BLI2028: Apparent Cause Analysis

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Course Objectives

Participants will learn:

- What is an Apparent Cause Analysis
- When to perform an Apparent Cause Analysis
- How to perform an Apparent Cause Analysis
Issues Management Process

Learning Organization

- Identify
- Evaluate
- Mitigate
- Analyze

Continuous Improvement

Transparency

Collaboration
Apparent Cause Analysis Definitions

What is an Apparent Cause?

The dominant reasonable cause of an incident / finding that management has the control to fix through effective corrective actions.

Key Points:

• Generally involves a mistake / failure / problem that explains why the event happened

• Conclusion involves some degree of judgment that is based on factual evidence

• May have more than one Apparent Cause
Apparent Cause Analysis Definitions

What is an Apparent Cause Analysis (ACA)?

A straightforward analytical approach used to identify obvious causes based on the facts pertaining to the incident / finding.

Key Points:
• Not the same level of depth as a formal root cause analysis (RCA);
• Addresses the circumstances/conditions surrounding the incident, but not the underlying cause(s)
• Examines the facts associated with the incident based on the best available information
• What is being analyzed needs to be identified / scoped
When to perform an Apparent Cause Analysis?

• Medium and low risk level issues analysis and resolution
• Smaller-scale, low complexity-level events / conditions
• Events where the likelihood of recurrence is minimal

Examples:

• PAAA Internally-Reportable incidents
• Occurrence Reporting and Processing System (ORPS) Category 2 and 3 Reportable incidents
• Non-reportable Worker Safety & Health and operational issues that do not fall into high risk levels
• Observations from external assessments

Resource: LBNL/PUB 5519 (2), Causal Analysis Program Manual
Scoping the Analysis

Identify

- Characterize the issue to describe the exposure, deficiency, hazard or risk the adverse condition presents.

- Determine the risk level to ensure that the appropriate levels of analysis and mitigation are commensurate with the issue severity.
• Application of a formal causal analysis methodology is not required

• Process is not sequential; activities may be concurrent and iterative

• Factual Accuracy review may vary depending on the method of report documentation; Also serves as a quality assurance review

• Additional facts may be uncovered during the Causal Analysis and/or Factual Accuracy Review that must be analyzed

• Apparent Causes may be documented in ORPS Reports or other methods as determined by management *(OIA has a template available for use)*
Performing Apparent Cause Analysis

Continued

• Analysis must be based on factual / objective evidence

• Data Collection may include interviewing personnel involved in the incident and reviewing physical evidence (such as, policies, procedures, other applicable documents/records and the incident location)
Performing Apparent Cause Analysis

The Analysis involves reviewing the facts and determining a cause(s) based on factual data. The Analysis uncovers:

Who – who was involved?

What – what happened, what is/are the issue(s)?

When – when did it happen?

Where – where did it happen?

How – how did it happen?

Why – why did it happen?
Performing Apparent Cause Analysis

First: The “Who” and “What” of the incident / finding
       “Who” did “What”?

Then: The “When”, “Where” and “How”

This is used to inform: The “Why”

– The “Why” is the Apparent Cause
– Generally it is the causal factor = The mistake/failure, event or condition that led to the incident
– Typically the level below the direct cause
– Typically the level above the underlying cause (Root Cause)
Performing Apparent Cause Analysis

Who – who was involved?
- Worker (s) Trained
- Workers (s) proficient/experienced with task, process, activity
- Appropriate selection of worker
- Appropriate oversight of worker

What – what happened, what are the problem?
- Task, process, activity performed
- Weakness, vulnerability or error
- Requirement not met
- Assumptions made

When – when did it happen?
- Alertness
- Distractions
- Time Pressures
- Multiple Tasks
Performing Apparent Cause Analysis

**Where – where did it happen?**
- Location equipped for the task, process, activity
- Tools / resources available
- Co-located hazards
- Housekeeping

**How – how did it happen?**
- ISM Followed
- Process / Procedure / Checklist in place and functioning properly
- Technique used / Process / Procedure / Checklist followed
- Controls/Barriers designed and functioning properly
- Departure from routine / shortcuts
**Performing Apparent Cause Analysis**

**Why — why did it happen?**

Examine the facts and determine the most probable cause(s)

- What mistake(s)/failure(s), event(s) or condition(s) led to the incident / finding
  - Identify and define common themes
  - Group the common themes into a common apparent cause or higher-level Apparent Cause(s) and Contributing Cause(s)
Human errors are causal factors for many incidents, but latent organizational weaknesses frequently lead to these causal errors.
Balancing Human Performance and Organization Causes

• Analysis should focus on latent organization weaknesses rather than on individual’s actions / errors

Examples:

<table>
<thead>
<tr>
<th>Human Performance Cause</th>
<th>Organization Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Researcher did not place the rinse syringe in the radiation waste bag at the end</td>
<td>Consider: Management policy/procedures or expectations were not well-defined,</td>
</tr>
<tr>
<td>of the workday.</td>
<td>understood or enforced</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>The shipping requester did not verify the shipment contents prior to completing the</td>
<td>Consider: Work was assigned to an inexperienced worker</td>
</tr>
<tr>
<td>shipping and transportation process.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>The electrician performed electrical work without signing the LOTO permit and affixing</td>
<td>Consider: Insufficient time allotted for completion of the task / poor work planning</td>
</tr>
<tr>
<td>his lock and tag to the gang lock box.</td>
<td></td>
</tr>
</tbody>
</table>
Examples of Apparent Cause Statements

• The system did not send out the customary warning messages to alert staff of the impending failure.

• The Responsible Individual did not submit the as-built blueprints with the penetration permit application.

• There was no warning label on the equipment indicating that a potential electrical hazard was present.

• A water valve was not properly restored to the opened position after the maintenance activity.

• Management has not clearly defined and implemented a comprehensive XYZ program that is fully compliant with DOE requirements.
Performing Apparent Cause Analysis

Corrective Actions Should Be SMART

**S = Specific**
The corrective action must address / resolve the apparent cause.

**M = Measurable**
The corrective action must be actionable, verifiable and demonstrate endurance.

**A = Accountable**
Accountability & responsibility must be assigned to someone who has the authority and resources to implement the correction action.

**R = Reasonable**
The correction action must be feasible (a cost effective control measure) and not introduce negative consequences.

**T = Timely**
The corrective action must be implemented in a realistic timeframe to prevent recurrence. Compensatory actions may be required.
Performing Apparent Cause Analysis

Key Points:

• Apparent Cause Analysis may be led / performed by a Causal Analyst, within a team setting or solely

• The Causal Analyst is selected by the responsible Cognizant Manager and may not be trained in a formal methodology

• Corrective actions address fixing the problems and should minimize the likelihood of recurrence, if possible
  - Corrective actions must be entered into the CATS Database
## Causal Analysis Comparison

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Apparent Cause Analysis</th>
<th>Root Cause Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analyst</strong></td>
<td>No formal RCA training required</td>
<td>Must be formally trained</td>
</tr>
<tr>
<td><strong>Analysis Methodology</strong></td>
<td>No formal RCA methodology required</td>
<td>Formal RCA methodology required</td>
</tr>
<tr>
<td><strong>Type of Issue</strong></td>
<td>Medium and low risk issues, and other issues as determined by management</td>
<td>High risk issues and other issues as determined by management</td>
</tr>
<tr>
<td><strong>Cause</strong></td>
<td>Obvious mistake / failure</td>
<td>Underlying reason for the mistake / failure</td>
</tr>
<tr>
<td><strong>Report</strong></td>
<td>No formal RCA report required</td>
<td>Formal root cause analysis (RCA) report required</td>
</tr>
<tr>
<td><strong>Corrective Action</strong></td>
<td>Must fix the mistake / failure; should prevent recurrence</td>
<td>Must address the root cause and prevent recurrence</td>
</tr>
<tr>
<td><strong>Issue Management Process</strong></td>
<td>No Extent of Condition (EOC) review or Effectiveness Review (ER) required</td>
<td>EOC and ER required for High Risk issues</td>
</tr>
</tbody>
</table>
### Causal Analysis Comparison Quiz

**Match the characteristics with the type of Analysis**

<table>
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<tr>
<th>Apparent Cause</th>
<th>Characteristics</th>
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<tr>
<td>• Actions developed to remedy the problem</td>
<td>• Formal, systematic process of collecting &amp; analyzing information</td>
</tr>
<tr>
<td>• Involves some degree of judgment based on factual evidence</td>
<td>• Actions developed to remedy the problem</td>
</tr>
<tr>
<td>• Straightforward process of collecting &amp; analyzing information</td>
<td>• Involves some degree of judgment based on factual evidence</td>
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<tr>
<td>• Identifies probable / reasonable cause(s)</td>
<td>• High risk issues or as determined by Management</td>
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<td>• Medium and low risk issues</td>
<td>• Identify underlying / basic cause(s)</td>
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<td><strong>Root Cause</strong></td>
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</tr>
<tr>
<td>• Identify underlying / basic cause(s)</td>
<td>• Performed by trained personnel</td>
</tr>
<tr>
<td>• Actions developed to address cause(s) and prevents recurrence</td>
<td>• Medium and low risk issues</td>
</tr>
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