with which each can be described, used, and reported.

b. **Methodology**: Base risk assessments on structured, generally accepted procedures and techniques for constructing a model and conducting its simulation.

c. **Data**: When possible, rely on quantitative data rather than qualitative data, e.g., for determining severity, likelihood, adverse outcomes, and risks. The benefits gained from using quantitative data include the capability to objectively and statistically compare quantitative results from simulations between simulation scenarios, as well as with the initial level of risk. Additionally, levels of confidence can be obtained for each comparison to assist decision makers.

d. **Results**: Compare the predicted effects of implementing the mitigation with the outcomes obtained from its simulation.

e. **Record Retention:** M&S records should be kept in accordance with SMS guidelines for record retention. For example, a report record for the M&S supporting an SRMD would be kept at one location, would include statements of purpose, copies of related reports, and other supporting documents noting assumptions, inputs, and other relevant data.

f. **Reporting**: Include in a request to AOV necessary and sufficient information about the model, the simulations, the results and their interpretation, and the rationale for the mitigation requested. This would generally be expected to expedite and facilitate AOV evaluation of a request. Any report of results will be expected to include the following items.

1) The description of the model. For example, a written description of the corresponding real world components being modeled, such as facilities, weather conditions, staffing, equipment, etc.

2) The list of model parameters, assumptions, and sources, including variables used and their corresponding data sources and data values, as well as the value sets used for particular scenarios.

3) Results should be provided in a format that gives AOV the capability to review the effects of different analyses given a set of input assumptions. Examples of possible formats include Excel spreadsheets, charts, tables, etc. This includes results from simulated model runs, statistical and sensitivity analyses, and hazard-control analyses.

4) A discussion of any weaknesses in the modeling and simulation. These could include:

a) Assumptions where there are uncertainties, e.g., due to differences of opinions from subject matter experts (SMEs).

b) Data variability/errors due to the conversion from qualitative to quantitative data.

c) Effects of sample size, e.g., effect on results of using a small sample size.

d) Scoping limitations imposed by placing boundaries on the system being studied (imposed by ATO).

e) Constraints on the process (outside control of ATO).

7. Recommended Steps of the M&S Process: The M&S process for the SRM process can be considered to consist of 8 steps (the term *steps* is used to clearly distinguish between these and the phases referred to in AOV SOC 07-02). A checklist is appended and shows the sequence.

a. **Step 1 -- ATO Development of a Safety Definition.** ATO completes a description of the system and its interfaces representing the changes being considered. This should include a preliminary hazard list (PHL) with the expected severity (Se) and likelihood (Li) of each hazard identified. The description and PHL are prerequisites for the next step in the design and development of an M&S process for the proposed change. AOV's feedback regarding the activities conducted during this phase may be solicited before continuing M&S work.

AOV Response: Review the materials and provide feedback regarding the completeness, relevance, and accuracy of the materials provided. Feedback from AOV may be accompanied by an initial agreement to proceed to the next step.

b. **Step 2 -- ATO Determination of Need for M&S**. Determination as to whether M&S should be used is based on severity and likelihood, each determined independently as defined by the ATO SMS Manual. M&S should be undertaken if preliminary evidence indicates that outcomes of the change made by ATO may take the form of (a) reduction in a separation standard, (b) reduction in ATC capability, (c) collision, (d) injuries or fatalities, (e) major, hazardous, or catastrophic severity levels. AOV feedback regarding the activities conducted during this phase may be solicited before continuing M&S work.

AOV Response: Review the materials and provide feedback regarding the completeness, relevance, and accuracy of the materials provided. AOV feedback may be accompanied by an agreement to proceed to the next step or agreement that M&S is not required.

c. **Step 3 -- ATO Identification of Adverse Scenarios to be Modeled Based on the PHL.** ATO identifies a set of adverse scenarios associated with the proposed change. A single change to the NAS may result in many different potential adverse outcomes. If so, the M&S should include these through the use of multiple scenarios. Detailed scenario descriptions define problem statements for the SME or analyst. Scenario descriptions should help determine which aspects of the NAS change (if any) require M&S. AOV feedback regarding the activities conducted during this phase may be solicited before continuing M&S work.

AOV Response: Review the materials and provide feedback regarding the completeness, relevance, and accuracy of the materials provided, including completeness and thoroughness of scenario descriptions. Adverse scenarios should take severity into account. AOV feedback may be accompanied by an agreement to proceed to the next step.

d. **Step 4 – ATO Determination of Appropriate Model(s).** If M&S is required and data are available, risk assessment should be based on objective quantitative statistical data (e.g., historical weather data, historical operational error data) or on observational data (e.g., SME watching radar display or SME reviewing audio/video recording). Where there is a lack of appropriate quantitative data to conduct a statistical assessment of risk, generally accepted methods, such as ranking, sorting, or SME judgment could be used to convert qualitative information into numerical values. However, it must be recognized that using transformed qualitative data severely limits the model design and resulting statistical analysis. At this step, there should be a complete identification, description, and discussion of the related assumptions, scoping, constraints, and other identified limitations. AOV's feedback regarding the activities conducted during this phase may be solicited before continuing M&S work.

AOV Response: Review the materials and provide feedback regarding the completeness, relevance, and accuracy of the materials provided. AOV feedback may be accompanied by an agreement to proceed to the next step

e. **Step 5 – ATO Building of Model**. Once the risk assessment/analyses are conducted, the mathematical model can be built to represent the system/subsystems, subject to the previously agreed to assumptions, scoping, constraints and other limitations. The model represents the real-world system and should be presented using mathematical formulations. The model should be quantitatively described by its inputs, components process and outputs. It is recommended that the qualitative inputs shall be converted to quantitative before the simulation. Changes from previous approved design should be completely documented and justified. AOV feedback regarding the activities conducted during this step may be solicited before continuing M&S work.

AOV Response: Review the materials and provide feedback regarding the completeness, relevance, and accuracy of the materials provided. AOV feedback may be accompanied by an agreement to proceed to the next step.

f. **Step 6 – ATO Run Simulation to Determine Baselines.**

1) Using the model, the outcomes should be evaluated based on mathematical analysis

of an event or outcome. Consequently, the uncertainty of values (i.e., probabilistic or stochastic) are introduced as appropriate to better account for the complex nature of the system being simulated. Simulations should reflect the system of interest and provide outcomes that communicate the probabilistic nature of the system. Results should be accompanied by the statistics reflecting outcomes from the various hazard controls. Statistical evaluation provides indicators for confidence judgments about the results of the simulation. ATO should provide AOV with the outputs obtained from the simulation. Note that simulation results are probabilistic and should be presented as such using results from probabilistic methods rather than deterministic (e.g., a range of values rather than just a point estimate).

2) A baseline should be established by a simulation of the model without using the proposed hazard control. An example methodology is as follows: the first simulation establishes a baseline representing normal operations. In Step 7 (below), a second simulation would represent operations in the presence of the hazard of interest. A third simulation would represent operations in the presence of the hazard of interest and the mitigation in place.

3) Baseline values can then be compared to outcome values from the simulation run with a hazard control included. Using baselines helps decision makers in both ATO and AOV to assess potential effects of proposed controls. ATO should provide the baseline information and results to AOV. AOV feedback regarding the activities conducted during this step may be solicited before continuing M&S work

AOV Response: Review the materials and provide feedback regarding the completeness, relevance, and accuracy of the materials provided. AOV feedback may be accompanied by an agreement to proceed to the next step.

g. **Step 7 – ATO Runs Simulation with Mitigations.** Simulation permits manipulation of operational conditions and situational assumptions to show the effect of mitigation. For example, a range of each variable can be simulated. Inputs can be controlled and systematically manipulated as needed to increase the clarity of comparison with the baseline. Inputs to the simulation should be selected so that the outcome from those inputs can be statistically compared to the baselines to demonstrate the effect of the mitigation. Such comparisons, which are based on a range of predetermined input sets, yield a range of risk estimates and thus can be a means to assess effects of the proposed mitigations on the hazard. Such systematic simulation may reveal and achieve the desired mitigation. The ATO should provide the simulation methodology and results to AOV before continuing M&S work

AOV Response: Review the materials and provide feedback regarding the completeness, relevance, and accuracy of the materials provided. Feedback may be accompanied by an agreement to proceed to the next step.

h. **Step 8 – ATO Complete Statistical Analysis and Sensitivity Analysis of Results.** The results of the M&S should be analyzed to provide appropriate statistical information and the sensitivity of the results to changes in the environment and/or assumptions.

AOV Response: Determine if the statistical analysis and sensitivity analysis are properly

designed, completed, documented, and presented. Based on proper completion of this process, AOV will approve the M&S process as conducted, contingent on the remaining parts of the SRM being conducted without changes to the hazard list, assumptions, limitations, and other related concerns.

8. Definitions: These definitions are consistent with definitions in other AOV and ATO SMS documentation.

a. **Cause:** An event that results in a hazard or failure. Causes can occur by themselves or in combinations.

b**. Data:** Qualitative or quantitative facts or evidence. Qualitative data may be converted to quantitative format using generally accepted methods.

c. **Hazard:** A condition that could foreseeably cause or contribute to an accident

d. **Hazard Control:** The means by which the resulting risk associated with a hazard is mitigated or reduced to an acceptable level.

e. **Hazard Risk:** An estimation of the potential outcome of a condition based on the condition's predicted severity (Se) and likelihood (Li).

f. **High Risk Hazard (HRH):** A hazard that is associated with high risk as defined in the ATO SMS Manual. High risks are unacceptable risks and must be mitigated so that the risk is reduced to a medium or low level."

g. **Likelihood (Li):** The estimated probability or frequency, in quantitative or qualitative terms, of a hazard's effect or outcome

h. **Mitigation:** A means to reduce the risk of a hazard.

i. **Model (Modeling):** A symbolic representation of a system or subsystem, that may or may not be based on quantitative data. A model approximates a real or hypothetical system or subsystem for the purpose of imitating (reflecting) characteristics and/or relationships of interest. A model is usually described by its inputs, components, processes, and outputs. These can be expressed as events, conditions, and controls (cf. Scenario and System). Conceptual models are qualitative and are useful to help to develop more complex models. Interactive models can be manipulated to demonstrate key elements of a system. Analytic models use mathematical expressions to characterize system elements and are most useful to identify patterns and relationships. For information on the use of quantitative and qualitative data refer to the ATO SMS Manual.

j. **Modeling and Simulation (M&S):** A summary term often used to refer to activities related to both a symbolic representation (model) and its manipulation (simulation). Representing these activities quantitatively and using mathematical functions has several benefits. Results can be statistically analyzed, precision of estimations can be calibrated, and

specific levels of confidence in the results can be known.

k. **Outcome:** Result or consequence. With respect to M&S it is the result from simulating a model. Adverse Outcome: An unwanted real world consequence, e.g., collision, loss of air traffic control capability, increase in flight crew workload, etc.

l. **Risk:** The composite of predicted severity (Se) and likelihood (Li) of the potential effect of a hazard.

m. **Scenario:** A set of particular events, conditions, and controls resulting in an outcome. The presence or absence and order of events, conditions, and controls can be important to understanding potential causes, outcomes and hazard risk; e.g., one set order (e.g., A, B, C, D) may produce a different outcome than a different set e.g., (A, C, D) or set order (e.g., B, A, C, D). A scenario describes a particular system state having certain conditions in which the system can exist. Adverse Scenario. A sequenced set of events, conditions, and controls which results in an adverse outcome.

n. **Severity (Se):** Impact associated with an outcome measured in terms of harm to persons, loss of capability, property loss, loss of function, etc. The measure of how bad the results of an event are predicted to be.

o. **Simulation:** Manipulation of a model with an intention to understand or predict behavior(s) of the system or subsystem being modeled. Simulation is usually done by inserting a range of values for each model parameter of interest given differing or specific data inputs. The quality of a simulation depends on the quality of the model and the choice(s) of the values selected to represent each parameter.

p. **System:** An integrated set of constituent elements that are combined in an operational or support environment to accomplish a defined objective. These elements include people, hardware, software, firmware, information, procedures, facilities, services, and other support facets.

q. **System State:** An expression of the various conditions, characterized by quantities or qualities, in which a system can exist.

9. SUMMARY: To help complete the SRM process smoothly and quickly, the AOV evaluation of the SRMD will include consideration of the following items:

a. Rationale as to why the M&S approach used was selected instead of an alternative approach.

b. Structure of the model and the simulated scenarios used as compared to other possibilities such as other simulations or the real world.

c. Known limitations of the modeling and simulation, including assumptions, scoping, and constraints.

d. Types of data used to build the model and to conduct the simulation, i.e., qualitative, quantitative, objective, subjective, etc.

e. Sources for data used, e.g., operations databases, subjective assumptions, statistical and non-statistical sources, expert judgment, etc.

f. Verification and validation of any converted or transformed values used in the model or simulation.

g. Selection of analytical approach based on the unique conditions associated with each requested change or relevant aspects of the change

h. Analysis of the results, possibly including: confidence intervals, p-values, range of validity, and levels of confidence.

i. Sensitivity of results, for example, results from various input sets or alternative assumptions as demonstrated by tests of significance.

Anthony Ferrante
Director, Air Traffic Safety Oversight Service

APPENDIX
Modeling & Simulation Checklist
(Use when ATO submits a document, e.g., SRMD, for AOV review)

Step 1 – ATO Development of Safety Definition	**YES**	**NO**	**REFERENCE**
1a) Is a Preliminary Hazard List (PHL) included?	Continue to Step 1b	Obtain missing PHL from ATO	
1b) Does the Preliminary Hazard List (PHL) include the expected severity of each hazard identified?	Continue to Step 2	Obtain expected severities from ATO	
Step 2 – ATO Determination of Need for M&S			
Is Modeling & Simulation (M&S) indicated?	Continue to Step 3	STOP M&S not needed	AOV SOC 07-02
Step 3 – ATO Identification of Adverse Scenarios to be Modeled Based on the PHL			
3a) Has ATO identified adverse scenarios?	Continue to Step 3b	Obtain missing information from ATO	
3b) For each adverse scenario, is a detailed description provided?	Continue to Step 4a	Obtain missing descriptions from ATO	
Step 4 – ATO Determination of Appropriate Model(s)			
4a) Are data available for the risk assessment?	Continue to Step 4b	Obtain data from ATO	
4b) Are objective quantitative data available?	Continue to Step 4d	Continue to 4c	
4c) Has objective qualitative data been converted to quantitative using SMEs expertise?	Continue to Step 4d	Obtain converted data from ATO	
4d) Is the selected model identified?	Continue to Step 4e	Obtain missing information from ATO	
4e) Is the selected model justified?	Continue to Step 5	Obtain missing information from ATO	

APPENDIX
Modeling & Simulation Checklist
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Step 5 – ATO Building of Model	**YES**	**NO**	**REFERENCE**
5a) Is the model described?	Continue to Step 5b	Obtain missing information from ATO	
5b) Are all the parts of the model described	Continue to Step 5c	Obtain missing information from ATO	
5c) Is the model stochastic (probability based)?	Continue to Step 5e	Continue to 5d	
5d) Is the non-use of a stochastic model justified?	Continue to Step 5e	Obtain missing information from ATO	
5e) Are all assumptions in the model documented?	Continue to Step 5f	Obtain missing information from ATO	
5f) Are all assumptions in the model identified?	Continue to Step 5g	Obtain missing information from ATO	
5g) Are all assumptions in the model justified?	Continue to Step 6	Obtain missing information from ATO	
Step 6 – ATO Run Simulation to Determine Baselines			
6a) Have simulations been run using the model?	Continue to Step 6b	Obtain missing information from ATO	
6b) Were the simulations based on existing (baseline) operations/conditions (without the mitigations)?	Continue to Step 6c	Obtain missing information from ATO	
6c) Are the results of the simulations provided?	Continue to Step 7	Obtain missing information from ATO	

APPENDIX
Modeling & Simulation Checklist
(Use when ATO submits a document, e.g., SRMD, for AOV review)

Step 7 – ATO Runs Simulation with Mitigations	**YES**	**NO**	**REFERENCE**
7a) Were simulations run incorporating the mitigations?	Continue to Step 7b	Obtain missing information from ATO	
7b) Are the results of the simulations provided?	Continue to Step 8	Obtain missing information from ATO	
Step 8 – ATO Complete Statistical Analysis and Sensitivity Analysis of Results.			
8a) Has a statistical analysis of the results of both sets of simulations been completed?	Continue to Step 8b	Obtain missing information from ATO	
8b) Are results for the statistical analysis presented?	Continue to Step 8c	Obtain missing information from ATO	
8c) Was a sensitivity analysis of the results of both sets of simulations conducted?	Continue to Step 8d	Obtain missing information from ATO	
8d) Are results for both sensitivity analyses presented?	Continue to Step 8e	Obtain missing information from ATO	
8e) Does the SMRD discuss the results of the M&S to support the conclusion that the mitigation is effective?	M&S is deemed adequate	Obtain missing information from ATO	

Air Traffic Safety Oversight Service (AOV)

SOC

Safety Oversight Circular

U.S Department of Transportation **Federal Aviation Administration**

SOC: 09-08B
DATE: August 1, 2016

Subject: Guidance Regarding the Air Traffic Safety Oversight Service Voluntary Disclosure Policy

1. Purpose of this SOC: This Safety Oversight Circular (SOC) provides guidance to the Air Traffic Organization (ATO) regarding the disclosure of self-identified safety compliance issues with ATO safety standards and/or the ATO Safety Management System (SMS). It describes the procedures for processing the issues, and outlines the criteria needed for a submitted Voluntary Disclosure Report (VDRP) to be accepted under the Voluntary Disclosure Policy (VDP).

2. Audience: All elements of the ATO involved in the SMS process.

3. Where Can I Find This SOC:
http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aov/policies_forms/

4. Background: FAA Order 1100.161, *Air Traffic Safety Oversight*, gives AOV the authority to issue documents that would require the ATO to make a change, stop a procedure, or alter a practice when there is a safety concern. AOV recognizes there are multiple means of identifying a safety concern. The Voluntary Disclosure Policy was established to address cases where the ATO can identify and disclose a safety compliance issue to AOV. It is designed to promote greater engagement between the ATO and AOV to cooperatively meet safety objectives.

The ATO established the Air Traffic Safety Action Program (ATSAP) and Technical Operations Safety Action Program (TSAP) in an effort to identify and report events that may have increased risk or negatively impacted the safety of the National Airspace System (NAS). As the oversight authority, AOV is obligated to monitor and oversee air traffic control operations as well as the activities generated from ATSAP and TSAP reports. The Voluntary Disclosure Policy is another effort to generate a collaborative method for AOV and ATO to work towards resolution of those self-identified safety concerns; thereby creating a positive impact in the NAS.

5. General Guidance: The AOV VDP applies to the ATO, ATO Service Centers, and ATO Service Delivery Points (SDP). The VDP does not apply to individuals or non-FAA facilities. AOV will evaluate acceptance of VDRPs based upon this criteria. AOV uses standard procedures to process safety compliance issues. In the case of voluntary disclosures, processing safety compliance issues requires a slightly different approach. After reviewing the VDRP, AOV may categorize the report with one of three categories and process accordingly:

a. V1 Level Compliance Procedures: V1 is the first disclosure category for safety compliance issues identified via VDRPs. The V1 category provides an avenue for corrective action at the lowest appropriate organizational level. AOV will review and then:

1. AOV sends a memo to the ATO to acknowledge the disclosure
2. AOV will monitor ATO activities to close the issue
3. No additional correspondence between the ATO and AOV is required.

b. V2 Level Compliance Procedures: V2 is the second disclosure category for safety compliance issues identified via VDRPs. The V2 category provides an avenue for corrective action at the appropriate organizational level. AOV will review and then:

1. AOV sends a memo to the ATO to acknowledge the disclosure and request formal notification when the ATO closes the issue
2. AOV will monitor activities to closure of the issue.

c. V3 Level Compliance Procedures: V3 is the third disclosure category for safety compliance issues identified via VDRPs. The V3 category provides an avenue for the ATO to take corrective action according to their current SMS Manual for existing high risk hazards. AOV will review and then:

1. AOV sends a memo to the ATO to acknowledge the disclosure and request formal notification when the ATO closes the issue
2. AOV will track and monitor activities to closure of the issue
3. AOV will verify implementation was successful.

All VDRPs regarding safety concerns that AOV had previously identified through AOV surveillance activities will be reviewed on a case by case basis for inclusion in the VDP. AOV will notify the ATO as to whether or not the VDRP will be processed.

6. Criteria for Submission of a VDRP:

a. The safety-related problem must not have been willful, or appear to involve an intentional disregard for safety on the part of the reporting entity
b. Report must be signed by the Vice President of Safety and Technical Training, or designee
c. Report must be submitted via AOV Correspondence Mailbox
d. At a minimum, the report must include the following:

1. Description of the noncompliance,
2. Requirements or safety standards violated,
3. Approved interim mitigations implemented with dates,
4. A statement of acceptance of the risk, or
5. Statement requiring the operation was stopped,
6. Date AOV can expect a corrective action plan and
7. A point of contact

7. Definitions:

a. **Factors (contributing and causal):** Action(s), condition(s), and or event(s) that led to the safety compliance issue.

b. **Interim Mitigation:** The immediate action(s) taken to reduce the risk of the safety compliance issue.

c. **Noncompliance:** Failure to meet a requirement or safety standard.

d. **Requirement:** An essential attribute or characteristic of a system. It is a condition or capability that must be met or passed by a system to satisfy a contract, standard, specification, or other formally imposed document or need.

e. **Risk:** The composite of predicted severity and likelihood of the potential effect of a hazard.

f. **Safety Compliance Issue:** Failure to follow an FAA safety standard or an ATO Safety Management System requirement that may manifest as a hazard in the NAS.

g. **Safety Standards:** Standards related to air traffic control functions, equipment and facility maintenance functions, flight inspection functions, flight procedure development and charting functions, and acquiring and implementing new systems as identified in Chapter 4 of FAA Order 1100.161, *Air Traffic Safety Oversight*.

h. **Voluntary Disclosure Policy (VDP):** An AOV program established to provide an effort to the ATO to identify and report events that may have increased risk or negatively impacted the safety of the National Airspace System (NAS).

i. **Voluntary Disclosure Report (VDRP):** A report of a self-identified failure or safety concern with a requirement or safety standard.

Anthony Ferrante
Director, Air Traffic Safety Oversight Service

Air Traffic Safety Oversight Service (AOV)

SOC

Safety Oversight Circular

U.S. Department of Transportation
Federal Aviation Administration

SOC: 13-13A
DATE: August 1, 2016

Subject: Corrective Action Plan Development and Acceptance in Response to Safety Compliance Issues

1. Purpose: This Safety Oversight Circular (SOC) provides information and guidance to the Air Traffic Organization (ATO) regarding the development of corrective action plans (CAP) in response to observations of noncompliance and observations of potential adverse safety impact. It describes the structure of a complete CAP and a process where by the ATO may submit a CAP to AOV for approval. It also provides information on types of feedback the ATO may receive from AOV. It explains how the ATO can submit an Interim Mitigation (IM) while working towards a complete CAP.

2. Audience: All offices of the ATO involved in the Safety Risk Management (SRM) process.

3. Where Can I Find this SOC:
http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aov/policies_forms/

4. Background: To promote the highest level of safety and compliance with regulatory standards, this SOC was updated to reflect the Federal Aviation Administration's Compliance Philosophy by fostering a safety culture to ensure compliance with regulations and identification of hazards and management of risk. The development of corrective action plans is a complex and frequently lengthy process which requires collaboration between AOV and the ATO. When the ATO submits a complete CAP, AOV may provide feedback on individual sections rather than rejecting the plan in its entirety. This increases the opportunity for feedback, improves collaboration and reduces the processing time for CAP acceptance. This SOC also describes the different catagories of noncompliance and provides procedures to assist the ATO to return to full compliance by the most effective means and prevent recurrence. This SOC does not constitute a change to any requirement contained in FAA orders, manuals, etc. However, appropriate standard operating procedures should be changed to reflect the processes defined in this SOC.

5. Structure of a CAP. AOV recommends the use of the CAP template (see Appendix 1) for submission of CAPs. An acceptable CAP must be constructed in the following order:

a. **Interim Mitigation (IM):** Identify the immediate actions taken to reduce the risk of the safety compliance issue. This is also known as Short Term Corrective Action. This element may be approved by AOV prior to submission of the remainder of the CAP. Include date(s)

of IM implementation.

b. **Factors:** Identify the causal and contributing factors that led to the noncompliance and the methodology used to identify them.

c. **Corrective Action Strategy:** Identify the specific actions to be taken to address the factors and to prevent recurrence. The following items should be clearly explained:

1. Specific action(s) to be taken.
2. The person and/or organization responsible for developing and executing the actions.
3. Proposed dates of implementation and completion for all actions.

d. **Compliance Verification:** Identify the specific actions to be taken to verify the effectiveness of the Corrective Action Strategy. The following items should be included:

1. Methods to be used to verify implementation and effectiveness of the actions taken to address the factors.
2. Safety Performance Targets (if applicable)
3. The person and/or organization responsible for developing and executing the actions.
4. Proposed dates of initiation and completion of the CAP.
5. The date the ATO expects to be in full compliance.

6. Observations of Noncompliance:

a. **CO Procedures:** AOV will notify the ATO of the noncompliance and expects the ATO to take corrective action to resolve the noncompliance. A compliance number will be assigned. COs do not require a response or CAP. AOV will monitor the noncompliance through various surveillance activities.

b. **C1 Level Compliance Procedures:** These observations relate to safety compliance issues that were previously reported as AOV CO noncompliances. These may include repeat noncompliances that have been reported to ATO from other organizations, such as NTSB. These procedures provide an avenue for the ATO to take corrective action to resolve the noncompliance at the lowest appropriate organizational level. AOV will notify the ATO of the noncompliance by sending a Memorandum of Noncompliance (MON). A compliance number will be assigned. No CAP is required. The ATO is expected to inform AOV upon correction of the noncompliance. AOV will monitor the noncompliance through various surveillance activities.

c. **C2 Level Compliance Procedures:** AOV will notify the ATO of the noncompliance by sending a MON. A compliance number will be assigned. A CAP is required. AOV requires the ATO to respond within 10 business days of receipt of the MON. If the issue is complex in nature, AOV may accept an Interim Mitigation which allows the ATO to provide the remainder of the CAP no later than 21 business days from acceptance of the IM or request an extension for CAP development. AOV may also consider a memorandum acknowledging the noncompliance with a date AOV can expect a CAP. For all submissions, AOV will respond within 10 business days with:

1. Approval of an IM with a date to provide the remainder of the CAP or
2. Disapproval of an IM with reason(s) for not approving or
3. Acceptance of a complete CAP or
4. A request for more information.

When the CAP has been determined to be complete and acceptable, AOV will send a CAP Acceptance memo, which closes the issue. AOV will continue to track and monitor the issue, which may be subject to follow-on verification.

d. **C3 Level Compliance Procedures:** AOV will notify the ATO of the noncompliance by sending a MON. A compliance number will be assigned. A CAP is required. AOV requires the ATO to respond within 5 business days of receipt of the MON. AOV may accept an Interim Mitigation which allows the ATO to provide the remainder of the CAP no later than 21 business days from acceptance of the IM or request an extension for CAP development. For all submissions, AOV will respond within 10 business days with:

1. Approval of an IM with a date to provide the remainder of the CAP
2. Disapproval of an IM with reason(s) for not approving
3. Acceptance of a complete CAP
4. Request for more information

When the CAP has been determined to be complete and acceptable, AOV will send a CAP Acceptance memo. Implementation of the CAP is monitored by AOV. After the ATO provides satisfactory verification that the CAP adequately mitigated the noncompliance, AOV will conduct follow-on actions to verify the effectiveness. When verification is confirmed, AOV will send a Letter of Correction (LOC) to the ATO which closes the issue.

e. If a previously accepted CAP is modified by the ATO, a revised CAP, incorporating that change, must be submitted to AOV for review and acceptance.

7. Observations of Potential Adverse Safety Impact: These are issues that may have a potential adverse impact on the safety of the NAS, but do not relate to specific requirements, and would not be considered noncompliances. Examples may include a break in continuity of management controls or requirements or discrepancies in procedures between controllers or facilities. AOV will notify the ATO of the issue by identifying it in a report or memorandum. A compliance number will be assigned. A CAP is not required. AOV expects ATO to use its SMS procedures to examine the potential safety risk and to validate safety concerns. AOVwill monitor the issue through various surveillance activities, such as a surveillance plan.

8. Definitions:

a. **Business Day:** A day of the week when HQ, FAA in Washington DC is open and operating.
b. **CAP Acceptance:** Acceptance of a complete CAP by AOV.
c. **Complete CAP:** Contains in order: Interim Mitigation, Factors, Corrective Action Strategy and Compliance Verification.
d. **Compliance Verification:** Methods used to verify implementation and effectiveness of actions identified in approved CAPs by ensuring those actions were successful in correcting the non-compliance and preventing recurrence
e. **Corrective Action Plan (CAP):** A plan of action that documents the interim mitigations, factors, corrective actions, and methods of verification to resolve a safety compliance issue. This plan includes dates of completed actions and/or expected dates for completion of all actions.
f. **Corrective Action Strategy:** Specific actions taken to address the factors (causal and contributing) and prevent recurrence.
g. **CAP Sections:** One of four distinct parts of a CAP: Interim Mitigation, Factors, Corrective Action Strategy and Compliance Verification.
h. **Factors (contributing and causal):** Action(s), condition(s) and/or event(s) that led to the noncompliance.
i. **Interim Mitigation (IM):** Immediate actions taken to reduce the risk of a hazard. This is also known as Short Term Corrective Action.
j. **Letter of Correction (LOC):** The Letter of Correction is sent from AOV to ATO to document ATO's correction of instances of noncompliance. An LOC is only sent to close a C3 level safety compliance issue.
k. **Noncompliance**: Failure to meet a requirement or safety standard.
l. **Requirement:** An essential attribute or characteristic of a system. It is a condition or capability that must be met or passed by a system to satisfy a contract, standard, specification, or other formally imposed document or need.
m. **Risk**: The composite of predicted severity and likelihood of the potential effect of a hazard.
n. **Safety Compliance Issue**: Failure to follow an FAA safety standard or the ATO Safety Management System requirement that may manifest as a hazard in the National Airspace System (NAS).

Anthony Ferrante
Director, Air Traffic Safety Oversight Service

Attachment: Appendix 1 – Example of Acceptable Corrective Action Plan

Appendix 1 – Example of Acceptable Corrective Action Plan

Compliance Number: COMP-FY27-219 **AOV Surveillance Number: ADT-FY27-25**

Requirement: FAAO 1100.161, Air Traffic Safety Oversight, paragraph 4-2- b(1), JO 7210.54, FAA Contract OTwer (FCT) Operation and Administration, parpagraph 12c(1), JO 7210.3, Facility Operation and Administration, paragraph 2-1-7b1.

Description/Summary of Noncompliance: The ATO was not in compliance with FAA Order 1100.161 whi states that air traffic control services provided by ATO, and by each person or provider with whom it arranges for the performance of that work, must be performed in accordance with appropriate FAA directives, manuals, and orders. This finding is supported by the following evidence.

Supporting Data/Evidence: The FCT Program Office and the Terminal Service Area Office did not provide supporting documnetation demonstrating coordination regardaing the number of FAA controllers to be assigned to specific events. A supervisory plan for special events requiring FAA supplemental satffing had not been developed as required by JO 7210.54. Seven (7) percent (1 out of 24) of the FCTs did not have the operational contingency plan (OCP) posted in the facility opertions quarters as required by JO 7210.3.

1. Interim Mitigation: (Actions taken to address the immediate issue)	**Persons or Organizations Responsible for developing and executing the identified actions**	**Date Interim Mitigation was implemented**
Add maintaining the OCP in the operations quarters as a special emphasis item to the FCT June 2007 monthly report.	FCT Program Office	2/7/07
Have vendors continue to conduct facility inspedtions/audits and report the results to ensure the OCP is properly maintained in the facility operations quarters.	FCT Program Office Personnel	2/7/07

2. Factors: (Identify the causal and contributing factors that may have caused the noncompliance)	**Person/Organization responsible for identifying Factors**	**Methods used to determine factors (i.e. Statistical sampling, inspections, etc.)**
FCT Program Office did not ensure plans for supplemental staffing for special events were developed or distributed due to an oversight of their responsibility.	FCT Program Office Personnel	FCT Program Office conducted a 100% sampling of the 14 FCTs. It was determined that 35% (5 out of 14) of the sampled FCTs did not have the OCPs posted in the facility operations quarters as required.
Employees take documents ouf of the operations quarters and do not return them.	FCT Program Office Personnel	FCT Program Office conducted a 100% sampling of the 14 FCTs. It was determined that 35% (5 out of 14) of the sampled FCTs did not have the OCPs posted in the facility operations quarters as required.

3. Corrective Action Strategy: (Actions to address the factors and prevent recurrence)	**Person/Organization responsiblefor developing and executing actions**	**Proposed implementation Dates**	**Proposed Completion Dates**
Every year, develop a supervisory plan for FAA supplemental staffing at least two months before upcoming special events take place.	District Managers, Service Center Quality Control Groups (assistance from FCT Program Office)	5/30/08	4/30/11
Request and maintain a copy of supervisory plans to post on the FCT KSN site.	FCT Program Office	5/30/08	4/30/11
Post the FAA Supplemental Staffing Schedules with the supervisory plans on the FCT KSN site.	FCT Program Office	5/30/08	4/30/11
Add auditing supervisory plans as a yearly auditable item.	FCT Program Office	5/30/08	4/30/11
Establish Quality Assurance Team to include ISO auditors.	Vendors - FCT Program Office will verify what vendors have done	5/30/08	4/30/11
Utilize a checklist to ensure the OCP and other required documents is maintained in the operational quarters.	Vendors - FCT Program Office will verify what vendors have done	5/30/08	4/30/11

4. Compliance Verification: (methods used to verify implementation and effectiveness. Include Safety Performance Targets if applicable)	**Person/Organizations Responsible for developing and executing the identified actions**	**Proposed Dates of Initiation of methods**	**Proposed Dates of completion of methods**
Audit FCT KSN site to verify supervisory plans and FAA Supplemental Staffing Schedules for special events were developed, maintained and current	FCT Program Office and Service Center Implementaion Managers	5/1/10	5/8/11
Conduct service verification evaluations to ensure that the facilities are in compliance with air traffic control regulations and procedures.	FCT Program Office and Service Center Implementaion Managers	5/1/10	5/8/11
Conduct facility inspections to ensure that the facilities are in compliance with air traffic control regulations and procedures.	FCT Program Office and Service Center Implementaion Managers	5/1/10	5/8/11
Create a facility checklist for both service evaluations and facility inspections to reflect tht the required documentation be maintained in the operational quarters.	FCT Program Office and Service Center Implementaion Managers	5/1/10	5/8/11

Date ATO expects to be in full compliance: 5/15/11	**Date of AOV CAP Acceptance: 5/12/08**	**Date ATO reported returning to compliance: 4/30/11**	**Date AOV verified return to compliance: 8/22/11**

U.S. Department
of Transportation
**Federal Aviation
Administration**

SOC

Safety Oversight Circular

SOC **07-02**
DATE: June 6, 2007

Air Traffic Safety
Oversight Service (AOV)

Subject: AOV Concurrence/Approval at Various Phases of Safety Risk Management Documentation and Mitigations for Initial High-Risk Hazards

1. PURPOSE: This safety oversight circular (SOC) provides information and guidance on how the Air Traffic Organization (ATO) may develop a process for reducing the likelihood of disapproval of initial high-risk hazard mitigations documented in Safety Risk Management Documents (SRMD) submitted to the Air Traffic Safety Oversight Service (AOV). This SOC describes a process for AOV concurrence at several phases of the SRM process; thus, providing guidance and reassurance to Safety Risk Management Panels (SRMP) and others within the ATO responsible for changes to the National Airspace System (NAS).

2. BACKGROUND: AOV has reached different conclusions, with regard to the evaluation of risk, methods, data, and evaluation of residual risk, etc., than those reached by ATO staff after several months or years of work towards the development of an SRMD. These differences have resulted in approval delays and may in the future result in disapprovals. This could result in programmatic delays and may create additional work to be performed by AOV and ATO to address fundamental issues that could have been resolved earlier in the risk assessment process.

3. DISCUSSION:

a. There is inherent risk associated with reaching a common understanding over a complex product development/operational issue. Waiting until the end of a process to approve controls or mitigations carries the programmatic risk that the controls might not be approved, which might cause a cost or schedule breach.

b. ATO is required to obtain AOV approval for proposed mitigations for initially identified high-risk hazards (HRH). Approval is primarily based on the safety analysis (SA) or SRMD provided by the ATO. Although AOV approval of the SA or SRMD itself is not required, the documentation is critical in establishing a foundation for approval of the proposed mitigations. At present, there is no requirement for ATO to consult with AOV at any point in the development of an SRMD before completion. This means that if initial HRHs are identified and mitigations developed, AOV may not be aware of them until a request is submitted for approval.

c. The current framework for an AOV approval without prior consultation is not working well for current operations and will not meet the needs for future acquisitions. This may result in

unacceptable programmatic risk since monetary/time commitments are being made to develop safety mitigations that might not be approved by AOV.

4. DISPOSITION: This guidance does not constitute a change to any requirement contained in FAA orders, manuals, etc. However, appropriate standard operating procedures should be changed to reflect the processes defined in this SOC. Adherence to this guidance will facilitate AOV approvals of HRH mitigations.

5. GUIDANCE: For acquisition projects and changes to the NAS likely to involve initial HRH or any complex change with unknown impact/integration challenges, ATO may obtain concurrence at specific phases of the SRM process before submission of a completed SRMD, thus ensuring potential differences are resolved at the earliest opportunity and reducing the likelihood of costly revisions or schedule delays at the end of the process. We acknowledge that the phases described below may not be as discretely distinct and as separated in time in an SA involving, for example, an Air Traffic Control (ATC) procedure or as that of an acquisition and thus, the "consultation and feedback" between AOV and ATO may be more compressed. However, for major NAS changes, there should be agreement between AOV and ATO on the definition of issues, the boundaries of the analysis, the approach to the assessment, and the basic assumptions of the assessment before the SRMP convenes. AOV is prepared to provide concurrence at the conclusion of each of the following identified SRM phases:

a. Phase I: Safety Definition Phase. Consists of a full description of the system and its interfaces or changes being considered. This phase should include a description of the safety requirements that apply and an assessment of how safe the system or change needs to be in the context of the full system[1]; including the assumptions being made, identification of human factors risks, specification of concept requirements, and setting of safety objectives. A Preliminary Hazard List (PHL) and expected severity of each hazard will be established and provided. In the Acquisition Management System (AMS), this is provided at the end of the Mission Need Analysis and documented in the Operational Safety Assessment (OSA).

- **AOV Response to Phase I:** AOV will review the OSA or similar SA or proposal and provide an initial concurrence on the bounding of the system under development or change and determination of safety objectives based on the established severity of the identified hazards.

b. Phase II: Mitigation/Solution Development/Control Validation Phase. Consists of the identification of potential solutions/mitigations being considered and an evaluation of the feasibility for each option; to include identification of the hazards associated with system use and the predicted residual risk described in terms of severity and likelihood. This phase establishes that the proposed solutions and mitigations of the design or change meet the safety objectives described in Phase I. This information is provided in the form of safety requirements and the predicted residual risk, described in terms of severity and likelihood, for each of the hazards associated with system use. In the AMS, this is provided to support final investment decision in the Preliminary Hazard Analysis (PHA).

[1] Level of safety in this context refers to compliance with the AOV-approved ATO SMS manual, once the system under consideration is properly defined.

- **AOV Response to Phase II:** AOV will review the PHA or similar SA or proposal and provide an initial concurrence with the identified mitigations or controls and rationale for the predicted residual risk. This will not be a final approval or rejection, but rather an initial control validation step designed to tell ATO if the predicted residual risk is reasonable and the mitigations appear valid.

c. Phase III: Operational Introduction/Control Verification Phase. Provides an assessment and supporting evidence that the system or change can be introduced into the NAS and that all risk mitigations have been validated and verified. This includes the analysis of integration with existing systems, and the transition from one system to another. The review will identify how the system or change will he introduced, given known or newly developed procedures and training, or how it will be made interoperable with other adjacent and peripheral systems. In the AMS, this is a review of the System Safety Assessment Report (SSAR), typically required to support the in-service decision (ISD).

- **AOV Response to Phase III:** AOV will review the SSAR or similar SA or proposal and provide initial concurrence with the proposed controls or mitigations for initial HRHs[2].

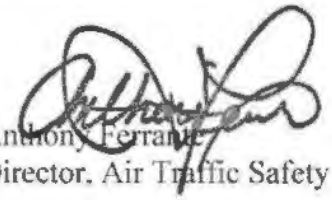
d. Phase IV: Tracking and Monitoring Planning Phase. Describes how the system or change will be tracked and monitored to ensure that it will continue to meet the safety objectives described in Phase I. This plan should focus on performance monitoring, incident investigation, and hazard mitigation. AOV will not approve any HRH mitigations that do not contain a plan on how ATO intends to track and monitor the effect of system changes.

- **AOV Response to Phase IV:** AOV will review SRMDs or similar SAs with HRH and provide concurrence with ATO's tracking and monitoring plan.

e. Phase V: Request for HRH Approval. Upon receipt of a request from ATO, AOV will approve or reject controls/mitigations for initial HRHs that contain the elements described in phases I through IV, before implementation of a change into the NAS.

[2] AOV will not provide final approval of any HRH mitigations until all aspects of the SRM process have been completed, including the development of a plan on how ATO intends to track and monitor the effect of system changes. However, AOV concurrences along the process will not be revisited without specific data indicating that an unsafe condition exists.

6. RESOLUTION OF DIFFERENCES: The safety compliance procedures described in FAA Order 8000.86, Air Traffic Safety Oversight Compliance Process, will be used to resolve issues if, at any point; differences cannot be resolved among staff.



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U.S. Department
of Transportation
**Federal Aviation
Administration**

SOC

Safety Oversight Circular

SOC **07- 04**
DATE: September 28, 2007

Air Traffic Safety
Oversight Service (AOV)

Subject: Aviation Safety Action Program (ASAP) for Credentialed ATO Personnel

1. PURPOSE. This Air Traffic Safety Oversight Service (AOV) Safety Oversight Circular (SOC) provides guidance to the Air Traffic Organization (ATO) for establishing an Aviation Safety Action Program (ASAP) for credentialed safety personnel. The objective of the ASAP is to encourage credentialed safety personnel to voluntarily report safety information that may be critical to identifying potential precursors to accidents. AOV has determined that identifying these precursors is essential to further reducing the risk of air traffic incidents, operational errors, and accidents. Under an ASAP, safety related issues are resolved through corrective action rather than through punishment or discipline. The ASAP provides for the collection, analysis, and retention of the safety data that is obtained. ASAP safety data, much of which would otherwise be unobtainable, is used to develop corrective actions for identified safety concerns, and to educate the appropriate parties to prevent a reoccurrence of the same type of safety related event. An ASAP is based on a safety partnership that will include ATO, AOV, and either the National Air Traffic Controllers Association (NATCA) or Professional Airways System Specialists (PASS) as appropriate. To encourage an employee to voluntarily report safety issues, even though they may involve the employee's possible noncompliance with Air Traffic Regulations and other requirements, reporting incentives should be designed into the program.

a. Information obtained from the ASAP program will provide participants with a mechanism to identify actual or potential risks throughout their operations, without fear of credential action by the regulator (AOV). Once identified, the parties to the ASAP can implement corrective actions in order to reduce the likelihood for reoccurrence of operational errors, incidents, or other safety related events. In order to gain the greatest possible positive benefit from ASAP, it is necessary for ATO to develop programs that are compatible with Aviation Safety Information Analysis and Sharing (ASIAS) data collection, analysis, storage, and retrieval systems requirements. The information and data, which are collected and analyzed, can be used as a measure of ATO system safety.

b. An ASAP provides a vehicle whereby credentialed employees of ATO can identify and report safety issues to management for resolution—without fear that ATO or AOV will use reports accepted under the program to take disciplinary or credential action against them. ASAP programs are designed to encourage participation from ATO credentialed safety personnel.

c. The elements of ASAP will be set forth in a Memorandum of Understanding (MOU) between ATO, AOV, and either National Air Traffic Controller's Association (NATCA) or Professional Airways System Specialists (PASS).

2. CANCELLATION

3. BACKGROUND. The FAA mission and Flight Plan require that the ATO take action to reduce or eliminate the likelihood of the recurrence of air traffic incidents, operational errors, and accidents. Over the last several years, ATO and AOV have sought innovative means for addressing safety problems and identifying potential safety hazards through mechanisms such as the Safety Council and through a more formal compliance process described in FAAO 8000.86. Additionally, FAA and the air transportation industry previously established ASAP's in an effort to increase the flow of safety information to both the air carrier and the FAA. These programs included incentives to encourage employees of air carriers participating in the programs to disclose information which may include possible noncompliance without fear of punitive enforcement sanctions for reports accepted under the program. Based on the lessons learned from government oversight of the air transportation industry, this SOC seeks to establish similar guidance so that safety goals are achieved.

4. KEY TERMS. The following key terms and phrases are defined for the purposes of ASAP to ensure a standard interpretation of the guidance.

a. Consensus of the Event Review Committee (ERC). Under ASAP, consensus of the ERC means the voluntary agreement of all representatives of the ERC to each decision required by the MOU.

f. Corrective Action. For the purposes of ASAP, corrective action refers to any safety-related intervention or action determined necessary by the ERC based upon a review and causal factors analysis of the reports submitted under the ASAP. Corrective action may involve intervention at the individual, supervisory, or organizational levels

g. Covered Under the Program/Qualified for Inclusion/Included in ASAP. For the purposes of ASAP, these terms all have the same meaning. They mean that the reporting incentives and other provisions of the ASAP apply to the employee who submitted the report.

h. Reporting Incentive. Refers to an assurance that lesser action will be used to address certain alleged noncompliance with air traffic requirements to encourage participation.

i. Event Review Committee (ERC). A group comprised of a representative from each party to the ASAP MOU. The group reviews and analyzes reports submitted under an ASAP. The ERC may share and exchange information and identify actual or potential safety problems from the information contained in the reports. The ERC is comprised of a management representative from the ATO, a representative from either NATCA or PASS, as applicable, and a representative from AOV.

j. Intentional Falsification. For the purposes of ASAP, intentional falsification means a false statement in reference to a material fact made with prior knowledge. It does not include mistakes or inadvertent omissions or errors.

l. Memorandum of Understanding (MOU). Refers to the written agreement between two or more parties setting forth the purposes for, and terms of, an ASAP.

m. Party/Parties. Refers to ATO, AOV, and any other person or entity (e.g., NATCA or PASS that is a signatory to the ASAP MOU.

n. Safety-Related Report. Refers to a written account of an event that involves an operational or maintenance issue related to aviation safety reported through an ASAP.

p. Sole-Source Report. For the purposes of ASAP, the ERC shall consider a report to be sole-source when all evidence of the event available to ATO outside of ASAP is discovered by or otherwise predicated on the ASAP report. It is possible to have more than one sole-source report for the same event.

(Similarly, for the purpose of any additional action taken by the ATO outside of ASAP, AOV considers a report to be sole-source when all evidence of the event known to the air traffic facility is discovered by or otherwise predicated on the ASAP disclosure. AOV and ATO do not use any information obtained through ASAP to initiate or support disciplinary action outside of ASAP, with the exception of those events excluded from ASAP due to the appearance of possible criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification.)

q. Sufficient Evidence. Sufficient evidence means evidence gathered by an investigation not caused by, or otherwise predicated on, the individual's safety-related report. There must be objective evidence to prove the noncompliance, other than the individual's safety-related report. In order to be considered objective evidence under ASAP, the ERC must determine that the evidence (other than the individual's safety-related report) would likely have resulted in AOV removal of the controllers credential had the individual's safety-related report not been accepted under ASAP.

r. Voluntary Disclosure Policy. A policy under which ATO (as an organization) may voluntarily report apparent non-compliances of air traffic regulations and develop corrective action satisfactory to AOV to preclude their recurrence. ATO facilities that satisfy the elements of the Voluntary Disclosure Policy receive a letter of correction in lieu of a letter of investigation, letter of warning, or safety directive. Voluntary disclosure reporting procedures requirements are in development and scheduled for completion by AOV during FY-2008.

5. APPLICABILITY. ASAP is intended for ATO. ASAP is entered into voluntarily by AOV, ATO, and either NATCA or PASS, as appropriate.

6. DEVELOPMENT. ATO may develop programs as required by FAA Order JO 1000.37, chapter 6, paragraph 2b and submit them to AOV for review and acceptance in accordance with the guidance provided herein. Ordinarily, programs are developed for specific employee groups, such as controllers or ATSS personnel. AOV will determine whether a program is accepted.

a. Development Considerations. The development and implementation of an ASAP is a multifaceted task:

(1) ATO, AOV, NATCA, or PASS must first develop a relationship that will promote the ASAP concept. The reluctance of one or more parties to commit to the program is detrimental to the process.

(2) The process for reporting reviews must be outlined in detail.

(3) Safety data collection, analysis, and retention processes must be developed and agreed upon, and compliant with the following:

A. ASAP Taxonomies used in ASIAS (Aviation Safety Information Analysis and Sharing).

B. DNAA (De-identified National ASAP Archive)

C. CICTT (CAST ICAO Common Taxonomy Team) Standards

D. 100% capture of all submitted ASAP reports

(4) Event investigation tasks must be assigned.

(5) Prior to the implementation of the ASAP, a comprehensive ATO employee and management education program must be undertaken.

(6) The ASAP process will require cultural change for all parties involved.

(7) Continuity of ERC representation personnel during the early stages of program implementation will promote the desired partnership relationship between program members.

b. Demonstration Programs. ATO initially must develop a separate demonstration program for each employee group under consideration for an ASAP. The objective of a demonstration program is to measure its effectiveness and ensure that it meets the safety objectives of the specific ASAP MOU.

(1) The initial demonstration program shall be at least 18 months long to achieve the desired goals and benefits articulated in the program, however should have a duration of no longer than 30 months.

(2) At the conclusion of the initial demonstration program, all parties will review the program. Demonstration programs that require modification may be extended for an additional time, not to exceed 12 months, to effectively measure any change(s) made to the original program to address a deficiency identified by any of the parties to the MOU.

c. Continuing Programs. After a demonstration program is reviewed and determined to be successful by the parties to the agreement, it may be accepted as a continuing program, subject to review and renewal every 2 years by AOV.

d. Withdrawal. Regardless of the duration of a program, any party to the ASAP MOU may withdraw from the program at any time. At that time, the ASAP program is terminated.

7. RESOURCES. An ASAP can result in a significant commitment of both human and fiscal resources by the parties to the program. During the development of a program, it is important that each party be willing to commit the necessary personnel, time, and monetary resources to support the program.

8. PROCESSING OF REPORTS.

a. Event Review Committee (ERC) Process. The determination of whether reports qualify for inclusion in the ASAP will be made by a consensus of the ERC.

(1) The ERC is composed of one designated representative and an alternate each from AOV, ATO, and either NATCA or PASS, as appropriate.

(2) The ERC will:

__review and analyze reports submitted under the ASAP

__determine whether such reports qualify for inclusion

__identify actual or potential problems from the information contained in the reports, and
__propose solutions for those problems

(3) For official meeting purposes, a quorum exists when all designated ERC representatives, or their alternates, are present (face to face or remotely). Some reported events may involve matters that are complex or sensitive, or that require the expertise of other FAA or industry persons. The ERC representatives are encouraged to consult with such persons as needed during the ASAP process.

b. Consensus of the ERC. The success of ASAP is built on the ability of the ERC to achieve consensus on each event that is reported. Consensus of the ERC means the voluntary agreement of all representatives of the ERC.

(1) The ERC must reach a consensus when deciding whether a report is accepted into the program and when deciding on corrective action recommendations arising from the event, including any ATO Performance Management action or AOV credential action. It does not require that all members believe that a particular decision or recommendation is the most desirable solution, but that the result falls within each member's range of acceptable solutions for that event in the best interest of safety. In order for this concept to work effectively, the ERC representative must be empowered to make decisions within the context of the ERC discussions on a given report. ATO management and supervisors should not preempt their respective ERC representative's decision-making discretion for an event reported under ASAP. If the parties to an ASAP MOU do not permit their respective ERC representative to exercise this discretion, the capacity of the ERC to achieve consensus will be undermined, and the program will ultimately fail.

(2) AOV will not use the content of an ASAP report in any subsequent credential action except as described in paragraph 11c(2). However, recognizing that AOV holds regulatory authority to enforce the necessary air traffic rules and regulations, it is understood that AOV retains all legal rights and responsibilities contained in FAA Order 1100.161, FAA Order 8000.90, and FAA Order 8000.86 in the event there is not a consensus of the ERC on decisions concerning a report involving an apparent noncompliance(s), or qualification issue.

(3) Neither AOV nor ATO will initiate or support disciplinary actions for an ERC accepted report without having knowledge of the event from other sources, provided those reports meet the requirements outlined in paragraph 9.

c. Reports Involving Medical Certification or Medical Qualification Issues. When the ERC becomes aware of an issue involving the medical qualification or medical certification of a controller, the ERC must immediately advise the appropriate Regional Flight Surgeon about the issue. The ERC will work with the Regional Flight Surgeon and the certificate holder's medical department or medical consultants to resolve any medical certification or medical qualification issues or concerns revealed in an ASAP report or through the processing of that report. The AOV ERC member must follow the direction(s) of the Regional Flight Surgeon with respect to any medical certification or qualification issue(s) revealed in an ASAP report.

9. GUIDELINES FOR ACCEPTANCE OF REPORTS UNDER ASAP.

a. General. Participation in ASAP is limited to AOV Credential Holders and to events occurring while acting in that capacity. Each employee participating in ASAP must individually submit a report in order to receive the credential-related incentives and benefits of the ASAP policy. However, in cases where an event is reported by more than one person, each individual who seeks coverage under ASAP may either sign the same report or submit separate signed reports.

b. Criteria for Acceptance. The following criteria must be met in order for a report involving a possible non-compliance to be covered under ASAP:

(1) The employee must submit a report in a timely manner. In order to be considered timely, a report must be submitted in accordance with either of the following two criteria:

(a) Within a time period following the event that is defined in the MOU, such as within 24 hours of the end of the duty day in which the event occurred. If this criterion has been met, a report would not be rejected for timeliness, even if ATO or AOV were already aware of the possible noncompliance with the regulations, and may have brought it to the attention of the employee;

(b) Within 24 hours of having become aware of possible noncompliance with Air Traffic Orders or regulations: If a report is submitted later than the time period after the occurrence of an event stated in the MOU, the ERC will review all available information to determine whether the employee knew or should have known about the possible noncompliance with air traffic regulations within that time period. If the employee did not know or could not have known about the apparent noncompliance within that time period, then the report would be included in ASAP, provided the report is submitted within 24 hours of having become aware of possible noncompliance with air traffic regulations, and provided all other ASAP acceptance criteria have been met. If the employee knew or should have known about the apparent noncompliance, then the report will not be included in ASAP.

(2) The alleged regulatory non-compliance must be inadvertent, and must not appear to involve an intentional disregard for safety.

(3) The reported event must not appear to involve criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification.

(4) Sole-source reports that meet all of the above acceptance criteria except timely submission will be accepted under ASAP.

c. Repeated Noncompliance's. Reports involving the same or similar possible noncompliance with air traffic regulations that were previously addressed with administrative/performance management action under ASAP will be accepted into the program, provided they otherwise satisfy the acceptance criteria under paragraphs 9a and 9b above. The ERC will consider on a case-by-case basis the corrective action that is appropriate for such reports.

d. Non-Reporting Employees Covered Under an ASAP MOU. If an ASAP report identifies another covered employee of the ATO in a possible noncompliance, and that employee has neither signed that report nor submitted a separate report, the ERC will determine on a case-by-case basis whether that employee knew or reasonably should have known about the possible noncompliance. If the ERC determines that the employee did not know or could not have known about the apparent noncompliance(s), and the original report otherwise qualifies for inclusion under ASAP, the ERC will offer the non-reporting employee the opportunity to submit an ASAP report. If the non-reporting employee submits

a report within 24 hours of notification from the ERC, that report will be afforded the same consideration under ASAP as that accorded the report from the original reporting employee, provided all other ASAP acceptance criteria are met. However, if the non-reporting employee fails to submit a report within 24 hours of notification, the possible noncompliance by that employee will be referred to AOV for additional investigation and reexamination and/or credential action, as appropriate, and for referral to law enforcement authorities, if warranted.

c. Non-Reporting Employees Not Covered Under the MOU. If an ASAP report identifies another ATO employee who is not covered under the MOU, and the report indicates that employee may have been involved in a possible noncompliance, the ERC will determine on a case-by-case basis whether it would be appropriate to offer that employee the opportunity to submit an ASAP report. If the ERC determines that it is appropriate, the ERC will provide that employee with information about ASAP and invite the employee to submit an ASAP report. If the employee submits an ASAP report within 24 hours of notification, that report will be covered under ASAP, provided all other ASAP acceptance criteria are met. If the employee fails to submit an ASAP report within 24 hours of notification, the possible noncompliance by that employee will be referred to AOV for additional investigation and reexamination and/or credential action, as appropriate, and for referral to law enforcement agencies, if warranted.

10. GUIDELINES FOR EXCLUDING REPORTS FROM ASAP.

a. Exclusion. The following types of reports are excluded under an ASAP:

(1) Reports involving an apparent noncompliance that is not inadvertent or that appears to involve an intentional disregard for safety.

(2) Reports that appear to involve possible criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification.

(3) Untimely reports excluded under paragraph 9b(1) or reports where a consensus on acceptance under paragraph 9 is not reached by the ERC.

(4) Reports of events that occurred when NOT acting as an ATO employee.

b. Failure to Complete Corrective Action. Reports initially included in an ASAP will be excluded from the program if the employee fails to complete the recommended corrective action in a manner satisfactory to all members of the ERC. In those cases, failure of any individual to complete corrective action for an apparent noncompliance, a qualification issue, or medical certification or qualification issue in a manner acceptable to all members of the ERC, may result in the reopening of the case and referral of the matter for appropriate action.

11. ENFORCEMENT POLICY.

a. AOV Investigation of Events Involving Possible Noncompliance with FAA directives. In accordance with FAA Order 1100.161, AOV is responsible for the safety oversight of ATO. However, ATO is responsible for the safety of the NAS and has investigative responsibility regarding events reported to the ASAP ERC.

(1) AOV or ATO ERC representatives are empowered to complete ASAP investigations and are responsible for coordinating all corrective and administrative actions in accordance with the current versions of the following FAA orders, as applicable:

(a) Order 7110.65, Air Traffic Control;

Order 3120.4
Order 7210.3
Order 7210.55
Order 7210.56
Order 7050.1
Order 7610.4

(b) Order 8020.16, Aircraft Accident and Incident Notification, Investigation, and Reporting;

(c) Order JO 1000.37, ATO Safety Management System

b. Reports Covered Under ASAP.

(1) Those non-sole-source reports included in ASAP with sufficient evidence (see paragraph 4q for the definition of sufficient evidence) to support a noncompliance of Air Traffic Regulations will be closed without ATO disciplinary or AOV credential action.

(2) Those sole-source reports that are included in ASAP will be closed without ATO disciplinary or AOV credential action.

(3) Those reports included in ASAP that demonstrate a lack of qualification or raise a question of a lack of qualification will be addressed with appropriate corrective action recommended by the ERC.

c. Reports Excluded From ASAP.

(1) Reported events that are excluded from ASAP will be entered into the ASAP database and referred to ATO-S investigations for possible compliance action and/or re-examination in accordance with 7210.56 or 8020.16 as appropriate.

(2) Reports of events that appear to involve possible criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification will be referred to an appropriate FAA office for further handling. The FAA may use such reports for any enforcement purposes, and will refer such reports to law enforcement agencies, if appropriate. If upon completion of subsequent investigation it is determined that the event did not involve any of the aforementioned activities, then the report will be referred back to the ERC for a determination of acceptability under ASAP. Such reports will be accepted under ASAP provided they otherwise meet the acceptance criteria contained in paragraph 9 of this safety oversight circular.

(3) Neither the written ASAP report nor the content of the written ASAP report will be used to initiate or support ATO discipline or as evidence for any purpose in a AOV credential action except as provided for in 11c(2). The ATO or AOV may conduct an independent investigation of an event disclosed in a report only if the event was known from other sources.

12. REOPENING REPORTS BASED ON NEW EVIDENCE. All safety-related reports should be fully evaluated and, to the extent appropriate, investigated by the ATO. A closed ASAP case, including any related investigative report (IR) involving a noncompliance addressed without action taken, may be reopened and appropriate intervention action taken if evidence is discovered at a later time that establishes that the noncompliance should have been excluded from the program.

13. NONCOMPLIANCES BY ATO. Apparent noncompliance of ATO disclosed through a safety-related report under an ASAP may be handled under the Voluntary Disclosure Policy, provided the credential holder voluntarily reports the apparent noncompliance to the FAA and the other elements of that policy are met (Voluntary disclosure reporting procedures requirements are in development and scheduled for completion by AOV during FY-2008).

14. EXAMPLES. The following are examples of the disposition of events involving possible noncompliance with air traffic regulations reported under ASAP:

a. Accepted Reports.

(1) Non-Sole-Source Report with Sufficient Evidence (Controller).

(2) Untimely Sole-Source Report (Controller) (In accordance with paragraph 9).

b. Excluded Events. Examples of events involving possible noncompliance with Air Traffic Regulations that would be excluded from the ASAP:

(1) Intentional Disregard for Safety (Controller).

(2) Intentional Disregard for Safety (Front Line Manager-Supervisor).

15. CORRECTIVE ACTION. The ERC will work with ATO to develop acceptable corrective action plans that will be taken based on information obtained under the ASAP. The corrective action must be completed in a manner satisfactory to all members of the ERC. Failure of ATO to follow through with corrective action acceptable to all members of the ERC to resolve any safety deficiencies will ordinarily result in termination of the program. In addition, failure of any individual to complete corrective action for an apparent noncompliance, a qualification issue, or medical certification or qualification issue in a manner acceptable to all members of the ERC, may result in the reopening of the case and referral of the matter for appropriate action.

16. MEMORANDUM OF UNDERSTANDING. The provisions of an ASAP that is acceptable to AOV should be set forth in an MOU signed by each party. A program will be implemented in accordance with the provisions of its MOU. A sample MOU which is available as an automated template (accessible on the Air Traffic Safety Oversight AOV webpage, is provided in appendix 1. Each MOU will be based on the parties' different needs and purposes for an ASAP.

a. MOU Elements. The MOU should set forth the elements of the ASAP, including at least the following which must be consistent with the guidance of this SOC:

(1) The identification of who the program applies to: ATCS, ATSS, or TMC (as appropriate).

(2) The identification of the type of program and the employee group(s) to which it pertains. The types of programs are:

(a) Demonstration Program;

(b) Renewal of Demonstration Program;

(c) Continuing Program; or

(d) Renewal of a Continuing Program.

(3) The duration of the program should be limited to the period of time needed to achieve the desired goals and benefits articulated in the program. Demonstration programs

initially should have a duration of no longer than 18 months and should be reviewed prior to renewal. Demonstration programs that undergo changes after their initial review may be renewed for no longer than 12 months. Programs that are classified as "Continuing" must be reviewed and renewed every 2 years.

(4) A statement that all parties to the ASAP have entered into this agreement voluntarily.

(5) A description of the objective(s), including the essential safety information that is reasonably expected to be obtained through the program, any specific safety issues that are of a concern to any of the parties, and the benefits to be gained through the use of the program.

(6) A description of any enforcement-related incentive that is needed to achieve the desired goal and results of the program.

(7) A statement that all safety-related reports shall be fully evaluated and, to the extent appropriate, investigated by the ERC.

(8) A description of the manner in which ASAP records and reports shall be kept. All records and documents relating to an ASAP must be appropriately kept in a manner that ensures compliance with Air Traffic Regulations and all applicable law.

(9) A description of the process for timely reporting to AOV all events disclosed under the program.

(10) A description of the procedures for the resolution of those events that are safety-related, and procedures for continuous tracking and analysis of safety-related events.

(11) A statement of the ASAP report acceptance and exclusion criteria.

(12) A description of the frequency of periodic reviews by the parties to determine whether the program is achieving the desired results. These reviews are in addition to any other review (audit) conducted by the ATO or any other party individually.

(13) A statement that the ERC shall be comprised of one representative from each party to the MOU, and a description of the duties of the ASAP manager. The ASAP manager may either be the same individual assigned as the ATO management representative to the ERC, or it may be another individual assigned by the ATO who will not serve as a voting member of the ERC.

(14) A description of the process for training and distributing information about the program to AOV Credential Holders and management, as well as procedures for providing feedback to individuals who make safety-related reports under the program.

(15) A statement that modifications of the MOU must be accepted by all parties.

(16) A statement that termination or modification of a program will not adversely affect anyone who acted in reliance on the terms of a program in effect at the time of that action, e.g., when a program is terminated, all reports and investigations that were in progress will be handled under the provisions of the program until they are completed.

(17) A statement that the program can be terminated at any time, by any party.

(18) A statement that failure of any party to follow the terms of the agreement ordinarily will result in termination of the program.

(19) A statement that failure of ATO to follow through with corrective action acceptable to AOV to resolve any safety deficiencies ordinarily will result in termination of the program.

(20) A detailed description of the following concepts and how they will be used:

(a) Event Review Committee;

(b) Consensus of the ERC;
(c) Sole-source reporting;
(d) Sufficient evidence; and
(e) Credential-related incentive.

(21) A statement that repeated instances involving the same or similar possible noncompliance with air traffic regulations that were previously addressed under the ASAP will be accepted into the program, provided that they otherwise meet the acceptance criteria of ASAP. The ERC will consider on a case-by-case basis the corrective action that is appropriate for such reports.

(22) ASAP reports that include other ATC facilities or possible pilot deviations should include procedures in the MOU to identify the date, time, location or fix, altitude, sector or position number, and ATC frequency at the time the event occurred.

(23) A statement that employees initially covered under an ASAP will be excluded from the program and not entitled to the credential-related incentive if they fail to complete the recommended corrective action in a manner satisfactory to all members of the ERC. These cases may result in the reopening of the case and referral of the matter for appropriate action.

(24) A statement that any safety-related ASAP event that concerns an apparent noncompliance(s) with air traffic regulations that is EXCLUDED from ASAP, will be entered into the ASAP database and referred by the ATO ERC representative to ATO-S for additional investigation or reexamination, and to AOV for credential action, as appropriate.

(25) A statement that a closed ASAP case that involves a noncompliance that did not receive an appropriate intervention may be reopened if additional evidence is later discovered that establishes that the interventions were insufficient, or that the event should have been excluded from the program.

(26) A statement that when the ERC becomes aware of an issue involving the medical qualification or medical certification of an airman, the ERC must immediately advise the appropriate Regional Flight Surgeon about the issue. The ERC will work with the Regional Flight Surgeon and the credential holder's medical department or medical consultants to resolve any medical certification or medical qualification issues or concerns revealed in an ASAP report, or through the processing of that report. The ATO ERC member must follow the direction(s) of the Regional Flight Surgeon with respect to any medical certification or qualification issue(s) revealed in an ASAP report.

(27) A statement that reports that appear to involve possible criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification will be referred to an appropriate FAA office for further handling. The FAA may use such reports for any enforcement purposes and will refer such reports to law enforcement agencies, as appropriate.

(28) A statement that the ASAP manager will maintain an electronic data base that tracks each event through and including closure of that event by the ERC and enables trend analysis.

b. Signatories. The MOU must be signed by an authorized representative of each party.

17. ACCEPTANCE/RENEWAL PROCEDURES.

a. Review. The ATO should initially develop and present the program to AOV for review. If the proposed MOU does not employ the automated remplate from the AOV

ASAP webpage (accessible at http://www.faa.gov/avs/aov), a completed ASAP checklist (found in Appendix 2 to this SOC and on the webpage) and the proposed MOU should be forwarded to AOV for review. The ATO and AOV will jointly review the MOU to ensure that it satisfies the guidance in SOC 07-ASAP, and other orders as applicable.

b. Procedures. When the ATO is satisfied that the program is acceptable under the SOC guidance of ASAP, the ATO forwards an electronic copy of the proposed MOU as well as the recommendation for acceptance to the respective AOV regional office and to the headquarters AOV ASAP program office. If the proposed MOU does not employ the automated template from the AOV SOC ASAP webpage, the completed ASAP checklist (found in Appendix 2 to this SOC and on the webpage) ATO should forward the proposed MOU for processing. All programs, except for renewals of continuing programs, shall receive authorization for final acceptance from the Director, Air Traffic Safety Oversight Service, AOV-1. AOV-1 will indicate acceptance authorization for the MOU by FAA memorandum to the ATO through the service area director. Following receipt of acceptance authorization from AOV-1, the ATO shall sign the MOU on behalf of the FAA. The credential holder should allow a minimum of 60 days for the AOV acceptance process to be completed once its ASAP program is received at AOV headquarters for review.

NOTE: ASAP Demonstration programs, renewal of a Demonstration program, and the initial acceptance of a Continuing program are processed in the same manner as described in paragraphs 17a and b.

c. Renewal of a Continuing Program. The renewal of a Continuing program is accomplished every 2 years after a review by the parties to the MOU to ensure the particular ASAP program is meeting its objectives. The renewal may be accomplished at the ATO service area level by the ATO service area director signing the MOU on behalf of the ATO. The ATO service area director shall notify the AOV ASAP program office in writing, 60 days in advance of renewing a Continuing ASAP program.

d. MOU Amendments. Any amendments to an MOU that has already been accepted must be coordinated with the AOV headquarters ASAP program office prior to ATO service area director signature, unless those amendments employ the exact language contained in the MOU template on the AOV ASAP webpage. Amendments which employ such pre-approved language may be accepted by the ATO service area director without further coordination, as long as an information copy is provided to the AOV ASAP program office.

e. Revision Control. It is recommended that the ATO employ standard revision control methodology with respect to amendments to the MOU. The original and subsequent revisions thereto should include:

(1) For each revision to an original MOU:

(a) A change control page, identifying the revision number;

(b) A brief synopsis of each change to the original document; and

(c) Which pages are to be removed and replaced.

(2) A list of effective pages.

(3) A table of contents.

(4) On each page of the MOU, a calendar date for when that page was prepared or revised.

(5) For all revisions to an original MOU, a revision number on each page which is revised.

(6) Sequential page numbers on all pages of the MOU (except the cover page, if applicable, which shall be understood to constitute page "i").

18. RECORDKEEPING. The parties should maintain those records necessary for a program's administration and evaluation. Records submitted to AOV for review relating to an ASAP are protected to the extent allowed by law under applicable exemptions of the Freedom of Information Act. All records and documents relating to an ASAP must be appropriately kept in a manner that ensures compliance with Air Traffic Regulations and all applicable law.

Anthony S. Ferrante
Director, Air Traffic Safety Oversight Service

APPENDIX 1. SAMPLE MEMORANDUM OF UNDERSTANDING

This is a sample of an Aviation Safety Action Program (ASAP) memorandum of understanding (MOU) for a Air Traffic Control Specialists at an air traffic control facility operating under Air Traffic Regulations. The sample is identical to the automated template available on the Air Traffic Safety Oversight Service (AOV) ASAP webpage located at http://www.faa.gov/avs/aov. In order to be accepted by the Air Traffic Safety Oversight Service (AOV), the MOU should address the elements of an ASAP that are set forth in AOV SOC guidance material on which this sample is based.

AIR TRAFFIC ORGANIZATION
AVIATION SAFETY ACTION PROGRAM (ASAP)
FOR AIR TRAFFIC CONTROL SPECIALISTS
MEMORANDUM OF UNDERSTANDING

1. GENERAL. ATO and NATCA; ATO and PASS, etc…

2. PURPOSE. The Air Traffic Organization (ATO), Air Traffic Safety Oversight Service (AOV), and the National Air Traffic Controllers Association (NATCA) are committed to improving air traffic safety. Each party has determined that safety would be enhanced if there were a systematic approach for controllers to promptly identify and correct potential safety hazards. The primary purpose of the ATO Aviation Safety Action Program (ASAP) is to identify safety events, and to implement corrective measures that reduce the opportunity for safety to be compromised. In order to facilitate air traffic safety analysis and corrective action, ATO and NATCA join AOV in voluntarily implementing this ASAP for air traffic control specialists, which is intended to improve air traffic safety through controller self-reporting, cooperative follow-up, and appropriate corrective actiou. This Memorandum of Understanding (MOU) describes the provisions of the program.

3. BENEFITS. The program will foster a voluntary, cooperative, non-punitive environment for the open reporting of air traffic safety concerns. Through such reporting, all parties will have access to valuable safety information that may not otherwise be obtainable. This information will be analyzed in order to develop corrective action to help solve safety issues and possibly eliminate deviations from Air Traffic Regulations. For a report accepted under this ASAP MOU, AOV will use lesser credential action or no credential action, depending on whether it is a sole-source report, to address an event involving possible noncompliance with Air Traffic Regulations. This policy is referred to in this MOU as an "credential-related incentive."

4. APPLICABILITY. The ATO ASAP applies to all air traffic control specialist employees of ATO and only to events that occur while acting in that capacity. Reports of events involving apparent noncompliance with Air Traffic Regulations that is not inadvertent or that appears to involve an intentional disregard for safety, criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification are excluded from the program.

a. Events involving possible noncompliance with Air Traffic Regulations by ATO that are discovered under this program may be handled under the AOV Voluntary Disclosure Policy, provided that ATO voluntarily reports the possible noncompliance to AOV and that the other elements of that policy are met (Voluntary disclosure reporting procedures requirements are in development and scheduled for completion by AOV during FY-2008).

b. Any modifications of this MOU must be accepted by all parties to the agreement.

5. PROGRAM DURATION. This is a Demonstration Program the duration of which shall be 18 months from the date this MOU is signed by the ATO (following signature by the other parties). If the program is determined to be successful after a comprehensive review and evaluation, the parties intend for it to be a Continuing Program. This ASAP may be terminated at any time for any reason by ATO, AOV, NATCA, or any other party to the MOU. The termination or modification of a program will not adversely affect anyone who acted in reliance on the terms of a program in effect at the time of that action; i.e., when a program is terminated, all reports and investigations that were in progress will be handled under the provisions of the program until they are completed. Failure of any party to follow the terms of the program ordinarily will result in termination of the program. Failure of ATO to follow through with corrective action acceptable to AOV to resolve any safety deficiencies ordinarily will result in termination of the program.

6. REPORTING PROCEDURES. When a air traffic control specialist observes a safety problem or experiences a safety-related event, he or she should note the problem or event and describe it in enough detail so that it can be evaluated by a third party.

a. ASAP Report Form. At an appropriate time during the workday (e.g. after the shift has ended for the day), the employee should complete ATO ASAP Form (ATO Form ASAP-1234) for each safety problem or event and submit it email to the Director of Air Traffic Safety, ATTN: ASAP Manager. If the safety event involves a deviation from an ATC clearance, the controller should note the date, time, place, altitude, flight number, sector/position number and ATC frequency, along with enough other information to fully describe the event and any perceived safety problem.

b. Time Limit. Reports that the ERC determines to be sole-source will be accepted under the ASAP, regardless of the timeframe within which they are submitted, provided that they otherwise meet the acceptance criteria of paragraphs 11a(2) and (3) of this MOU. Reports which the ERC determines to be non-sole-source must meet the same acceptance criteria, and must also be filed within one of the following two possible timeframes:

(1) Within 24 hours after the end of the duty day for the day of occurrence, absent extraordinary circumstances. For example, if the event occurred at 1400 hours on Monday and a controllers shift for that day ends at 1900 hours, the report should be filed no later than 1900 hours on the following day (Tuesday). In order for all employees to be covered under the ASAP for any apparent noncompliance with Air Traffic Regulations resulting from an event, they must all sign the same report or submit separate signed reports for the same event. If the FAA mail system is not available to the controller at the time he or she needs to file a report, the employee may contact the ASAP manager's

office and file a report via fax or telephone within 24 hours after the end of the controllers shift for the day of occurrence, absent extraordinary circumstances. Reports filed telephonically within the prescribed time limit must be followed by a formal report submission within three calendar days thereafter.

(2) Within 24 hours of having become aware of possible noncompliance witb Air Traffic Regulations provided the following criteria are met: If a report is submitted later than the time period after the occurrence of an event stated in paragraph 6b(1) above, the ERC will review all available information to determine whether the controller knew or should have known about the possible noncompliance with Air Traffic Regulations within that time period. If the ERC determines tbat employee did not know or could not have known about the possible noncompliance with Air Traffic Regulations until informed of it, then the report would be included in ASAP, provided the report is submitted within 24 hours of having become aware of possible noncompliance with Air Traffic Regulations, and provided that the report otherwise meets the acceptance criteria of this MOU. If the employee knew or should have known about the possible noncompliance with Air Traffic Regulations, then the report will not be included in ASAP.

c. Non-reporting employees covered under this ASAP MOU. If an ASAP report identifies another covered employee in an event involving possible noncompliance with Air Traffic Regulations and that employee has neither signed that report nor submitted a separate report, the ERC will determine on a case-by-case basis whether that employee knew or reasonably should have known about the possible noncompliance with Air Traffic Regulations. If the ERC determines that the employee did not know or could not have known about the apparent possible noncompliance with Air Traffic Regulations, and the original report otherwise qualifies for inclusion under ASAP, the ERC will offer the non-reporting employee the opportunity to submit his/her own ASAP report. If the non-reporting employee submits his/her own report within 24 hours of notification from the ERC, that report will be afforded the same consideration under ASAP as that accorded the report from the original reporting employee, provided all other ASAP acceptance criteria are met. However, if the non-reporting employee fails to submit his/her own report within 24 hours of notification from the ERC, the possible noncompliance with Air Traffic Regulations by that employee will be referred to an appropriate office within the FAA for additional investigation and reexamination and/or enforcement action, as appropriate, and for referral to law enforcement authorities, if warranted.

7. POINTS OF CONTACT. The ERC will be comprised of one representative from ATO management; one representative from NATCA, and one AOV Air Traffic Safety Inspector (ATSI) assigned as the ASAP representative or designated alternates in their absence. In addition, the ATO Safety Service will designate one person who will serve as the ASAP manager. The ASAP manager will be responsible for program administration, and will not serve as a voting member of the ERC.

8. ASAP MANAGER. When the ASAP manager receives the report, he or she will record the date and time of any event described in the report and the date and time the report was submitted through the FAA mail system. The ASAP manager will enter the report, along with all supporting data, on the agenda for the next ERC meeting. The ERC

will determine whether a report is submitted in a timely manner or whether extraordinary circumstances precluded timely submission. To confirm that a report has been received, the ASAP manager will send a written receipt through the FAA mail system to each employee who submits a report. The receipt will confirm whether or not the report was determined to be timely. The ASAP manager will serve as the focal point for information about, and inquiries concerning the status of, ASAP reports, and for the coordination and tracking of ERC recommendations.

9. EVENT REVIEW COMMITTEE (ERC). The ERC will review and analyze reports submitted by controllers under the program, identify actual or potential safety problems from the information contained in the reports, and propose solutions for those problems. The ERC will provide feedback to the individual who submitted the report.

a. The ASAP manager will maintain a database that continually tracks each event and the analysis of those events. The ERC will conduct a 12-month review of the ASAP database with emphasis on determining whether corrective actions have been effective in preventing or reducing the recurrence of safety-related events of a similar nature. That review will include recommendations for corrective action for recurring events indicative of adverse safety trends.

b. This review is in addition to any other reviews conducted by the ATO. The ERC will also be responsible for preparing a final report on the demonstration program at its conclusion. If an application for a continuing program is anticipated, the ERC will prepare and submit a report with the ATO Service Area/Facility's (Note: dependent on scope of each ASAP program. i.e. national, service unit, or facility specific) application to AOV 60 days in advance of the termination date of the demonstration program.

10. ERC PROCESS.

a. The ERC will meet as necessary to review and analyze reports that will be listed on an agenda submitted by the ASAP manager. The ERC will determine the time and place of the meeting. The ERC will meet at least twice a month and the frequency of meetings will be determined by the number of reports that have accumulated or the need to acquire time critical information.

b. The ERC will make its decisions involving ASAP issues based on consensus. Under the ATO ASAP, consensus of the ERC means the voluntary agreement of all representatives of the ERC. It does not require that all members believe that a particular decision or recommendation is the most desirable solution, but that the result falls within each member's range of acceptable solutions for that event in the best interest of safety. In order for this concept to work effectively, each ERC representative shall be empowered to make decisions within the context of the ERC discussions on a given report. The ERC representatives will strive to reach consensus on whether a reported event is covered under the program, how that event should be addressed, and the corrective action or any enforcement action that should be taken as a result of the report. For example, the ERC should strive to reach a consensus on the recommended corrective action to address a safety problem such as an operating deficiency or noncompliance with an air traffic regulation reported under ASAP. The corrective action process would include working the safety issue(s) with the appropriate facility or service area and the ATO that have the expertise and responsibility for the safety area of concern. AOV will

not use the content of an ASAP report in any subsequent credential action except as described in paragraph 11c(2). However, recognizing that AOV holds regulatory authority to enforce the necessary air traffic rules and regulations, it is understood that AOV retains all legal rights and responsibilities contained in FAA Order 1100.161, FAA Order 8000.90, and FAA Order 8000.86 in the event there is not a consensus of the ERC on decisions concerning a report involving an apparent noncompliance(s), or qualification issue. ATO will not use the content of the ASAP report in any subsequent disciplinary action, except as described in paragraph 11a(3) of this MOU.

c. It is anticipated that three types of reports will be submitted to the ERC: safety-related reports that appear to involve a possible noncompliance with Air Traffic Regulations; reports that are of a general safety concern, but do not appear to involve possible noncompliance with air traffic regulations; and any other reports, e.g., involving controller time on position and other issues. All safety-related reports shall be fully evaluated and, to the extent appropriate, investigated.

d. The ERC will forward non-safety reports to the appropriate ATO safety department head for his/her information and, if possible, internal (ATO) resolution. For reports related to air traffic safety, including reports involving possible noncompliance with air traffic regulations, the ERC will analyze the report, conduct interviews of reporting controllers, and gather additional information concerning the matter described in the report, as necessary.

e. The ERC should also make recommendations to ATO for corrective action for systemic issues. For example, such corrective action might include changes to ATO traffic management procedures, airspace, standard operating procedures, or modifications to the training curriculum for controllers. Any recommended changes that affect ATO will be forwarded through the ASAP manager to the appropriate department head for consideration and comment, and, if appropriate, implementation. AOV will work with ATO to develop appropriate corrective action for systemic issues. The ASAP manager will track the implementation of the recommended corrective action and report on associated progress as part of the regular ERC meetings. Any recommended corrective action that is not implemented should be recorded along with the reason it was not implemented.

f. When the ERC becomes aware of an issue involving the medical qualification or medical certification of an airman, the ERC must immediately advise the appropriate Regional Flight Surgeon about the issue. The ERC will work with the Regional Flight Surgeon and the certificate holder's medical department or medical consultants to resolve any medical certification or medical qualification issues or concerns revealed in an ASAP report, or through the processing of that report. The ATO ERC member must follow the direction(s) of the Regional Flight Surgeon with respect to any medical certification or medical qualification issue(s) revealed in an ASAP report.

g. Any corrective action recommended by the ERC for a report accepted under ASAP must be completed to the satisfaction of all members of the ERC, or the ASAP report will be excluded from the program, and the event will be referred to AOV for further action, as appropriate.

h. Use of the ATO ASAP Report: Neither the written report nor the content of the written ASAP report will be used to initiate or support any ATO disciplinary action, or as evidence for any purpose in an AOV credential action, except as provided in paragraph

11a(3) of this MOU. The ATO or AOV may conduct an independent investigation of an event disclosed in a report.

11. AOV ENFORCEMENT.

a. Criteria for Acceptance. The following criteria must be met in order for a report to be covered under ASAP:

(1) The employee must submit the report in accordance with the time limits specified under paragraph 6 of this MOU;

(2) Any possible noncompliance with Air Traffic Regulations disclosed in the report must be inadvertent and must not appear to involve an intentional disregard for safety; and,

(3) The reported event must not appear to involve criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification. Reports involving those events will be referred to an appropriate FAA office for further handling. The FAA may use the content of such reports for any enforcement purposes and will refer such reports to law enforcement agencies, if appropriate. If upon completion of subsequent investigation it is determined that the event did not involve any of the aforementioned activities, then the report will be referred back to the ERC for a determination of acceptability under ASAP. Such referred back reports will be accepted under ASAP provided they otherwise meet the acceptance criteria contained herein.

c. Sole-Source Reports. A report is considered a sole-source report when all evidence of the event is discovered by or otherwise predicated on the report. Apparent noncompliance's disclosed in ASAP reports that are covered under the program and are sole-source reports will be addressed with an ERC response (no AOV action). It is possible to have more than one sole-source report for the same event.

d. Reports Involving Qualification Issues. ASAP reports covered under the program that demonstrate a lack, or raise a question of a lack, of qualification of a credential holder employee will be addressed with corrective action, if such action is appropriate and recommended by the ERC.

e. Excluded from ASAP. Reported events involving possible noncompliance with air traffic regulations that are excluded from ASAP will be referred by the AOV ERC member to an appropriate office within the AOV for any additional investigation and re-examination and/or credential action, as appropriate.

f. Corrective Action. Employees initially covered under an ASAP will be excluded from the program and not entitled to the enforcement-related incentive if they fail to complete the recommended corrective action in a manner satisfactory to all members of the ERC. Failure of an employee to complete the ERC recommended corrective action in a manner satisfactory to all members of the ERC may result in the reopening of the case and referral of the matter for appropriate action.

g. Repeated Instances of Noncompliance with air traffic regulations, reports involving the same or similar possible noncompliance with the air traffic regulations that were previously addressed with no intervention under ASAP will be accepted into the program, provided they otherwise satisfy the acceptance criteria in paragraph 6 above. The ERC will consider on a case-by-case basis the corrective action that is appropriate for such reports.

h. Closed Cases. A closed ASAP case including a related enforcement investigative report involving a noncompliance addressed with the credential-related incentive, or for which no action has been taken, may be reopened and appropriate credential action taken if evidence later is discovered that establishes that the noncompliance should have been excluded from the program.

12. EMPLOYEE FEEDBACK. The ASAP manager will provide regular feedback to the employees in a manner acceptable to the ERC. The synopsis will include enough information so that the controllers can identify their reports. Employee names, however, will not be included in the synopsis. The outcome of each report will be published. Any employee who submitted a report may also contact the ASAP manager to inquire about the status of his/her report. In addition, each employee who submits a report accepted under ASAP will receive individual feedback on the final disposition of the report.

13. INFORMATION AND TRAINING. The details of the ASAP will be made available to all ATO employees and their supervisors in a manner acceptable to the ERC. Each controller and facility manager will receive written guidance outlining the details of the program at least 2 weeks before the program begins. Each air traffic control specialist will also receive additional instruction concerning the program during the next regularly scheduled recurrent training session, and on a continuing basis in recurrent training thereafter. All new-hire air traffic control specialists (employees) will receive training on the program during initial training.

14. REVISION CONTROL. Revisions to this MOU shall be documented using standard revision control methodology.

15. RECORDKEEPING. All documents and records regarding this program will be kept by the ATO-S ASAP manager and made available to the other parties of this agreement at their request. All records and documents relating to this program will be appropriately kept in a manner that ensures compliance with Air Traffic Regulations and all applicable law. AOV will maintain whatever records they deem necessary to meet their needs.

16. SIGNATORIES. All parties to this ASAP are entering into this agreement voluntarily.

_____ _____

COO, Air Traffic Organization Date

_____ _____

President, National Air Traffic Controllers Association (NATCA) Date

_____ _____

Director, Air Traffic Safety Oversight Service Date

APPENDIX 2. ASAP MOU CHECKLIST

NO.		ITEM	RESPONSE (Circle Yes, No, or NA)	MOU PARAGRAPH REFERENCE
1		Does this program involve a Air Traffic Facility or service area?	Yes No NA	
2		Is this ASAP:		
	a	Specific to an employee group(s)?	Yes No NA	
	b	A Demonstration program?	Yes No NA	
	c	An Extension of a Demonstration program?	Yes No NA	
	d	A Continuing program?	Yes No NA	
	e	A renewal of a Continuing program?	Yes No NA	
3		Is the duration of the program limited to the period of time needed to achieve the desired goals and benefits articulated in the program? Demonstration programs initially should have a duration of no longer than 18 months and should be reviewed prior to renewal. Demonstration programs that undergo changes after their initial review may be extended for no longer than 12 months. Programs that are classified as Continuing must be reviewed and renewed every 2 years.	Yes No NA	
4		Have all parties to the ASAP entered into this agreement voluntarily?	Yes No NA	
5		Is there a description of the objective(s) of the program which includes:		
	a	The essential safety information that is reasonably expected to be obtained through the program?	Yes No NA	
	b	Any specific safety issues that are of a concern to any of the parties?	Yes No NA	
	c	The benefits to be gained through the use of the program?	Yes No NA	
6		Is there a description of any enforcement-related incentive that is needed to achieve the desired goal and results of the program?	Yes No NA	
7		Is there a statement that all safety-related reports shall be fully evaluated and, to the extent appropriate, investigated by the ERC?	Yes No NA	
8		Is there a description of the manner in which ASAP records and reports shall be kept that ensures compliance with Air Traffic Regulations, the Pilot Records Improvement Act (PRIA), and any other applicable law?	Yes No NA	

NO.	ITEM	RESPONSE (Circle Yes, No, or NA)	MOU PARAGRAPH REFERENCE
9	Is there a description of the process for timely reporting to the ERC all events disclosed under the program?	Yes No NA	
10	Is there a description of the procedures that provide for:		
a	The resolution of safety-related events?	Yes No NA	
b	Continuous tracking of those events?	Yes No NA	
c	The analysis of safety-related events?	Yes No NA	
11	Is there a statement of ASAP report acceptance and exclusion criteria?	Yes No NA	
12	Is there a description of the frequency of periodic reviews by the parties to determine whether the program is achieving the desired results? (These reviews are in addition to any other review conducted by the FAA or any other party individually).	Yes No NA	
13	Are the point(s) of contact responsible for oversight of the program identified for each party?	Yes No NA	
14	Is there a description of the process for training and distributing information about the program to certificate holder management and employees and procedures for providing feedback to individuals who make safety-related reports under the program?	Yes No NA	
15	Is there a statement that modifications to the MOU must be accepted by all parties?	Yes No NA	
16	Is there a statement that termination or modification of a program will not adversely affect anyone who acted in reliance on the terms of a program in effect at the time of that action, e.g., when a program is terminated, all reports and investigations that were in progress will be handled under the provisions of the program until they are completed.	Yes No NA	
17	Is there a statement that the program can be terminated at any time, by any party?	Yes No NA	
18	Is there a statement that failure of any party to follow the terms of the agreement ordinarily will result in termination of the program?	Yes No NA	

19	Is there a statement that failure of a certificate holder to follow through with corrective action acceptable to FAA, to resolve any safety deficiencies, will ordinarily result in termination of the program?	Yes No NA
20	Is there a detailed description of the following concepts and how they will be used:	
a	Event Review Committee?	Yes No NA
b	Consensus of the ERC?	Yes No NA
c	Sole-source reporting?	Yes No NA
d	Sufficient evidence?	Yes No NA
e	Enforcement-related incentive?	Yes No NA
21	Is there a statement that repeated instances involving the same or similar possible noncompliance with Air Traffic Regulations previously addressed with administrative action under the ASAP will be covered under the program, provided that they otherwise meet the acceptance criteria of ASAP? (The determination of appropriate corrective action for such events will be made by the ERC on a case-by-case basis.)	Yes No NA
22	Does the ASAP include an MOU procedure to identify the date, time, location or fix, altitude, flight number, and ATC frequency at the time the event occurred? (This applies to ASAP MOUs that contain provisions for ATC events.)	Yes No NA
23	Is there a statement that employees initially covered under an ASAP will be excluded from the program and not entitled to the enforcement-related incentive if they fail to complete the recommended corrective action in a manner satisfactory to all members of the ERC? (These cases may result in the reopening of the case and referral of the matter for appropriate action.)	Yes No NA
24	Is there a statement that any safety-related ASAP event that concerns an apparent noncompliance(s) that is EXCLUDED from ASAP, will be referred by the AOV ERC representative to an appropriate office within AOV for any additional investigation and reexamination and/or enforcement action, as appropriate?	Yes No NA
25	Is there a statement that a closed ASAP case, including a related FSAS report, that involves a noncompliance addressed with administrative action (need AOV equivalent??) or for which no action has been taken, may be reopened if evidence is later discovered that establishes the event should have been excluded from the program?	Yes No NA

26	Is there a statement that when the ERC becomes aware of an issue involving the medical qualification or medical certification of credential holder, the ERC must immediately advise the appropriate Regional Flight Surgeon about the issue? (The ERC will work with the Regional Flight Surgeon and the credential holder's medical department or medical consultants to resolve any medical certification or qualification issues or concerns revealed in an ASAP report, or through the processing of that report. The ATO ERC member must follow the direction(s) of the Regional Flight Surgeon with respect to any medical certification or medical qualification issue(s) revealed in an ASAP report.)	Yes No NA
27	Is there a statement that reports that appear to involve possible criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification will be referred to an appropriate FAA office for further handling. The FAA may use such reports for any enforcement purposes and will refer such reports to law enforcement agencies, as appropriate.	Yes No NA

U.S. Department
Of Transportation

Federal Aviation Administration

SOC

Safety Oversight Circular

SOC **08-07**
Date AUG 2 0 2008

Air Traffic Safety
Oversight Service (AOV)

Subject: **Guidance Regarding the Validation and Verification of the ATO Safety Management System**

1. REFERENCED DOCUMENTS

- FAA Order 1100.161 *Air Traffic Safety Oversight Service*
- ICAO Document 4444 *Air Traffic Management* (PANS-ATM)
- ICAO Annex 11 *Air Traffic Services*
- Air Traffic Safety Oversight Service Memorandum ATO Vice President of Safety Services, *ATO Safety Management System Requirements*, August 24, 2005.

2. PURPOSE

This Safety Oversight Circular (SOC) provides general information and guidance regarding the methods and standards by which the Air Traffic Safety Oversight Service (AOV) will conduct its Validation and Verification (V&V) of the Air Traffic Organization (ATO) Safety Management System (SMS). This information is provided in order to help prepare ATO for the V&V process.

3. BACKGROUND AND DISCUSSION:

a. Under FAA Order 1100.161 *Air Traffic Safety Oversight Service*, ATO must "develop and maintain a Safety Management System (SMS) and submit it and any changes thereto, to AOV for approval." AOV, in turn, is responsible for establishing requirements for the ATO SMS "in accordance with International Civil Aviation Organization (ICAO) Annex 11 to the *Convention on International Civil Aviation, Air Traffic Services*, and ICAO Document 4444 (ATM/501), *Procedures for Air Navigation Services, Air Traffic Management*". Approval of the ATO SMS is accomplished via a system engineering process called "Validation and Verification". V&V confirms that system requirements are correct (validation) and satisfied (verification).

b. Specifically, validation involves an evaluation to establish that the ATO SMS completely, consistently, and unambiguously reflects relevant Federal Aviation Administration (FAA) and ICAO requirements. Inconsistencies identified by AOV evaluations are documented for corrective action by ATO. Relevant FAA requirements are found in the following documents:

- ✈ FAA Order 1100.161 *Air Traffic Safety Oversight Service*
- ✈ Air Traffic Safety Oversight Service Memorandum ATO Vice President of Safety Services, *ATO Safety Management System Requirements*, August 24, 2005

c. Once ATO SMS requirements are complete and consistent with FAA and ICAO requirements, verification then establishes that the ATO SMS requirements are correctly implemented. In broad terms, verification ensures that the system requirements have been met by the design solution and that the system is ready to be used in the operational environment for which it was intended. In accordance with the basic organization of a safety management system, the AOV verification process divides these requirements into the following four areas:

- ✈ Safety Policy
- ✈ Safety Risk Management
- ✈ Safety Assurance
- ✈ Safety Promotion

d. In theory, the V&V process extends to all levels of an organization, although in practice the lowest (most disaggregated) levels are evaluated through a sampling procedure. Figure 1 shows a "multi-*V*" illustration of the V&V process. In the "*V*" representation, the left and right arms of each "*V*" represent validation and verification components, respectively. The largest "*V*" encompasses the organization as a whole, including individual facility SMS; the smaller "*V*s represent different levels of the organization.

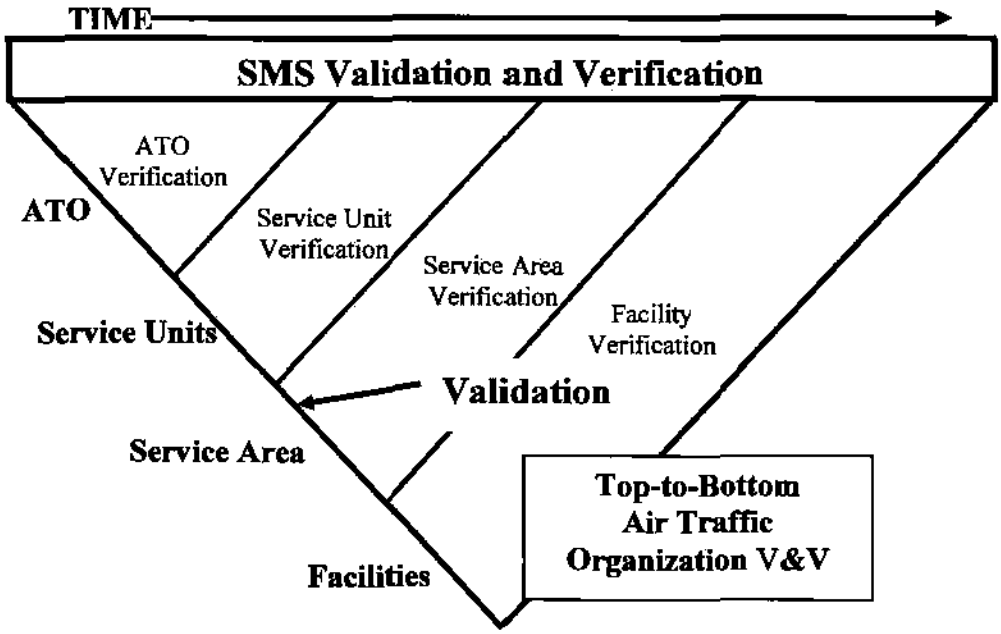


Figure 1. "Multi-V" Diagram Representation of ATO SMS Validation and Verification

Figure 1 also shows the general time sequence of the V&V process with the highest level requirements evaluated first, followed by successively lower levels of the ATO. In this way, the V&V process confirms that the highest level requirements are appropriately translated to the lowest levels of the organization. For example, facility V&V sampling could include an

evaluation to determine that facility operating procedures are consistent with ATO SMS requirements.

e. AOV is committed to continual engagement with the ATO in order to maximize the likelihood of successful SMS implementation prior to the target date of March 2010. This is evidenced by the fact that V&V activities have been underway for several years. In May 2004, AOV granted ATO interim approval of the SMS, as documented in the SMS Manual Version 1.1. In a memorandum dated June 23, 2004, AOV requested that the MITRE Corporation Center for Advanced Aviation System Development (CAASD) provide an independent validation assessment of the SMS Manual. The results of the assessment were used to provide feedback to ATO on the strengths and weaknesses in its SMS design. In the same spirit, this SOC provides broad direction to ATO in advance of the target SMS implementation date.

4. DISPOSITION:

This guidance does not constitute a change to any requirement contained in FAA orders, manuals, etc. However, applicable Standard Operating Procedures (SOP) should be changed to reflect the processes defined in this SOC.

5. GUIDANCE:

a. Summary of AOV Validation and Verification Process

As described in paragraph 3 of this SOC, V&V activities will begin with examination of aggregate ATO-level requirements and continue to lower levels of the organization including facility-level sampling. The process is summarized in figure 2.

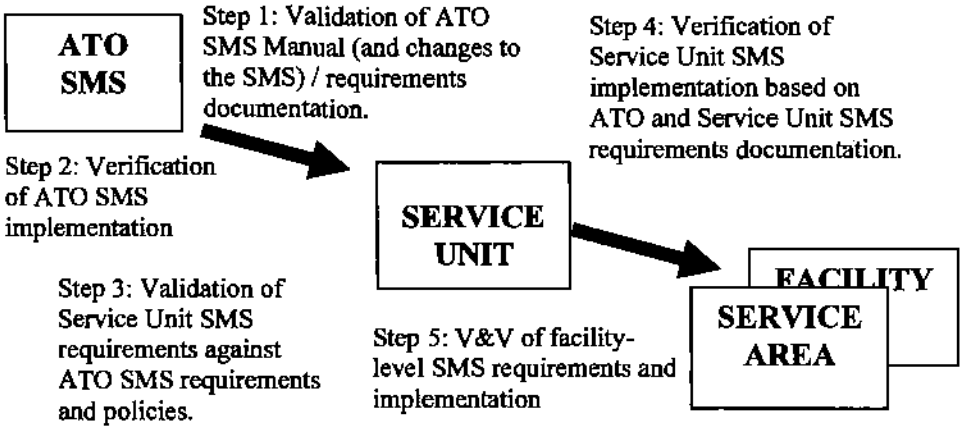


Figure 2. Summary of AOV V&V Process

1) **Step 1: Air Traffic Organization Validation of Requirements**

At the ATO level, validation will begin with an evaluation of the ATO Safety Management System Manual (ATO SMS JO 1000.37) and SMS implementation plan as they relate to relevant FAA and ICAO SMS requirements. In accordance with FAA Order 1100.161, paragraphs 2-1.e and 2-2.b, the SMS Manual (and changes to the SMS Manual) will be approved by AOV.

2) **Step 2: Service Unit Validation**

Upon validation of ATO SMS requirements, the next step in the V&V process involves an assessment of whether ATO requirements have been appropriately translated into ATO service unit implementation plans for:

- ✈ Acquisition and Business Services, Communications
- ✈ En Route and Oceanic Service
- ✈ Operations Planning, System Operations Services
- ✈ Technical Operations Service
- ✈ Terminal Service

Service Unit level validation involves a detailed analysis of Service Unit SMS documentation (e.g., Orders, SOPs, etc.) against ATO SMS requirements.

3) **Step 3: Service Unit Verification**

Verification refers to the analysis which determines whether ATO-wide and Service Unit SMS requirements have been correctly implemented. This analysis will be conducted through AOV audits of Service Unit safety management systems and implementation plans.

4) **Step 4: Service Area and Facility V&V**

V&V must extend to the level at which ATO interacts with customers at the point where service is provided. This will be done by auditing service areas and facilities in order to evaluate:

(i) how well service center and facility SOPs conform to ATO SMS requirements
(ii) how well SOPs relating to SMS are being followed
(iii) how airspace changes are processed and approved
(iv) how safety risk is managed

b. Summary of FAA SMS Requirements

As discussed in paragraph 3, the AOV V&V program can be divided into four components, reflecting the standard SMS organization: Policy, Safety Risk Management, Safety Assurance, and Promotion. The table below enumerates the requirements for each of the four components, and provides examples of the information that would be required for V&V.

1) Safety Policy Requirements.

Requirement Citation	Requirement Description	Examples
FAA 1100.161 3.3 a4	Development of minimum National Airspace (NAS) service level availability requirements, which include validation and verification of these requirements, for new systems entering the NAS and hardware and/or software improvements to existing systems.	Establish minimum NAS service level availability requirements and the NAS service level availability requirements for new systems. Verify and validate NAS service level availability requirements for new systems and system improvements before their entry into the NAS.
ATO Safety Management System Requirements Memo, SMS 1.0	The ATO shall implement a Safety Management System (SMS) that provides for a systematic approach to safety and establishes an effective organization to deliver and monitor safety performance.	
SMS 1.01	The Chief Operating Office (COO) shall be responsible and accountable for safety of the NAS, and shall ensure that all levels of management within the ATO are held accountable for ensuring that required safety levels are maintained in the provision of air traffic services.	Document policies regarding NAS safety and ensure compliance with policies on NAS safety. Hold top management accountable for safety.
SMS 1.02	Clear and unambiguous lines of authority and responsibility for SMS compliance shall be established and maintained at all organization levels and within all service units.	Clear and unambiguous lines of authority and responsibility for SMS compliance are visible to all employees through guidance and training.
SMS 1.04	ATO shall promote and measure SMS implementation and performance.	Provide personnel incentives for SMS implementation and performance. Measure the success of these incentives through periodic audits.
SMS 1.06	ATO shall establish an ATO Safety Unit responsible for developing, implementing, and maintaining the SMS.	Establish a Safety Unit. The Safety Unit is responsible for developing, implementing, and maintaining the SMS.
SMS 1.07	The Safety Unit shall be organizationally independent from the service delivery portion of ATO.	Establish a Safety Unit that is organizationally independent from the service delivery portion of ATO.
SMS 1.08	At each organizational level, the safety manager shall report directly to the general manager of that organization.	The safety manager is on the manager's first level staff and participates in the management of the organization.

2) Safety Risk Management Requirements

Requirement Citation	Requirement Description	Examples
FAA 1100.161 2.2.f	Provide to AOV regular and periodic (as set by AOV) status briefings, to include information regarding NAS changes being tracked by the ATO Safety Unit. The NAS change tracking data will be developed. ATO compliance with this reporting requirement will be effective September 15, 2006.	Provide status briefings to AOV regarding NAS changes being tracked by ATO-S.
FAA 1100.161 2.2.g	Develop and maintain a hazard tracking database in which all types of medium and high risk hazards are tracked, and provide continuous AOV access to the database. ATO compliance with this reporting requirement will be effective September 15, 2006.	Enter and track medium and high hazards in a hazard tracking database and provides means to track, manage, resolve, and communicate hazards. Grant AOV access to this database.
SMS 1.03	The ATO shall develop, implement, and maintain written SMS instructions and procedures for conducting safety management.	Implement written Safety Risk Management (SRM) instructions and procedures and maintain these written SRM instructions and procedures
SMS 1.05	The ATO shall comply with established safety standards and the approved procedures and standards contained in the approved SMS.	Comply with established safety standards and the approved procedures and standards contained in the approved SMS.
SMS 2.0	The ATO shall document the acceptable level of safety risk applicable to the provision of air traffic services. The acceptable level of safety risk may be specified in qualitative or quantitative terms.	Define and follow a process to monitor, adjust, and improve the specified acceptable level of safety risk.

Requirement Citation	Requirement Description	Examples
SMS 2.01	The SMS shall define a risk matrix depicting acceptable and unacceptable risk.	Define a risk matrix depicting acceptable and unacceptable risk.
SMS 2.02	The SMS shall define both elements of risk: severity in qualitative and likelihood in both quantitative and qualitative terms.	Define severity in qualitative terms. Further, define likelihood in both quantitative and qualitative terms.
SMS 3.0	The ATO safety management system shall include Safety Risk Management (SRM).	Describe SRM in the ATO SMS Manual and other safety guidance materials.
SMS 3.01	The ATO SMS shall identify actual and potential hazards.	Follow guidelines and requirements to properly identify potential hazards through a standardized and documented SRM process.
SMS 3.02	The ATO SMS shall assess the risk of those hazards.	Assess the risks associated with identified hazards according to SMS guidelines.
SMS 3.03	The ATO SMS shall determine necessary mitigation of those risks to an acceptable level.	Determine the necessary mitigations of the hazards to an acceptable level.
SMS 3.04	The ATO SMS shall verify that the mitigations are included in the system.	Identify and verify Mitigations before implementation.
SMS 4.0	Any change to the NAS, whether or not a Safety Risk Management Document (SRMD) is developed, shall only be implemented after a safety assessment has demonstrated that the change will meet or exceed the defined acceptable level or safety risk.	
SMS 4.01	ATO shall establish a framework for identifying, monitoring, and documenting proposed NAS changes.	Establish a framework for identifying, monitoring, and documenting proposed NAS changes.
SMS 4.02	NAS changes with identified actual or potential hazards shall be subject to the provisions of the SRM as required in SMS 3.	
SMS 4.03	All decisions determining that NAS changes do not have identified actual or potential hazards and therefore are not subject to the provisions of SRM must be documented in a written statement that includes a description of the decision and supporting documentation signed by a manager and kept on file for a period equivalent to the lifecycle of the system or change.	Document, in a written statement, decisions that includes a description of the decision and supporting documentation signed hy a manager. Keep these documents on file for a period equivalent to the lifecycle of the system or change.

	All activities undertaken in an ATO safety management program shall be documented. All documentation shall be retained for the life of the program.	Retain documentation for the life of the program.

3) Safety Assurance Requirements

Requirement Citation	Requirement Description	Examples
FAA 1100.161 3.3a.1	Regularly scheduled internal ATO inspections of air traffic control, airway facility operations and maintenance, acquisition programs, and the ATO Aviation System Standards (AVN) organization.	Conduct and document regularly scheduled internal inspections of air traffic control, facility operations and maintenance. In addition, conduct and document regularly scheduled internal inspections of acquisition programs and AVN.
FAA 1100.161 3.3a.10	A process that periodically verifies that the controls required to mitigate hazards identified during risk assessments, and tracked in the hazard tracking and risk resolution system, are being met throughout the NAS. The ATO will develop and implement a methodology to determine the frequency of verification based on risk classification at a minimum.	
FAA 1100.161 3.3a.2	Internal ATO no-notice spot inspections of Air Traffic Control, and Airway Facility Operations and maintenance, including the ATO AVN organization, conducted by a party independent of the service organization that is inspected.	Conduct and document no notice, third party inspections of air traffic control, facility operations and maintenance.
FAA 1100.161 3.3a.4	Development of minimum NAS service level availability requirements, which includes validation and verification of these requirements for new systems entering the NAS and hardware, and/or software improvements to existing systems.	Demonstrate internal oversight, evaluation, and quality assurance through documentation and guidance material.
FAA 1100.161 3.3a.5	Monitoring and validation of NAS service availability standards, which include the comparison of fielded service availability performance within the standards.	Develop standards and guidance for NAS service availability. Provide measures for ATO NAS service availability against standards.
SMS 1.09	The ATO shall assess the effectiveness of the SMS in managing the safety of the NAS.	Continually assesses SMS effectiveness and document the process.
SMS 1.11	ATO shall track and share safety data (as defined in FAA Order 1100.161 Section 3.3.c) throughout the FAA.	Continuously track and share operational safety data (OE's, RI's, etc.). Provide evidence of tracking and sharing of hazard data. In addition, track and share SMS implementation data.

SMS 1.11	ATO shall track and share safety data (as defined in FAA Order 1100.161 Section 3.3.c) throughout the FAA.	Continuously track and share operational safety data (OE's, RI's, etc.). Provide evidence of tracking and sharing of hazard data. In addition, track and share SMS implementation data.
SMS 1.13	The ATO SMS shall include a mechanism for identifying the need for safety enhancing measures.	Identify the need for additional controls in the NAS through the application of SMS.
SMS 3.05	The ATO SMS shall provide continuous monitoring and regular assessment of the safety level achieved.	Constantly monitor, assess and document safety level achieved.
SMS 5.0	All activities undertaken in an Air Traffic System (ATS) safety management program shall be documented. All documentation shall be retained for the life of the program.	Document ATO Safety Assurance activities.
SMS 6.0	The ATO SMS shall establish a formal incident reporting system to facilitate the collection of data on actual incidents and potential safety hazards related to the provision of ATS.	
SMS 6.01	The ATO SMS shall collect data from the NAS on safety incidents.	Collect data from the NAS regarding safety incidents.
SMS 6.02	The ATO SMS shall monitor overall safety levels and detect any adverse trends.	Detail a process to detect trends in safety metrics.
SMS 7.0	Reports concerning the availability and reliability of ATO facilities and systems, such as failures and degradations of communications, surveillance and other safety significant systems and equipment shall be systematically documented, reviewed and investigated by the ATO in order to detect any hazards, including adverse trends.	Detail a process to ensure reports of failures and degradations of NAS systems are reviewed.
SMS 9.0	ATO shall conduct scheduled and unscheduled audits and evaluations of ATO service units that have the ability to change the NAS. ATO shall conduct formal reviews of the audit and evaluation results reported by service units.	
SMS 9.01	The ATO Safety Management System (SMS) shall provide for the conduct of safety reviews by all ATS units as part of the SMS continuous improvement process.	Conduct reviews of the SMS processes.
SMS 9.01.a	ATO shall publish an audit schedule quarterly.	Publish an audit schedule quarterly.

SMS 9.02	ATO shall conduct audits that cover, at a minimum, all items listed in ICAO doc 4444 paragraph 2.5.2.	Maintain a documentation system that ensures that manuals are complete, concise, and up-to-date. (ICAO doc 4444, 2.52a)

4) Safety Promotion Requirements

Requirement Citation	Requirement Description	Examples
SMS 1.05	The ATO shall comply with established safety standards and the approved procedures and standards contained in the approved SMS.	The COO is lead of implementation of safety culture and COO ensures periodic status reporting for safety culture is being conducted.
SMS 1.10	All ATO executives, directors, managers, and practitioners shall be trained in SMS.	Identify ATO personnel who require SMS training and ensure training is received.
SMS 1.12	ATO shall share safety-related lessons learned throughout the FAA.	Publish safety lessons learned and ensure lessons learned are available to the entire FAA.
SMS 10.0	ATO shall document competency requirements, and where appropriate credentialing or certification requirements, for Safety Managers and Engineers, Air Traffic Controllers and Air Transportation System Specialists.	Document competency requirements for the safety managers and safety engineers.
SMS 11.0	Safety Managers and Engineers, Air Traffic Controllers and Air Transportation System Specialists shall meet the competency, credentialing, and certification requirements documented in the approved SMS Manual and/or contained in other related FAA orders, handbooks and guidance materials.	Ensure safety managers and engineers meet competency requirements.

6. OTHER CONSIDERATIONS

a. Clarification of Approval Criteria for the ATO SMS

FAA Order 1100.161 stipulates that ATO must "develop and maintain an SMS and submit it and any changes thereto, to AOV for approval." Determination of compliance by ATO will be on the basis of the AOV V&V process. The validation part of the process ensures that the ATO SMS requirements are correct. Audits are conducted in the verification part of the process to ensure that facilities are in compliance with these requirements.

For example, a V&V audit reveals that a number of facilities are not in compliance with ATO SMS requirements. Would this, in itself, justify a non-approval determination for the SMS? Typically, the answer would be no. Approval would be granted unless all, or a very large number of facilities, were not in compliance. In this case there is the possibility of a system-wide problem that could, *in the absence of corrective action*, result in a determination of non-approval. Generally, approval requires that the following conditions be met:

Condition 1: The ATO Safety Management System (as defined in paragraph 4 of this SOC) fulfills the requirements enumerated in paragraph 6 of this SOC.

The SMS is defined as an "integrated collection of processes, procedures, policies, and programs that are used to...manage...safety risk." Condition 1 requires that these processes, procedures, policies and programs completely, consistently, and unambiguously reflect all relevant FAA SMS requirements.

Condition 2: Absence of large-scale, systemic non-compliance with ATO SMS requirements.

In a case of large-scale systemic non-compliance with ATO SMS requirements, the efficacy of corrective actions taken to mitigate that non-compliance would have to be evaluated before SMS approval could be granted. Evidence of non-systemic non-compliance, however, would not generally result in a determination of non-approval providing scheduled and unscheduled internal audits and evaluations have been planned to clearly reveal the non-compliance issues.

b. ATO SMS Validation and Verification Package

As described in this SOC, the validation and verification process is executed by AOV...

(i) approving the ATO SMS manual and policies.

(ii) reviewing and evaluating documents including Service Unit and facility Standard Operating Practices.

(iii) receiving from ATO, prior to a formal request for approval of its SMS, a V&V package containing relevant orders, manuals, and SOPs from each of the affected Service Units.

As part of the audit planning process, AOV will request selected facilities to provide documentation relevant to the SMS V&V process.

Anthony S. Ferrante
Director, Air Traffic Safety Oversight Service

Attachment: Appendix

Appendix:

DEFINITIONS (SOC 08-07)

a. **Acceptance**
The process whereby the regulating organization has delegated the authority to the service provider to make changes within the confines of approved standards and only requires the service provider to notify the regulator of those changes within 30 days. Changes made by the service provider in accordance with their delegated authority can be made without prior approval by the regulator.

b. **Approval**
The formal act of approving a change submitted by a requesting organization. This action is required prior to the proposed change being implemented.

c. **Assumptions**
Characteristics or requirements of a system or system state that are neither validated nor verified.

d. **ATO Safety Personnel**
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.

e. **Cause(s)**
Events that result in a hazard or failure. Causes can occur by themselves or in combinations.

f. **Configuration Management**
A management process for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its requirements, design, and operational information throughout its life.

g. **Control**
Anything that mitigates the risk of a hazard's effects. A control is the same as a safety requirement. All controls must be written in requirement language. There are three types of controls:

1) **Validated**
Those controls and requirements that are unambiguous, correct, complete, and verifiable.
2) **Verified**
Those controls and requirements that are objectively determined to have been met by the design solution.
3) **Recommended**
Those controls that have the potential to mitigate a hazard or risk but have not yet been validated as part of the system or its requirements.

h. **Credentialing Program**
A program for issuing, amending and removing credentials of ATO safety personnel, examiners and others, as appropriate, to ensure their currency and continued competency to perform safety functions as described in AOV's Credentialing order.

i. **Effect**
A description of the potential outcome or harm of the hazard if it occurs in the defined system state.

j. **Hazard**
Any real or potential condition that can cause injury, illness, or death to people; damage to or loss of a system, equipment, or property; or damage to the environment. A hazard is a condition that is a prerequisite to an accident or incident.

k. **Letter of Correction**
Formally documents an ATO correction of an instance of non-compliance.

l. **Letter of Investigation**
Provides official notification to ATO that it has not been able to informally resolve an alleged non-compliance issue. The letter informs ATO of the specific matter being investigated and provides ATO an opportunity to respond in writing.

m. **Maintenance**
Any repair, adaptation, upgrade, or modification of NAS equipment or facility.

n. **Oversight**
To validate the development of a defined system and verify compliance to a predefined set of standards; Regulatory Supervision.

o. **Requirement**
An essential attribute or characteristic of a system. It is a condition or capability that must be met or passed by a system to satisfy a contract, standard, specification, or other formally imposed document or need.

p. **Risk**
The composite of predicted severity and likelihood of the potential effect of a hazard in the worst credible system state. There are three types of risk: (1) initial, (2) current, and (3) residual.

1) **Initial Risk**
The composite of the severity and likelihood of a hazard considering only verified controls and documented assumptions for a given system state. It describes the risk at the preliminary or beginning stage of a proposed change, program or assessment. .

2) **Current Risk**
The predicted severity and likelihood of a hazard at the current time. When determining current risk, both validated controls and verified controls may be used in the risk assessment. Current risk may change based on the actions taken by the decision-maker that relate to the validation and/or verification of the controls associated with a hazard.

3) **Residual Risk**
The remaining risk that exists after all control techniques have been implemented or exhausted, and all controls have been verified. Only verified controls can be used for the assessment of residual risk.

q. Safety Council
A forum for top management officials from AOV and the ATO Safety to meet and discuss non-compliance and other safety issues in an attempt to resolve those issues.

r. Safety Directive (SD)
A mandate from AOV to ATO to take immediate corrective action to address a non-compliance issue that creates a significant unsafe condition.

s. Safety Management System (SMS)
An integrated collection of processes, procedures, and programs that ensure a formalized and proactive approach to system safety through risk management. Risk assessments are required for all changes to identify safety impacts. The SMS is a closed-loop system ensuring that all changes are documented and all problems or issues are tracked to conclusion.

t. Safety Requirement
A control written in requirements language.

u. System
An integrated set of constituent pieces that are combined in an operational or support environment to accomplish a defined objective. These pieces include people, equipment, information, procedures, facilities, services, and other support services.

v. System Safety
The application of technical and managerial skills to the systematic, forward-looking identification and control of hazards throughout the life cycle of a project, program, or activity.

w. System State
An expression of the various conditions, characterized by quantities or qualities, in wbich a system can exist.

x. Validation
The process of proving that the functions, procedures, controls, and safety standards are correct and the right system is being built (i.e., the requirements are unambiguous, correct, complete, and verifiable).

y. Verification
The process that ensures that the system requirements have been met by the design solution and the system is ready to be used in the operational environment for which it is intended.

z. Warning Notice
A notice that brings to ATO attention that immediate action is required to correct a significant unsafe condition. It warns that if the issue is not corrected, a Safety Directive (SD) mandating specified action will be issued. In emergency situations, where time does not permit the issuance of a warning notice, a SD may be issued without a warning notice.

U.S. Department
Of Transportation
Federal Aviation
Administration

SOC

Safety Oversight Circular

SOC **09-11**
DATE Sep 30, 2009

Air Traffic Safety
Oversight Service (AOV)

SUBJECT: Safety Oversight Standards

1. **PURPOSE.** This Safety Oversight Circular (SOC) provides information and guidance material that may be used by the Air Traffic Organization (ATO) to develop and implement internal procedures in order to comply with the requirements of FAA Order 1100.161, Chapters 2 *(Responsibilities)* and 4 *(Safety Standards)*. It also identifies those systems that AOV will oversee to determine compliance with safety standards.

2. **DEFINITIONS.**

   A) **Requirements.** National standards contained in FAA Orders or Manuals that are part of the Directives Management and Information system.
   B) **System.** An integrated set of constituent pieces that are combined in an operational or support environment to accomplish a defined objective. These pieces include people, equipment, information, procedures, facilities, services and support services.
   C) **Safety.** Safety is the state in which the risk of harm to persons or damage to property is reduced and maintained at or below an acceptable level through a continuing process of hazard identification and risk management. It is a level of risk that is acceptable.

3. **BACKGROUND.**

   A) The primary responsibility for safety of the National Airspace System (NAS) rests with the ATO. To maintain operational safety, the ATO is required to comply with the provisions of FAA Order 1100.161. These provisions require the Chief Operating Officer to have primary responsibility for system safety and compliance with safety standards in order to ensure that all organizational and operational levels establish and maintain a high level of safety.
   B) AOV Approval of ATO actions are governed by the "AOV Approval, Acceptance and Concurrence Process," published as part of Aviation Safety's Quality Management System.[1]

[1] The "AOV Approval, Acceptance and Concurrence (AAC) Process," may be found at this URL: https://intranet.faa.gov/faaemployees/org/linebusiness/avs/qms/qms_homepages/aov/processes_forms/
The AOV Secretary is the Correspondence Point of Contact for status information on AAC Process actions.

C) This circular describes a system safety[2] approach to more clearly define the safety standards noted in FAA Order 1100.161. This approach facilitates the identification of those changes to the NAS that require AOV approval or acceptance. It also identifies those systems that apply the safety standards accepted by AOV under the provisions of FAA Order 1100.161, Chapter 2, paragraph 2-1.a.

D) To achieve the highest possible acceptable level of safety, the FAA has begun to use the Safety Management System (SMS) and data-analysis techniques in order to anticipate and thus prevent accidents. Objective 6, which is listed under the "Increased Safety" goal in the FAA Flight Plan (2009-2013), indicates the need to implement the SMS. The ATO is required to have SMS fully implemented by March 14, 2010.

E) In defining a system safety approach, this circular does not preclude the development of follow-on subsystem standards that will provide more detailed information for ensuring consistent interpretation and focused attention to system safety.

4. **SYSTEM-ORIENTED SAFETY STANDARDS.** FAA Order 1100.161, Chapter 4, identifies six areas of integrated and complex systems (i.e. a "system of systems") within the ATO environment. Those areas are defined as:

1) Acquisition and Implementation of New Systems
2) Air Traffic Control Functions
3) Equipment and Facility Maintenance Functions
4) Flight Inspection Functions
5) Flight Procedure Development Functions and
6) Charting Functions

This circular identifies the systems contained in these six areas that are the **focus** of AOV oversight. Changes and/or waivers that require AOV approval or acceptance are outlined in FAA Order 1100.161, *Air Traffic Safety Oversight*. Changes and/or waivers to these systems require AOV approval or acceptance as ATO must follow their AOV approved SMS when making such changes. AOV recognizes that there are some joint oversight responsibilities that will be handled collaboratively between AOV and Flight Standards Service (AFS).

A) **Acquisition and Implementation of New Systems.** AOV oversight will concentrate on the following systems and procedures within the acquisition and implementation of new systems function:

i) Acquisition Management System: New acquisitions within the FAA are required to address the FAA Acquisition Management System (FAA AMS) whose policy and guidance materials are maintained in the FAA Acquisition System Toolset (FAST) website at http://fast.faa.gov. Additionally, each program is required to address the Safety Risk Management policy and program requirements as defined in the ATO

[2] System Safety is defined in FAA Order 1100.161, Air Traffic Safety Oversight, as "The application of technical and managerial skills to the systematic, forward-looking identification and control of hazards throughout the life cycle of a project, program or activity."

SMS Manual, the Safety Risk Management Guidance for System Acquisitions (SRGMSA), as well as the System Safety Handbook (SSH). The Joint Resources Council (JRC) Secretariat team has established checklists to a review program's readiness to be presented to the JRC for investment decision. One of the checklist items (for which ATO Safety has the Lead) is to ensure that each program, at the conclusion of each acquisition phase, complies with (among other things) the safety requirements as noted in the FAA AMS. There is currently no requirement via the JRC checklist for AOV to review safety risk management documentation prior to investment decision. However, the Safety Oversight Circulars issued by AOV do provide guidance to ATO for AOV's engagement early in the process. AOV, Aircraft Certification Service (AIR) and AFS cooperate to ensure the safety aspects of the FAA AMS are properly considered and comply with safety management system requirements. Changes or waivers to safety risk management requirements in the FAA AMS should receive AOV and in some cases AIR and AFS, approval prior to implementation. The following are examples of such requirements:

1. Safety risk management planning
2. Safety risk management conduct
3. Document analyses
4. Coordinate analyses through the System Safety Working Group and
5. Safety documentation review

ii) To ensure timely and orderly consideration of safety risk management in the acquisition of new systems, specific documents should be completed during each of the acquisition management system (AMS) phases. Current and future AOV Safety Oversight Circulars provide guidance on their development. 'Current SOCs include:

(1) SOC-07-01 *Acceptance of Air Traffic Organization (ATO) Baseline*
(2) SOC-07-02 *AOV Concurrence/Approval at Various Phases of Safety Risk Management*
(3) SOC-07-05 *AOV Guidance on Safety Risk Modeling of High-Risk Hazards*
(4) SOC-07-06 *ATO Safety Management (SMS) Definitions* and
(5) SOC 08-07 *AOV Guidance Regarding the Validation and Verification of the ATO Safety Management System*

ATO should coordinate required SRM documentation with AOV for concurrence in each of the AMS decision points using AOV Concurrence/Approval SOC 07-02, as indicated in Figure 1.

AMS Decision Point	Type of Analysis Required	Required SRM Documentation	AOV Concurrence/Approval (SOC 07-02)
Concept and Requirements Definition Decision Investment Analysis Readiness Decision	Operational Safety Assessment (OSA)	**SRMD: OSA** – Requirements input to preliminary Program Requirements (pPR) and incorporated into the Enterprise Architecture Safety Plan inputs to the Investment Analysis Plan (IAP)	**Safety Definition**: provide system description and Preliminary Hazard List of expected severity of each identified initial high-risk hazards. (see SOC 07-02 for details)
Initial Investment Decision	Comparative Safety Assessment (CSA)	**SRMD: CSA** (Update to the existing SRMD)	**No concurrence required**
Final Investment Decision	Preliminary Hazard Analysis (PHA)	**SRMD: PHA** (Update to the existing SRMD) Program Safety Plan (PSP) In-Service Readiness (ISR) Checklist	**Mitigation/Solution Development/ Control Validation Phase:** provide PHA identifying severity and likelihood of residual risk and corresponding mitigation. (see SOC 07-02 for details)
In-Service Decision	-Sub-System Hazard Analysis (SSHA) -System Hazard Analysis (SHA) -Operating & Support Hazard Analysis (O&SHA) -Others as defined in the Program Safety Plan (PSP)	**Update existing SRMD** to include: SSHA, SHA, O&SHA SSAR (includes Safety Action Records and SRVT) ISR Checklist Complete	**Operational Introduction and Control Verification:** Provide in SSAR evidence that the system can be introduced into the NAS and risk mitigations are validated and verified. **Tracking and Monitoring Plan:** provide in SSAR how system will be monitored and tracked. **Request for High-Risk Hazard Approval:** upon request AOV approve or reject mitigations to initial high-risk hazards. (see SOC 07-02 for details)

Figure 1: Coordination of SRM Documentation, AOV Concurrence and AMS Decision Points

iv) Change Control Board (CCB) Safety Policies and Procedures: The NAS CCB controls changes to the NAS. It is a body composed of representatives from all FAA Lines of Business. FAA policy now requires each approved NAS Change Proposal (NCP) be accompanied by safety risk management documentation memo stating that no risk exists to the NAS. Changes or waivers to NAS CCB safety risk management requirements should receive AOV approval prior to implementation.

B) **Air Traffic Control.** AOV oversight will focus on the following ATC systems and subsystems within the air traffic control function:

i) **ATC System Classifications.** FAA Order 1100.161, Chapter 4, notes four main areas on which AOV oversight activities are concentrated. These include:

- Organization
- Operations
- Personnel & Training and
- Operations & Procedural Handbooks, Orders & Documents

The sections below further define these areas as they pertain to approvals and acceptances and audit areas of concentration. In an effort to convey the focus of AOV oversight activities, we have identified five major system categories for the Air Traffic Control Function as listed in FAA Order 1100.161. These major system categories are drawn from FAA requirements and International Civil Aviation Organization (ICAO) Procedures for Air Navigation Systems, Air Traffic Management Document 4444 (ICAO Document 4444). These include:

- Control
- Safety Assurance
- Special Operation
- Airspace and Procedures and
- Administrative Requirements

ii) **Category Classifications.** The categories shown in figure 2 below contain activities associated with major system areas addressed within FAA orders and ICAO Document 4444. Each category contains relevant references to FAA Orders, ICAO Document 4444, and other guidance (when applicable) pertaining to that category.

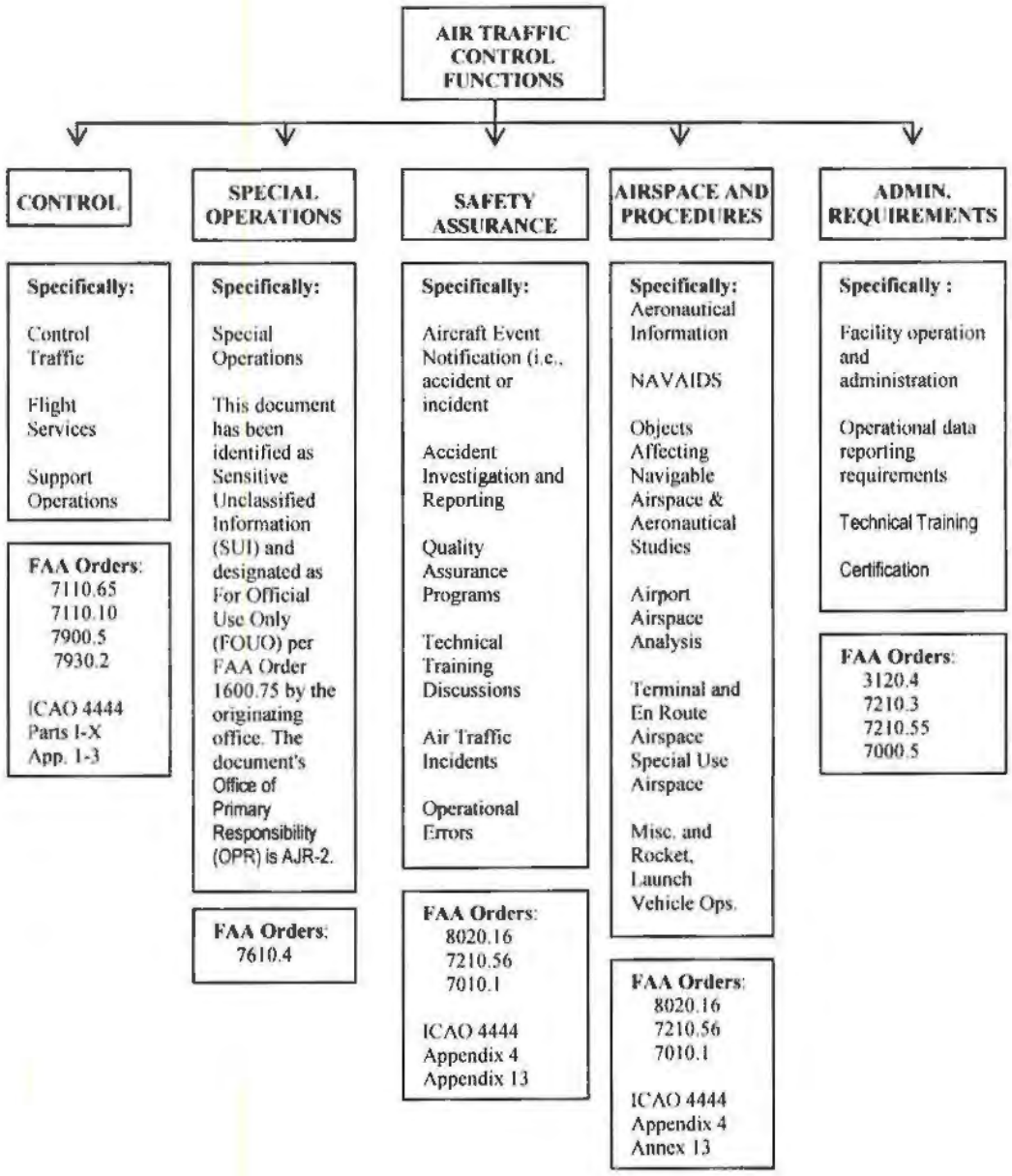


Figure 2: Systems and Sub-Systems Categories of Air Traffic Control Functions

** The Admin. Requirements exist in each function area but have been broken out for emphasis.*

** A complete listing of all listed FAA Orders is located in Appendix 1*

iii) **ATC Process and Procedures.** FAA orders relating to the *Control* area are further divided into *Traffic Control, Flight Services* and *Support Operations* categories. These categories are not intended to be all inclusive, but rather serve as guidelines through which procedures and processes can be more easily identified. These are shown in Figure 3.

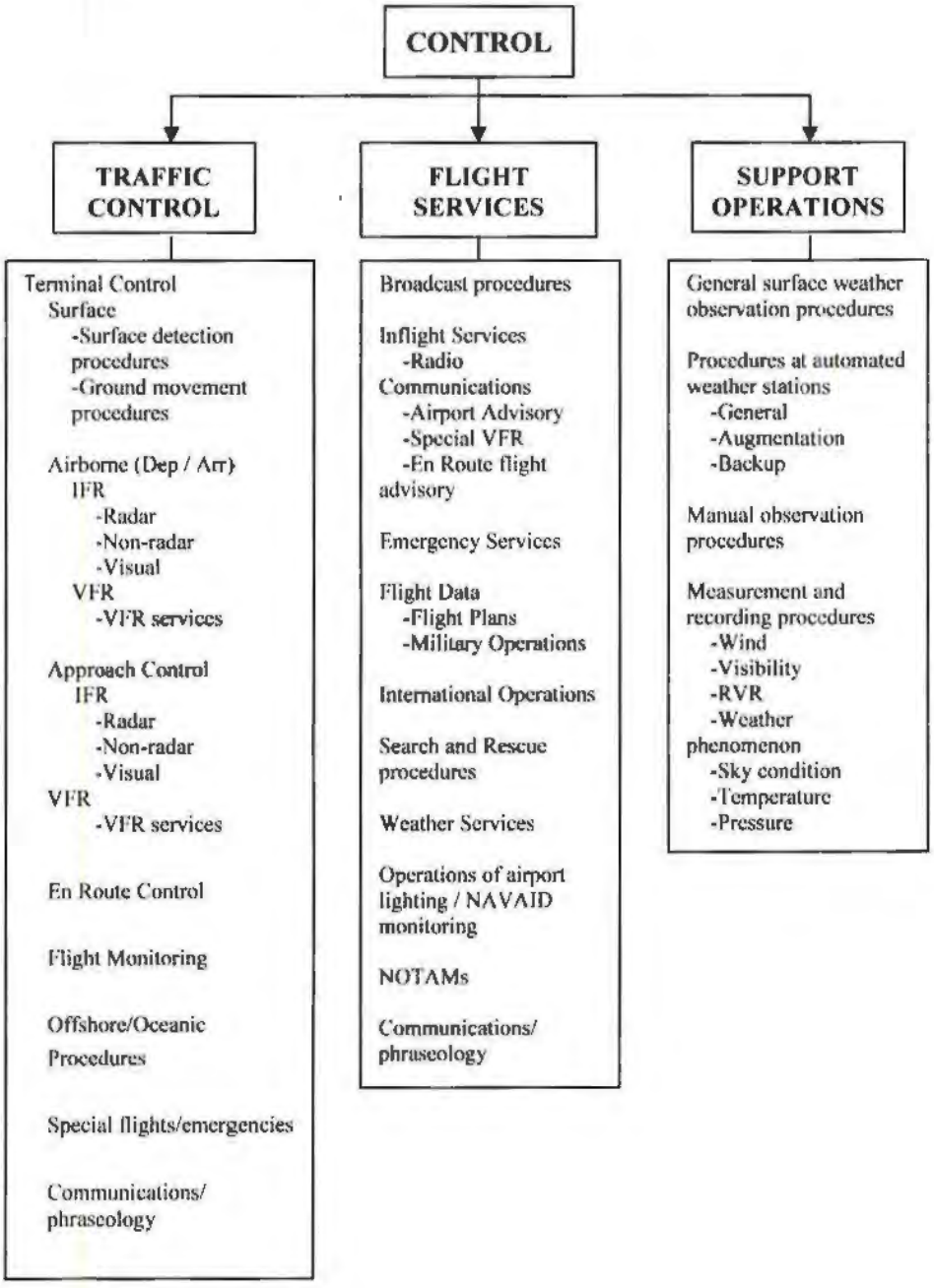


Figure 3: Air Traffic Control System, Subsystems and Processes and Procedures (Traffic Control, Flight Services and Support Operations)

iv) **AOV Oversight Focus.**

(1) **Audits of the ATO.** AOV has determined that the majority of processes and procedures relating to separation minima fall under the Traffic Control area. A change in the Flight Services area has the potential to affect separation minima. Therefore, AOV audits will focus on the *Control and Flight Services* categories.

(2) **Approvals and Acceptance.** FAA Order 1100.161, *Air Traffic Oversight*, paragraph 2-1 g (2) states that changes or waivers to provisions of handbooks, orders and documents, including FAA Order 7110.65, Air Traffic Control, current edition, that pertain to separation minima requires AOV approval. We have determined that, as a general rule, any changes of process or procedure that fall into the Traffic Control Area (see Figure 3) affect separation minima and therefore require AOV approval. It should be recognized that any changes to a process or procedure that falls into the *Flight Services* area has a high potential to affect separation minima and should be thoroughly reviewed by each Safety Risk Management Panel (SRMP). If the SRMP determines that the change does not change separation minima, the determination should be documented in the system description of the SRMD. Any change in the areas of *Safety Assurance*, *Special Operation, Airspace and Procedures*, or *Administrative Requirements* (see Figure 2) that do not affect safety standards or do not have identified high risk hazards require AOV acceptance.

C) **Equipment and Facility Maintenance Functions.** Within the equipment and facility maintenance function, AOV oversight will focus on the following systems and programs:

i) **Equipment and Facility Maintenance Classifications**
FAA Order 1100.161, Chapter 4, notes four main areas on which AOV Oversight activities are focused. These include:

- Organization
- Equipment Maintenance Availability Program
- Maintenance Operation and Technical Manuals and
- Personnel and Training

We have established five major system areas under Equipment and Facility Maintenance Functions in an effort to better organize AOV activities in overseeing the ATO. These include:

- Certification
- Maintenance
- Safety Assurance
- NAS Availability and
- Administrative Requirements

ii) Function Classifications

Equipment and Facility Maintenance Functions can be further organized into areas that fall under specific equipment and facility functions. Functions, Areas and Categories are shown in Figure 4.

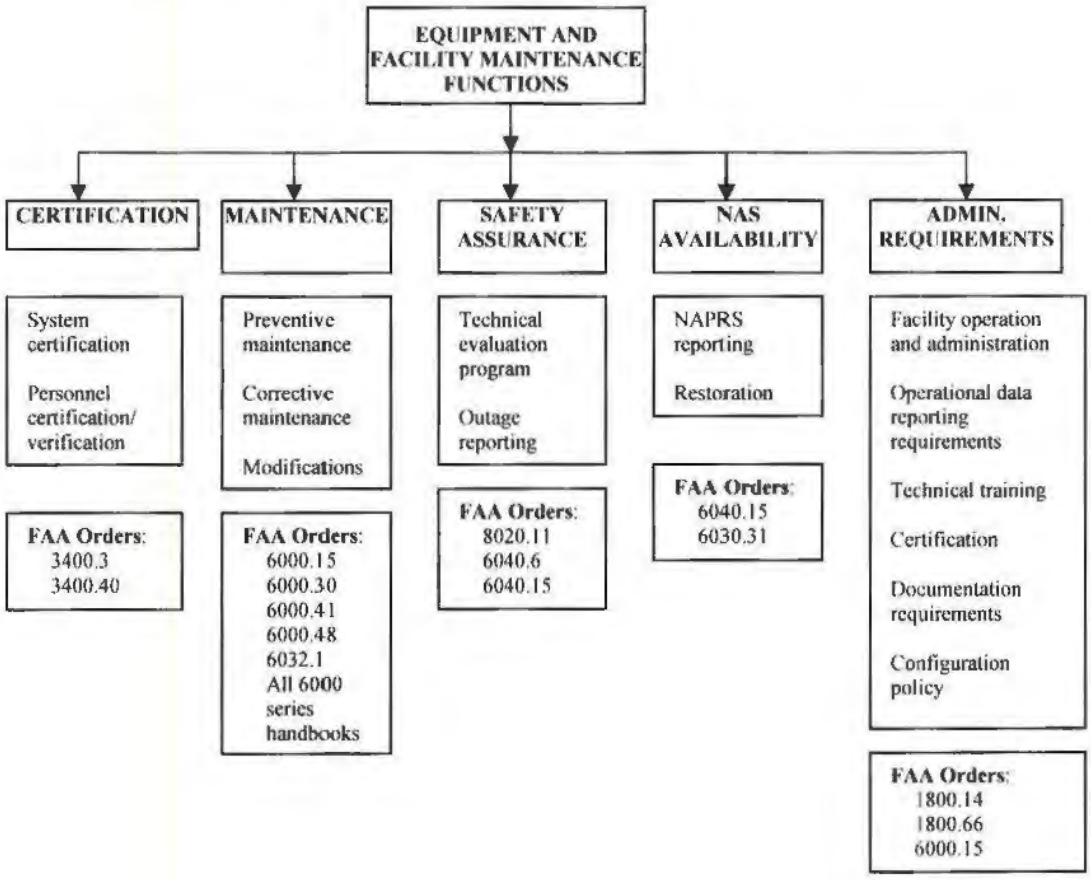


Figure 4: Functions, Areas and Categories for Equipment and Facility Maintenance Functions[3]

iii) System, Subsystem and Service Certification Program. Changes to the requirements in any of the following areas should obtain AOV approval:

Certification/verification standards that define the responsibilities, criteria, types, basis, interval and techniques required to obtain system, subsystem and service level certification, decertification and verification.

iv) Personnel Certification/Verification Program. Changes to the requirements in any of the following areas require AOV acceptance:

[3] National Airspace Performance Reporting System (NAPRS)

Personnel certification/verification standards that define the types of and the requirements to, obtain certification/verification authority, as well as the requirements to newly establish, retain, review and revoke the certification/verification authority.

v) **Maintenance Requirements Program.** Changes to the requirements in any of the following areas require AOV acceptance:

Maintenance standards that define periodic and corrective maintenance activities for NAS facilities and their technical performance parameter requirements as well as the types of evaluations and inspections that provide a quality assurance function.

vi) **Maintenance Procedures Program.** Changes to the requirements in any of the following areas require AOV acceptance:

Procedures that define the requirements for handling unscheduled interruptions and the scheduling and coordinating of scheduled interruptions of facilities and services as well as their reporting and restoration requirements.

vii) **Configuration Management.** Changes to the requirements in any of the following areas require AOV acceptance:

Configuration management standards that define the technical and administrative direction and surveillance activities in order to identify and document the functional and physical characteristics of an item, control changes to those characteristics and record and report change processing and implementation status.

viii) **Technical Training.** Changes to the requirements in any of the following areas require AOV acceptance:

Technical training standards that define the procedures and policies necessary to implement and sustain a uniform technical training program in order to develop the specialized skills, knowledge and abilities that allow specialists to maintain the National Airspace System.

ix) **NAS Availability Program.** Changes to the requirements in any of the following areas need AOV approval:

Standards that define the requirements to provide an efficient and effective training, certification, maintenance and logistics program to ensure optimum facility availability.

x) **Administrative Management Program.** Changes to the requirements in any of the following areas require AOV acceptance:

Administrative management processes that define the requirements for technical documentation, reporting and recording forms and maintenance logs used in the documentation of maintenance activities.

D) Flight Inspection, Flight Procedures Development, and Charting Functions.

Within the nine ATO service units, System Operations Services and Technical Operations Services share responsibilities for flight procedure development and charting. The National Aeronautical Navigation Services (AeroNav Services) serves as the umbrella for these responsibilities. AFS develops flight procedure standards and together with AOV, participates in the oversight of these standards. Oversight of the Flight Inspection, Flight Procedures Development, and Charting Functions are largely based on AFS flight procedures and orders. Figure 5 shows which organizations are involved in flight procedure development.

Due to the unique interrelationship of these functions and offices, and the wide variety of processes and requirements that are applied to procedure development and maintenance, the Flight Inspection, Flight Procedures Development, and Charting Functions outlined in FAA Order 1100.161 are combined for discussion below. In addition to the guidance below, AOV and AFS will rely upon their Memorandum of Agreement (MOA) dated June 26, 2008,[4] and any subsequent updates to that MOA to articulate their respective areas of oversight of the ATO with regards to the Flight Inspection, Flight Procedures Development, and Charting functions.

[4] Memorandum of Agreement between the Flight Standards Service, Flight Technologies and Procedures Division, AFS-400 and the Air Traffic Safety Oversight Service, Air Traffic Operations Oversight Division, AOV-100, on coordination of oversight functions, dated June 26, 2008.

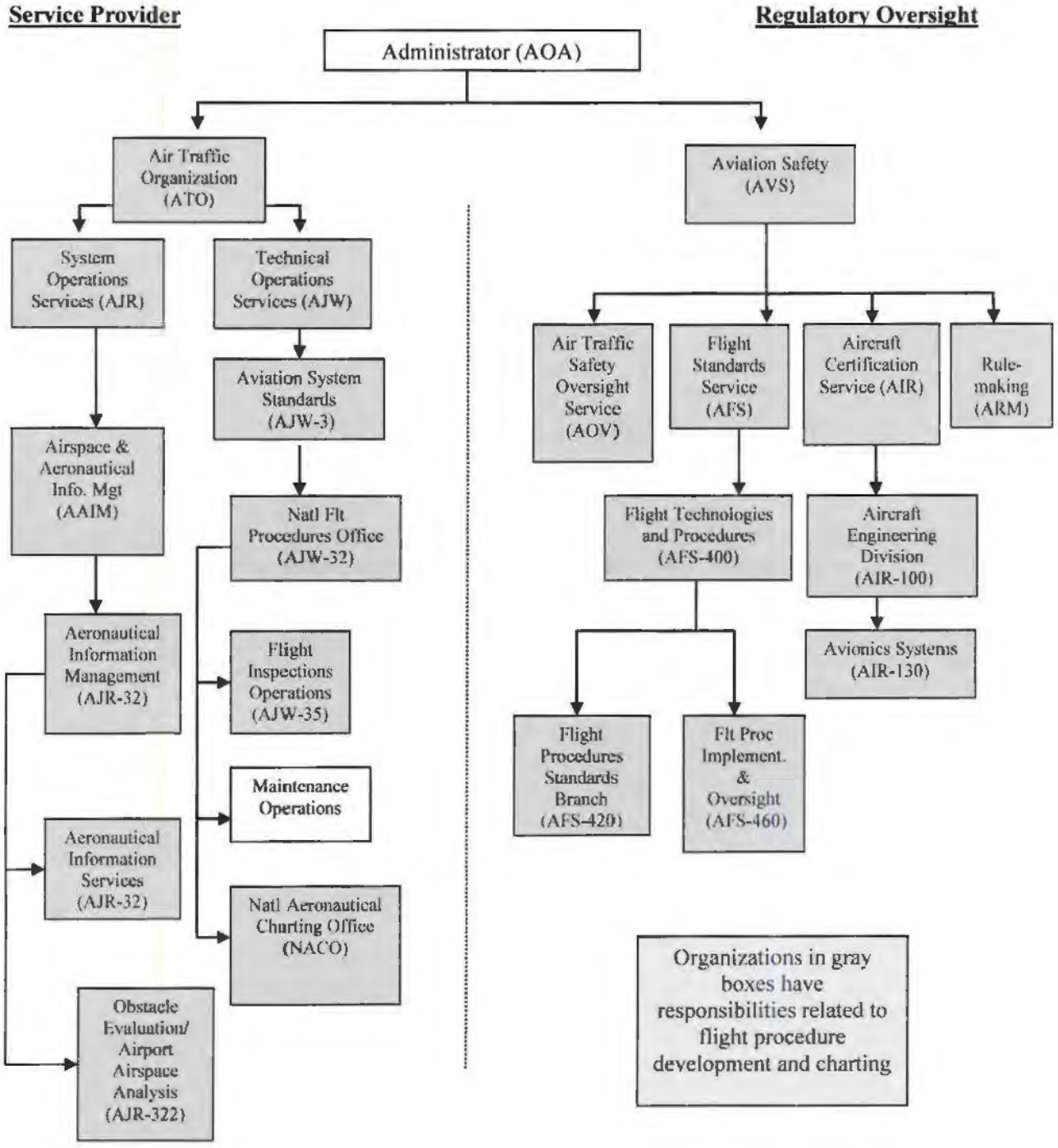
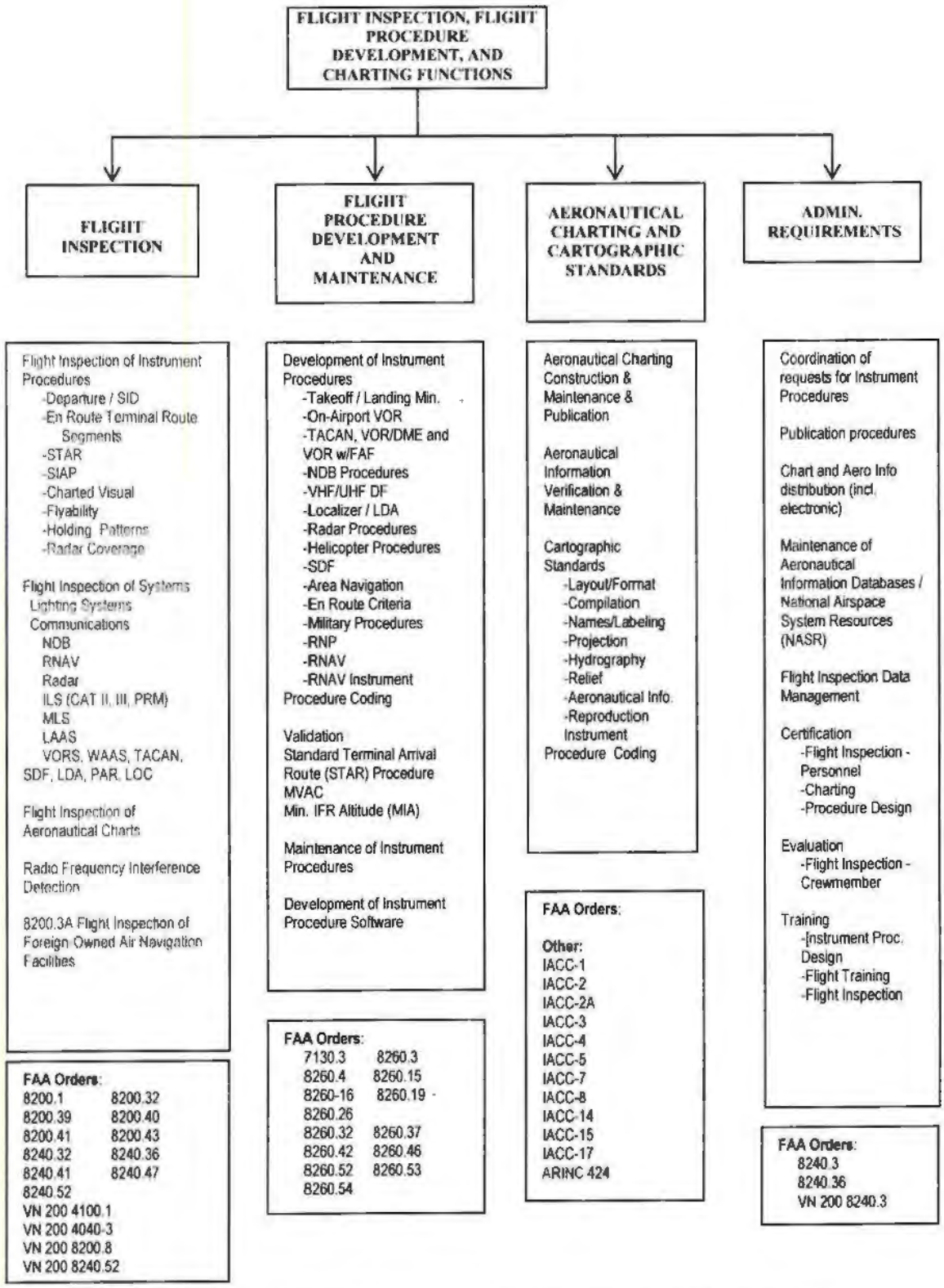


Figure 5: Organizations Involved In Flight Inspections, Flight Procedure Development, and Charting functions



* *The Admin. Requirements exist in each function area but have been broken out for emphasis.*

Figure 6: Flight Procedure Development, Flight Inspection, and Charting functions.

i) **Flight Inspection Functions.** Changes to the following areas in FAA Order 8200.1, United States Flight Inspections Manual, require AFS approval and AOV acceptance:

- Flight Inspector's authority and responsibilities
- Facility status classifications and issuance of NOTAM
- Records and Reports
- Extensions in the periodicity or interval of inspections
- Established tolerances or proposed new equipment or functionality
- Required checklist items for specific areas of systems to be inspected
- Procedures for evaluating safety and fly ability of instrument flight procedures
- Personnel Certification Requirements
- Certification and Calibration Standards
- Waivers from FAA Order 8200.1 requirements

ii) **Flight Procedure Development and Maintenance Functions.** AOV oversight will focus on the following flight procedure development and maintenance functions:

- Changes to the requirements in any of the following need AOV approval:
  - ATO generated waivers or deviations from FAA orders or policy promulgated by the Director, Flight Standards Service[5]
  - Waivers or deviations from Safety Management System requirements
- Changes to the requirements in any of the following need AOV acceptance:
  - Data Validation
  - Production Management
  - Quality Assurance Requirements
  - Certification Standards

iii) **Charting Functions.** Changes to any of the following require AOV acceptance:

- Training Requirements for Aeronautical Charting Personnel
- Compliance with Interagency Air Cartographic Committee (IACC)
- Quality Assurance Requirements

iv) **Administrative Requirements.** Administrative requirements articulated in figure 6 are resident within the each of the flight inspection, flight procedure development, and charting functions and will be treated for oversight purposes the same as activities within each of those functions.

[5] It does not include special procedures/waivers approved by AFS-400. Coordination between AFS and AOV is outside the scope of this circular.

5. OVERSIGHT OF COMPLIANCE/PROCESS MEASUREMENT.

A) **Functions Oversight.** AOV will conduct oversight of the implementation of systems covered in this document through ATO-wide audits of representative facilities where specific systems are located. AOV's goal is to evaluate all systems and subsystems referred to in this SOC every four years while auditing the top 120 ATO facilities that AOV has identified as having control over nearly 100% of US air traffic. Facilities include the 70 air carrier airports with the highest volume and a combination of 50 Terminal Radar Approach Control, Air Route Traffic Control Center and Center/Radar Approach Control facilities. Facility safety considerations will be used to make any final selection. Figure 7 below is a matrix showing an example of potentially sampled facilities and systems. The matrix illustrates the approach AOV uses to conduct system-wide audits, using standard sampling techniques,[6] to randomly selected facilities. AOV will develop standardized checklists for each system utilizing the system safety attributes described in Section 4 of this SOC.

	Facilities[7]								
	ZDC	C90	ZLA	N90	SCT	PCT	ZMA	etc...	HQ
Systems↓									
New Systems									
• JRC Safety Requirements									√
• CCB Safety Policies									√
ATC Functions									
• Traffic Control	√		√		√	√			
• Flight Services		√		√			√		√
• Support Operations	√		√			√			√
Equipment & Facility Maintenance									
• Personnel Certification/Verification	√	√	√	√					√
• Logistics Management								√	√
Flight Procedure Development									
• Flight Inspection						√	√	√	√
• Aeronautical Charting								√	√

Figure 7: Matrix Table of Sampled Facilities

[6] For more information on standard sampling techniques, see "Practical Statistical Sampling for Auditors," Graduate School USDA, 2004.

[7] Three letter nomenclature refers to a specific facility. See FAA Order 7350.7 S, Location Identifiers, for a complete listing of identifiers.

B) SMS Oversight. Once ATO has fully implemented the AOV approved Safety Management System, AOV will conduct oversight of the operation of SMS through ATO-wide audits of representative facilities. This will be done to evaluate compliance with SMS requirements. Figure 8 below is a matrix showing an example of facilities using SMS that may be sampled:

Facilities									
	ZDC	C90	ZLA	N90	SCT	PCT	ZMA	**Etc...**	**HQ**
Systems↓									
Policy									
• Management Accountability									√
• SMS Metrics	√	√		√					√
Safety Risk Management									
• SRM Documentation	√	√	√	√					
• Safety Assessments								√	√
Safety Assurance									
• Internal Audit Program					√	√	√		√
• Continuous monitoring and improvement								√	√
Safety Promotion									
• Training						√	√	√	√
• Communication								√	√

Figure 8: Matrix Table of Sampled Facilities with SMS

Anthony Ferrante
Director, Air Traffic Safety Oversight Service

Appendix 1: FAA Orders Identified in this SOC

1) Identified Orders for Air Traffic Control Functions (Section 4. B)

Control:

FAA Order JO 7110.65	*Air Traffic Control*
FAA Order JO 7110.10	*Flight Services*
FAA Order 7900.5	*Surface Weather Observing*
FAA Order 7930.2	*Notices to Airmen (NOTAMs)*

Airspace and Procedures:

FAA Order 1110.76	*Air Traffic Procedures Advisory Committee*
FAA Order JO 7400.2	*Procedures for Handling Airspace and Procedures*
FAA Order JO 7400.8	*Special Use Airspace*
FAA Order 7450.1	*Special Use Airspace Management System*

Safety Assurance:

FAA Order 8020.16	*Air Traffic Organization Aircraft Accident and Incident Notification, Investigation and Reporting*
FAA Order 7210.56	*Air Traffic Quality Assurance*
FAA Order, 7010.1	*Air Traffic Organization Safety Evaluations and Audits*

Special Operations:

FAA Order JO 7610.4	*Special Operations* This document has been identified as Sensitive Unclassified Information (SUI) and designated as For Official Use Only (FOUO) per FAA Order 1600.75 by the originating office.

Administration Requirements:

FAA Order 3120.4	*Air Traffic Technical Training*
FAA Order 7210.3	*Facility Operation and Administration*
FAA Order 7210.55	*Operational Data Reporting Requirements*
FAA Order 7000.5	*Submissions for Air Traffic Publications*
FAA Order 8260.26	Establishing & Scheduling Civil Public-Use Standard Effective dates

2) Identified Orders for Equipment and Facility Maintenance Functions (Section 4. C)

System, Subsystem and Service Certification/Verification Program

Air Traffic Organization, *Technical Operations Concept of Operation*

Personnel Certification/Verification Program

FAA Order 3400.3H	*Airway Facilities Maintenance Personnel Certification Program*
FAA Order 6700.20A,	*Non-Federal Navigational Aids and Air Traffic Control Facilities*

Maintenance Requirements Program

FAA Order 6000.15E	*General Maintenance Handbook for National Airspace System (NAS) Facilities*
FAA Order 6000.30D	*National Airspace System Maintenance Policy*
FAA Order 6000.41B	*Contractor-Assisted Maintenance for the National Airspace System*

FAA Order JO 6040.6H *National Airspace System Technical Evaluation Program*

Maintenance Procedures Program

FAA Order JO 6030.41H	*Notification of Facility and Service Interruptions and Other Significant Events*
FAA Order JO 6030.31F	*National Airspace System Failure Response*
FAA Order JO 6040.15E	*National Airspace Performance Reporting System*

Configuration Management

FAA Order 1800.66	*Configuration Management Policy*

Technical Training Program

FAA Order 3000.10B	*AF Technical Training Program*

NAS Availability Program

FAA Order JO 1000.37	*Air Traffic Organization Safety Management System*

Administrative Management Program

FAA Order 6000.15E	*General Maintenance Handbook for National Airspace System (NAS) Facilities*

3) <u>Identified Orders for Flight Inspection, Flight Procedure Development, and Charting Functions (Section 4.D)</u>

Flight Inspection

FAA Order 8200.1	*United States Standard Flight Inspection Manual*
FAA Order 8200.32	*Flight Inspection Criteria for Aspen Colorado Localizer-Type Directional Al (LDA)*
FAA Order 8200.39	*Flight Inspection of Precision Runway Monitors/Final Monitor Aid*
FAA Order 8200.40	*Flight Inspection of the Transponder Landing System (TLS)*
FAA Order 8200.41	*Flight Inspection Evaluation of Differential Global navigation Satellite Positioning System Special*
FAA Order 8200.43	*Flight Inspection of the Microwave Scanning Beam Landing System (MSBLS)*
FAA Order 8240.36	*Instructions for Flight Inspection Reporting*
FAA Order 8240.41	*Obstacle Assessment Surface Evaluation for Independent Simultaneous Parallel Precision Operations*
FAA Order 8240.47	*Determination of Instrument landing System (ILS) Glidepath Angle Reference Datum Heights (RDH)*
FAA Order 8240.52	*Aeronautical Data Management*
VN 200 4100.1	*Aviation System Standards Flight Inspection Aircraft Configuration Control (FIACC) and Software Change Process*
VN 200 4040.3	*Flight Inspection Standardization Evaluation Program*
VN 200 8200.8	*Flight Inspection Program Standards*
VN 200 8240.52	*Aeronautical Data Management*
VN 200 8200.3	*Policy with Respect to Military Program Procedures for Flight Inspection of Foreign-Owned Air Navigation*

Flight Procedure Development

FAA Order 7130.3	*Holding Pattern Criteria*
FAA Order 8260.3	*United States Standard for Terminal Instrument Procedures (TERPS)*
FAA Order 8260.4	*ILS Obstacle Rick Analysis*
FAA Order 8260.15	*United States Army Terminal Instrument Procedures Service*
FAA Order 8260.16	*Airport Obstruction Surveys*
FAA Order 8260.19	*Flight Procedures and Airspace*
FAA Order 8260.32	*U.S. Air Force Terminal Instrument Procedures Service*
FAA Order 8260.37	*Heliport Civil Utilization of Collocated Microwave landing Systems (MLS)*
FAA Order 8260.42	*Helicopter Global Positioning System (GPS) Nonprecision Approach Criteria*
FAA Order 8260.46	*Departure Procedure (DP) Program*
FAA Order 8260.52	*U.S. Standard for RNP Approach Procedures With special Aircraft & Aircrew Authorization Required*
FAA Order 8260.53	*Standard Instrument Departures That Use Radar Vectors to Join RNAV Routes*
FAA Order 8260.54	*United States Standard for Area Navigation (RNAV)*

Charting

IACC-1	*Enroute Low Altitude Charts and Alaska*
IACC-2	*VFR Sectional, Tactical Pilotage and Terminal Area Charts*
IACC-2A	*VFR Flyway Planning Chart*
IACC-3	*World Aeronautical Chart (WAC), Operational navigation Chart (ONC)*
IACC-4	*Low Altitude IAPs and Airport Diagrams*
IACC-5	*IFR Enroute High Altitude Charts, US and Alaska*
IACC-7	*Standard Instrument Departure (SID) Charts*
IACC-8	*Supplement Alaska*
IACC-14	*Standard Terminal Arrival (STAR) Charts*
IACC-15	*Helicopter Route Charts*
IACC-17	*Low Altitude US Terminal Procedures Publication (TPP)*
ARINC 424	*Coding specifications for National Flight Data Base (NFD)*

Administrative Requirements

FAA Order 8240.36	*Instructions for flight Inspection Reporting*
VN 200 8240.3	*Certification of Flight Inspection Personnel*
AOV/AFS MOA	*Memorandum of Agreement dated June 26, 2008*