



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)

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

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**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/](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.<sup>1</sup>

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<sup>1</sup> 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<sup>2</sup>.

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<sup>3</sup> that ATO did the following:

(1) Identified and analyzed the error(s)<sup>4</sup> causal and contributory factors;

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<sup>2</sup> 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.

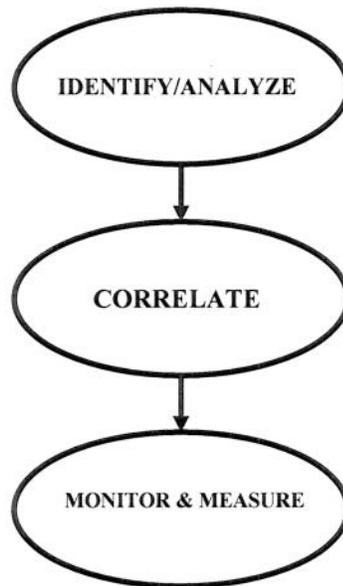
<sup>3</sup> Objective Evidence. Verifiable information or records pertaining to the quality of an item or service or to the existence of a quality system element that is based on observation, measurement or test.

<sup>4</sup> 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<sup>5</sup>:**

(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<sup>6</sup>.**

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<sup>5</sup> 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

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<sup>6</sup> As required by FAA Order 8000.90, Para 6-3n

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## 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

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## 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).

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- 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

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## 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.

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### **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 previous events.**

The Controller A assigned the following:

- CBI's: Situational 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 current 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)	<ul style="list-style-type: none"> <li>▪ Insufficient Planning</li> <li>▪ Radio/Telephone Communications and Instructions</li> <li>▪ Wrong Action on Right Object</li> </ul>	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)	<ul style="list-style-type: none"> <li>▪ Complex Traffic Sequence</li> </ul>	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)	<ul style="list-style-type: none"> <li>▪ Training and Experience</li> </ul>	1 Hour of OJT on the Arrival Position	Skill Check prior to RTD, then at 30 days	RTD Plan
Supervisory/Management	<ul style="list-style-type: none"> <li>▪ Complex Traffic Sequence</li> <li>▪ Training and Experience</li> </ul>	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	<ul style="list-style-type: none"> <li>▪ Traffic Management Initiatives</li> </ul>	"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

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## 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 \*##\*##\*##\*##.

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- 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:
<p>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?</p> <p>That is, all performance data must be included in the RTD plan concerning any documented performance activities (both positive and negative) including <u>any</u> 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<sup>7</sup>.</p>		<p>Questions:</p> <ul style="list-style-type: none"> <li>○ Does this data correlate to the OE causal factors identified through causal factors analysis?</li> <li>○ Has causal factors analysis been performed during any of these data generating activities?</li> <li>○ Any mitigations or strategies applied?</li> <li>○ Method(s) utilized to determine if these mitigations were effective?</li> </ul>
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		

<sup>7</sup> 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.

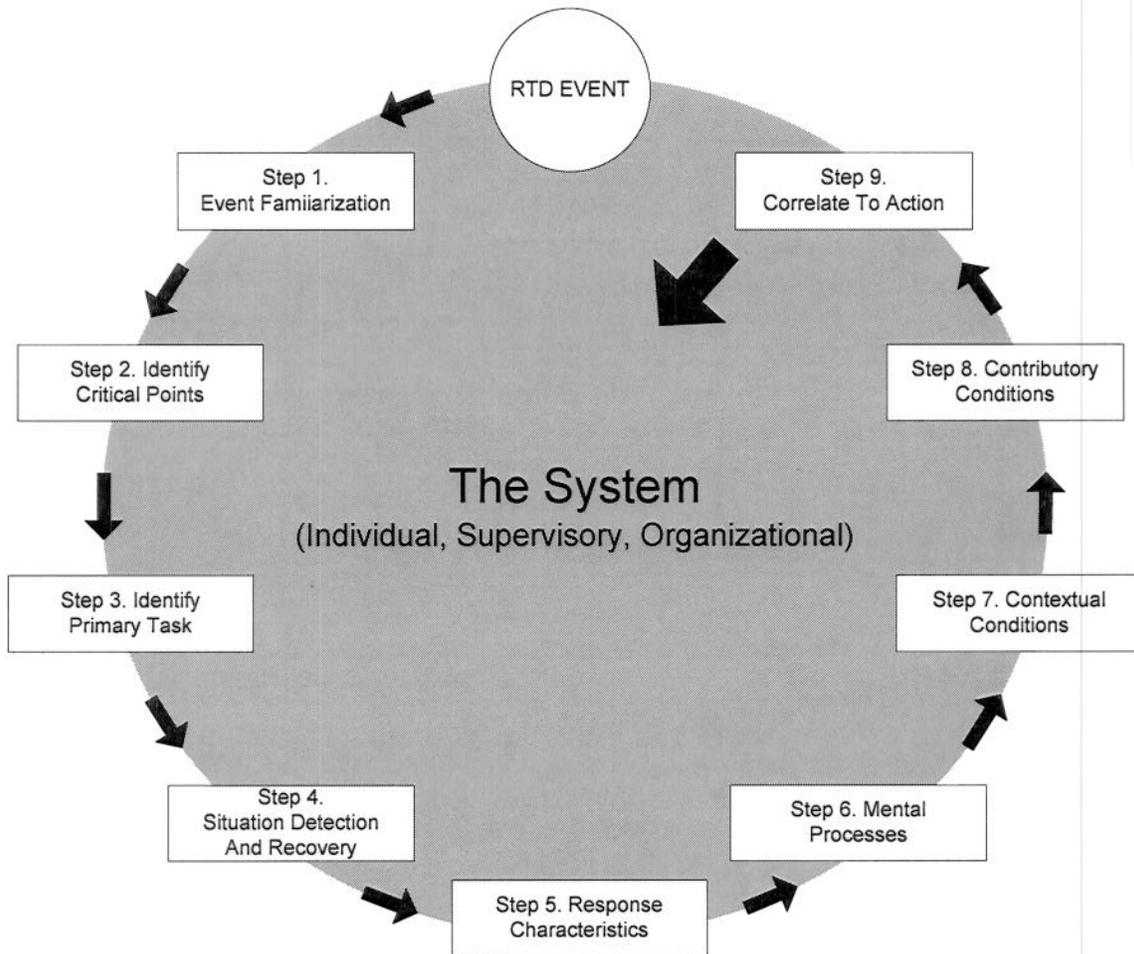


Figure 3: Flowchart of OE Causal Factor Analysis

**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<sup>8</sup>, such as:
  - Map printouts
  - Weather conditions at the time of the OE
  - Traffic conditions
  - Traffic Management Initiatives<sup>9</sup>
  - 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

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<sup>8</sup> In addition to the requirements specified in Order 7210.56.

<sup>9</sup> Obtain applicable Traffic Management Initiatives and Strategic Plan of Operations from facility TMU, the ATCSCC, or <http://www.atcsc.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:<sup>10</sup>

**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 that 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.**

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<sup>10</sup> 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.

The 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.**