

# WP 15-GM1001

Revision 2

## Root Cause Analysis

Management Control Procedure

EFFECTIVE DATE: 10/25/10

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APPROVED FOR USE

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<b>CHANGE HISTORY SUMMARY</b>		
Revision No.	Date Issued	Description of Changes
2	10/25/10	Removed Attachment 2, Data Collection Guidelines; and Attachment 4, Sample Root Cause Analysis Methods, and referred user to WP 15-PA.02, Cause Analysis Guidance, for these activities.

**INTRODUCTION** [1](#), [2](#), [3](#), [4](#), [5](#), [6](#), [7](#), [8](#), [9](#), [10](#)

Root Cause Analysis (RCA) provides an opportunity for an organization to separate "what" happened from "why" an issue/event happened. Once an issue/event has occurred that requires a RCA, the organization can merely fix the symptoms that lead to the issue/event or gain learning and improvement at all levels while providing assurance that the issue/event will not reoccur. RCA Teams (RCATs) need to look at all areas of the Integrated Safety Management process for an issue/event such as Conduct of Operations, Human Performance Improvement, Quality Assurance, and Safety Culture. Results from the analysis should provide lessons that may be learned from the issue/event that may be applied to other areas of the organization.

This procedure sets forth the requirements for determination and the selection of RCA methods implementation, and team selection for RCAs that are a result of significant issues/events from Price-Anderson Amendments Act (PAAA) violations reported into the DOE Noncompliance Tracking System (NTS), occurrences/events, Significant Conditions Adverse to Quality (SCAQs) resulting from WIPP Forms, and external oversight notices generated by the Office of Enforcement (PAAA headquarters), the U.S. Environmental Protection Agency, and the U.S. Nuclear Regulatory Commission against Washington TRU Solutions LLC (WTS).

RCA is any structured approach to identifying the factors that influenced the consequences of one or more past events in order to identify what behaviors or conditions need to be changed to prevent recurrence of similar consequences and to identify the lessons to be learned to promote the achievement of better consequences.

At a minimum, for an employee to qualify or act as an RCA Team Leader (RCATL), an industry-standard RCA course must be completed successfully and documentation (i.e., certificate) submitted to the Technical Training organization to be placed in the individual employee's training file. This training can be provided by a vendor or is available through the WTS Technical Training section. Individuals/teams conducting direct derivation analysis are not required to have documented training.

Senior management may decide to subcontract an RCA. In this case, the subcontractor must be qualified/approved by WTS as capable of performing the RCA to an acceptable industry standard for this purpose. Criteria for qualification or approval will be documented in the respective procurement package.

RCAT members shall have the appropriate level of technical expertise in the areas to be investigated, as determined by the RCATL or the responsible manager. For larger teams investigating significant issues, varying backgrounds for team members, including use of bargaining unit personnel, should be a consideration by the RCATL in order to gain a broad perspective on an event.

Records shall be maintained by the Secretary of the Senior Management Corrective Action Review Board (CARB):

- Root Cause Analysis Report (RCAR) (final signed original should be submitted)
- Other documentation supporting the RCA (i.e., written statements, photographs, reports, logs, personal notes)

## REFERENCES

### BASELINE DOCUMENTS

- 10 CFR Part 830, Subpart A, "Quality Assurance Requirements"
- DOE Order 231.1A, Change 1, *Environment, Safety, and Health Reporting*
- DOE Order 414.1C, *Quality Assurance*
- DOE Order 5480.19, Change 2, *Conduct of Operations Requirements for DOE Facilities*
- ASME NQA-1, *Quality Assurance Requirements for Nuclear Facilities*
- DOE/CBFO-94-1012, *CBFO Quality Assurance Program Document*
- DOE/CBFO-09-3442, *CBFO Integrated Safety Management System Description*
- WP 04-CO.01, Conduct of Operations series
- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description

### REFERENCED DOCUMENTS

- WP 04-IM1000, Issues Management Processing of WIPP Forms
- EA04IM1000-1-0, WIPP Form
- WP 12-ES3918, Reporting Occurrences in Accordance with DOE Order 231.1A
- WP 15-PA.02, Cause Analysis Guidance
- WP 15-RA.01, Nuclear Safety & Worker Safety and Health Compliance Program
- MC 1.9, Senior Management Corrective Action Review Board

- DOE G 231.1-2, *Occurrence Reporting Causal Analysis Guide*

## PERFORMANCE

### 1.0 ROOT CAUSE ANALYSIS

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#### NOTE

An RCAT may consist of one or more individuals, with the RCATL being qualified. Resources for the RCAT should be allocated commensurate with the significance of the event.

An RCA may be required if an incident or issue is reportable in the PAAA NTS, reportable in Occurrence Reporting and Processing System (ORPS), a Significant Condition Adverse to Quality (SCAQ), stipulated by an external oversight organization, or as determined by management.

RCATLs for PAAA NTS-reportable events are selected by the responsible department manager and appointed by the WTS General Manager, the Facility Manager (FM)/Facility Manager Designee (FMD) for ORPS-reportable occurrences/events, the Responsible Manager (RM) for nonreportable occurrences/events, and the Cognizant Manager (CM) for WIPP Forms (see WP 04-IM1000 and EA04IM1000-1-0), external CARs, and management determination. Team members may be chosen by the RCATL or the responsible manager. Senior management will determine when an RCA is to be subcontracted and will requisition the services of a qualified/approved subcontractor.

An RCAR involving an ORPS-reportable event should be completed within 40 calendar days of the onset of the occurrence or event.

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- 1.1 RCATL, obtain all data collected from initiating organization.
- 1.2 RCATL, determine the method(s) of RCA using WP 15-PA.02, or other approved method, and initiate RCA.
- 1.3 RCAT, **GO TO** WP 15-PA.02 for guidance on collecting data, applying techniques, and collecting additional data as needed, then **RETURN TO** Step 1.4.
- 1.4 RCAT, analyze data collected and evaluate for the following using standard lines of inquiry:
  - Cause(s) of the issue(s)/event(s) (include cause[s] that failed to identify the issue(s)/event(s) earlier)
  - Extent of condition for the issue(s)/event(s)
  - Extent of the causes for the issue(s)/event(s) for behaviors and conditions identified that amount to conditions adverse to quality

- Whether a lack of previous lessons learned from similar issues could have contributed to the event being considered
  - Whether self-assessments, management assessments, or independent assessments should have identified the factors before the issue/event
  - How maintaining compliance to existing procedures and processes would have reduced or eliminated the consequences of the issue/event
- 1.5 RCAT, recommend corrective actions for each cause (except that actions for personnel/disciplinary issues need not be listed), and ensure the corrective action recommendations meet the following criteria:
- Prevent recurrence
  - Are feasible
  - Allow the primary objectives and mission of the facility to be met
  - Clearly state new risks and respond to them, as applicable
  - Are appropriate and effective
- 1.6 RCAT, evaluate data to determine other potential recommendations that may enhance safety, quality, or operations.
- 1.7 RCATL, document all findings, determinations, and recommended corrective actions as follows:
- 1.7.1 Document ORPS reportable incidents on the RCAR using the format outlined in Attachment 2, Root Cause Analysis Report Format for ORPS Reportable Incidents.
- [ A ] In addition to format, determine the cause codes for the factors identified per Attachment 2 of DOE G 231.1-2.
- 1.7.2 Document other requested RCA activities, including NTS per WP 15-RA.01, and follow the format outlined in Attachment 2 or an appropriate method(s) of documentation based on the determination of the RCAT.

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**NOTE**

RCAT disputes may also be resolved by applying the subsection titled "Resolution of Disputes" in WP 13-1.

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- 1.8 RCATL, allow each RCAT member/analyst the opportunity to document any dissenting or clarification comments as an attachment of the report.

- 1.9 RCATL, or senior manager for subcontracted RCAs, submit the report and associated documentation for review as follows:
- Compliance Coordinator
  - Occurrences/Events, Reportable: FM/FMD
  - Occurrences/Events, Nonreportable: RM
  - WIPP Forms: CM of the responding organization(s)
  - External CARs: CM of the responding internal organization(s)
  - Management Determination: CM of the responding organization(s)
  - Senior Management Corrective Action Review Board (will be reviewed for rigor, depth, and breadth)
- 1.10 RCAT, work with reviewers to resolve comments and incorporate appropriate changes.
- 1.11 If further analysis or investigation is warranted, RCAT, perform Steps 1.3 through 1.8 and submit new report for review per Step 1.9.
- 1.12 All team members sign the final report for approval.
- 1.13 RCATL, submit the original approved report and associated documentation to the Secretary of the CARB with copies of the report for distribution as follows:
- Compliance Coordinator and the QA Manager
  - Occurrences/Events, Reportable: FM/FMD
  - Occurrences/Events, Nonreportable: RM
  - WIPP Forms: CM of the responding organization(s)
  - External CARs: CM of the responding internal organization(s)
  - Management Determination: CM of the responding organization(s)
  - Operating Experience/Lessons Learned Program Coordinator

## Attachment 1 - Definitions

<b>Cause (Causal Factor)</b>	Any condition or action that adversely affects the nature, the magnitude, or the timing of an adverse consequence.
<b>Chain-of-Custody</b>	The documented trail of the people who have, or have had, collected data in their possession so the data can be found and accessed easily.
<b>Condition</b>	Any as-found state, whether or not resulting from an event, that may have adverse safety, health, quality assurance, security, operational, or environmental implications. A condition is usually programmatic in nature (i.e., an existing error in analysis or calculation, anomaly associated with or resulting from design or performance, or an item indicating a weakness in the management process).
<b>Contributing Cause</b>	A cause(s) that contributed to an occurrence, but by itself would not have caused the occurrence.
<b>Direct Cause</b>	The cause(s) that directly resulted in the occurrence.
<b>Direct Derivation</b>	An informal process of utilizing and analyzing the best available data to determine the cause of an occurrence, event, or incident that does not require a formal RCA. The cause for these issues is apparent and results are documented via internal correspondence to the responsible manager.
<b>Event</b>	A real-time occurrence or anything that could adversely impact DOE or contractor personnel, the public, property, the environment, or the intended mission of this DOE facility.
<b>Extent of Condition</b>	Generic implications of a failure, malfunction, deficiency, defective item, weakness, or problem (i.e., the actual or potential applicability for an event or condition to exist in other activities, projects, programs, facilities, or organizations). Criteria for the evaluation should be based on uniqueness of the issue (how wide does the issue extend), recurrence (has it happened before), seriousness (potential or actual), and causal factors.
<b>Extent of Cause</b>	Extent to which the causal factors of an identified problem have impacted other plant processes, equipment, or human performance.
<b>Facility</b>	Any equipment, structure, system, process, or activity that fulfills a specific purpose.
<b>Reportable Occurrence</b>	An event or condition to be reported according to the criteria defined in DOE Order 231.1A.

Attachment 1 - Definitions

**Root Cause**

The most basic cause that can reasonably be identified that management has control to fix, and when fixed, will prevent or significantly reduce the likelihood of the problem's recurrence. In some instances, there may be more than one root cause.

## Attachment 2 - Root Cause Analysis Report Format for ORPS Reportable Incidents

TITLE	DESCRIPTION
Table of Contents	Self-explanatory
Acronyms	Self-explanatory
1.0 Executive Summary	Include a brief account of the essential facts surrounding the occurrence and major consequences; the conclusions and root cause(s) based on factors such as the organizational management system and line management oversight deficiencies that allowed the occurrence to happen and actions needed to prevent recurrence.
1.1 Introduction	Include event date, description of event, event discovery, affected SSCs, descriptions of the scope of the investigation, and its purpose and methodology employed in conducting the investigation.
2.0 Similarity with Other Events or Incidents	List other events/incidents that are similar to this one and explain how they are similar.
3.0 Facts	Include the facts related to the accident. Focus on events connected to the accident and causal factors that allowed those events to occur. Include a description of the accident, chronology, and a description of the responses to the accidents. Include facts pertinent to physical hazards, controls, and other related factors and management systems.
4.0 Analysis	Include types of analysis used, brief descriptions, and results of various analyses that were conducted (i.e., events and causal factors analysis, barrier analysis, change analysis).
4.1 Extent of Condition	Evaluate how this event/condition could exist in other activities, projects, programs, facilities, or organizations.
4.2 Summary of Causes and Recommendations	Provide a summary of causes and recommendations based on the analysis method performed.
4.2.1 Contributing Causes	Cause(s) that contributed to the issue/event, but by itself (themselves) would not have caused the issue/event.
4.2.2 Direct Cause	The cause that directly resulted in the issue/event.
4.2.3 Root Cause	The most basic cause(s) that can reasonably be identified that management has control to fix and, when fixed, will prevent or significantly reduce the likelihood of the problem's occurrence or existence.
5.0 Conclusions	Include statements of what was found through interviews, analysis, deduction, etc., by the RCAT.
6.0 Corrective Actions	Include recommended actions to prevent recurrence.
7.0 Recommendations (if needed)	List any additional recommendations identified by the RCAT that may not be pertinent to the causes, but may enhance safety, quality, or operations.
Appendices	Attach supporting documentation/evidence such as graphs, figures, photographs, reports, member/analysts comments, etc.
RCAT Signatures/Titles	Each member of the RCAT sign the final RCAR.