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Corrective Action Development, Tracking, and Verification

This procedure provides guidance for the development, tracking and verification of corrective actions for safety, safeguards and security, cyber security, emergency management and infrastructure issues.

Comments and questions regarding this procedure should be directed to the contact persons listed below:

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Note: Original Sign-off Record with signatures is on file with ESH&A.

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1.0 Revision/Review Log

This document will be reviewed and revised as necessary, once every three years at a minimum.

<u>Revision Number</u>	<u>Effective Date</u>	<u>Contact Person</u>	<u>Pages Affected</u>	<u>Description of Revision</u>
0	01/15/99	T.E. Wessels	All	Initial Document
1	01/15/02	T.E. Wessels	All	Minor editorial changes
2	05/01/04	T.E. Wessels	All	G:\Docs&Rec\DCP\Revision Description\Procedure 10200.039 Rev 2 revdesc
3	8/1/07	S. Nelson	None	None
4	1-1-08	S. Nelson	All	G:\Document Control /Revision Description/ Procedure 10200.039 revdesc
5	2-1-11	S. Nelson	All	On-going, same revision description as above.

2.0 Purpose and Scope

This document describes the process utilized by Ames Laboratory to direct the development, tracking, and verification of effectiveness for corrective actions related to safety, safeguards and security, cyber security, emergency management and infrastructure issues. Occasionally in the past, the development, tracking, and verification processes for corrective actions have exhibited the following weaknesses:

- Actions do not address the primary causal factors of the identified deficiency
- Actions are not institutionalized into existing operating practices
- Actions are not tracked to completion
- Verification of completion of actions are not directed by guidance
- Verification of effectiveness of corrective actions are not directed by guidance

To ensure deficient issues are adequately corrected, it is best to design and implement corrective actions that address the causal factors associated with the identified deficiencies and to fully verify the completion and effectiveness of such actions. This document provides guidance to help determine the level of detail, rigor, and independence of review for corrective actions.

3.0 Prerequisite Actions and Requirements

3.1 Definitions

ISC = Incident of Security concerns

Line Management = Any management level, within the laboratory organization, including program directors, department managers, group/section leaders and supervisors that are responsible and accountable for directing and conducting work.

ORPS = Occurrence Reporting and Processing System

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PAAA-NTS = Price Anderson Amendment Act – Non Compliance Tracking System

TapRoot® Causal Process = A system of root cause analysis, problem investigation, and proactive improvement marketed by System Improvement.

WSH = Worker Safety and Health

4.0 Performance

Issues and concerns are generally identified during assessment processes or event/incident investigations. Typically the Laboratory's assessment processes (such as Topical Appraisals, internal audits, or other internal reviews) identify items as defined below or through supplemental assessment documentation.

Finding: A finding is a determination of deficiency pertaining to implementation of a requirement based on a recognized inadequacy or weakness. Findings are categorized as levels 1, 2 High Significance, 2 Moderate Significance, or 3. This categorization is necessary to identify the degree of management formality and rigor required for the correction, tracking to closure, and trending of findings.

Level 1 Finding is a deficiency of major significance that warrants a high level of attention on the part of line management. Typically these reflect a gap in addressing requirements or a systemic problem with implementing requirements. If left uncorrected, this level of finding could negatively impact the Laboratory's mission. Examples of a Level 1 Findings include deliberate violations, sabotage, and ignoring Radiation Work Permits.

A Level 2 High Significance Finding is one that could cause a severe injury, a serious violation of a safety, health, or an environmental requirement or a programmatic impact. Examples of Level 2 Findings High Significance finding include exposure to live electrical parts, using poisonous gas outside of a fume hood or designated cabinet, not using laser glasses when beam is exposed, and improper disposal of hazardous waste. Multiple deficiencies at this level, when of a similar nature, may be rolled-up together into a Level 1 Finding.

A Level 2 Moderate Significance Finding is one that could cause moderate injury, a violation of safety, health, or environmental requirement or programmatic impact. Examples of Level 2 Moderate Significance Findings include improper use of extension cords, not labeling of chemicals, late disposal of hazardous waste, not maintaining log entries for X-ray machines. Multiple deficiencies at this level, when of a similar nature, may be rolled-up together into Level 2 High significance.

Level 3 Finding is an inadequacy where it is recognized that improvements can be gained in safety, process, performance, or efficiency already established for meeting a requirement. This level of finding should also include minor deviations observed during oversight activities that can be promptly corrected and verified as completed. Examples of Level 3 Findings include idle / obsolete equipment being stored in laboratory spaces, not

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updating chemical inventories, emergency information on door cards not up to date, and not stocking safety glasses in visitor bins.

Strength: A mature process or activity that has consistently demonstrated the ability to meet expectations, or a process or activity that efficiently and effectively facilitates and integrates processes, activities, and resources.

Noteworthy Practice: A positive observation, based on objective assessment data, or a particular practice, procedure, process, or system considered so unique or innovative enough that other organizations within the Laboratory might find it beneficial. Mere compliance with mandatory requirements is not considered to be a noteworthy practice.

All assessment results (internal and external), and event/incident investigation issues are screened and categorized for reportability according to the Laboratory's *Event Reporting Program* (Plan 40000.001). The following table provides a summary guidance for the minimum level of rigor for performance of Causal Analysis, Development of Corrective Action, Tracking of Corrective Action, and Verification of Completion and Effectiveness of Corrective Action, according to the results of screening and categorization of the issue.

Table 4.1 Guidance for Corrective Actions based on Event Categorization

Assessment Results or Event Type	Screened, but below AMES LOCAL threshold (as defined by Plan 40000.001 <i>Event Reporting Program</i>)	Categorized as: • AMES LOCAL – ORPS • AMES LOCAL – PAAA • AMES LOCAL – WSH • AMES LOCAL - ISC	Categorized as: • ORPS • PAAA-NTS • WS&H - NTS • Incidents of Security Concern	Categorized as: • Type A Accident • Type B Accident
Causal Analysis	No Causal Analysis	Basic Cause Category Determination by ESH&A.	TapRooT® Causal Process by ESH&A.	Performed by Type A or Type B Accident Investigation Team.
Development of Corrective Action	Line management with consensus of ESH&A.	Line management with consensus of ESH&A.	Line management with consensus of ESH&A.	ESH&A in consultation with Ames Site Office.
Tracking of Corrective Action	As directed by specific audit program or ESH&A. (See Note # 1.)	ALCATS.	ALCATS. Also tracked in ORPS or NTS.	ALCATS. Also tracked in ORPS or NTS.
Verification of the Completion of Corrective Action	Line Management. No documentation requirement.	Line Management and ESH&A. Documentation required.	Line Management and ESH&A. Documentation required.	Line Management, ESH&A, and Ames Site Office. Documentation required.

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Verification of Effectiveness of Corrective Action	None. (See Note # 2.)	ESH&A. Documentation required.	ESH&A. Documentation required.	ESH&A and Ames Site Office. Documentation required.
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Note # 1=Many of the issues screened, but not categorized are also tracked in databases depending on the type of issue. For example, Findings from Independent Walk-throughs are tracked in ALCATS, and Discrepancies identified by Plant Protection Section are tracked in a Discrepancy database on the Ames Laboratory Administrative computer.

Note # 2= Many of the issues in this category have corrective action(s), which when noted as complete are thereby also verified as effective. For example, a finding from an Independent Walk-through could be the labeling of a chemical sample in a container. Once the labeling is complete, it is unnecessary to judge effectiveness.

ALCATS = Ames Laboratory Corrective Action Tracking System.

4.1 Guidance for Causal Analysis

When determining the level of effort associated with the causal analysis of an event, the significance, severity, or risk associated with the event must be considered. The following guidance levels of effort are defined for performance of causal analysis.

- As noted in the table in section 4.0, no causal analysis is required for issues which are screened but not categorized as events.
- Events categorized as AMES LOCAL are subject to the AMES LOCAL Event Investigation and Analysis Process as described in Plan 40000.001, Event Reporting Program.
- Events categorized as ORPS, PAAA-NTS, and Incidents of Security Concern are subject to the AMES LOCAL Event Investigation and Analysis Process as described in Plan 40000.001, Event Reporting Program.
- Type A or Type B Accidents will undergo causal analysis as determined by the Accident Investigation Team.

4.2 Guidance for Development of Corrective Actions

The following guidance is provided to direct, as applicable, the minimum rigor for the development of corrective actions.

- Develop an understanding of the basis, scope and cause of the deficiency, including the extent of conditions/causal factors that led to the deficiency.
- Provide a description of the proposed action(s) that will effectively resolve the issue(s).
- Examine existing documentation of programs and practices related to the deficiency.
- Designate a responsible individual and associated line management as point of contact for the corrective action.
- Review resource needs for proposed actions with appropriate line management.

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- Develop or modify documentation for programs and practices related to the deficiency.
- Establish a planned completion date for the corrective action, which allows adequate time to address the corrective action and ensures a timely response to the deficiency.
- Include the causal factors of the deficiency in periodic trend analysis (Procedure 10200.042, Trend Analysis of ES&H Concerns).
- Provide a general description of the mechanism used to verify the status of the corrective action, including any specific deliverables, which signify partial or total completion.
- If appropriate, provide a general description of the mechanism used to verify the effectiveness of the corrective action.

4.3 Guidance for Tracking of Corrective Actions

The following guidance is provided to direct, as applicable, the tracking of corrective actions.

- Computer based systems are effective for managing information related to deficiencies and corrective actions. A database, Corrective Action 5, is utilized by ESH&A to support the Ames Laboratory Corrective Action Tracking System (ALCATS) as the primary tracking system for corrective actions. ALCATS should be utilized whenever possible, but the ESH&A Manager or the Chief Operations Officer can approve other mechanisms.
- The Industrial Safety Specialist enters corrective actions into ALCATS.
- A copy of the corrective action information, as entered into ALCATS, will be provided to the point of contact for the corrective action.
- Corrective action status shall be updated periodically.
 - The status of corrective actions related to events not categorized shall be updated according to the requirements of the specific program that identified the deficiency.
 - The status of corrective actions related to events categorized as Ames-Locals, ORPS, PAAA-NTS, Incidents of Security Concerns (ISC), and Type A or Type B Accidents shall be updated monthly.

4.4 Guidance for Verification of Corrective Action Completion

The following guidance is provided to direct, as applicable, the verification of completion of corrective actions.

- The appropriate line management element is responsible for initial verification of completion of corrective action for all corrective actions.
- Corrective actions related to AMES LOCAL events; ORPS, PAAA-NTS, WSH-NTS, ISCs, and Type A or Type B Accident events are also verified by ESH&A.
- Ames Site Office also verifies corrective actions related to Type A and Type B Accident events.
- Completion of corrective actions is verified according to the following guidance:
 - Verification that all document updates referenced in the corrective action has been completed.
 - Verification that all training related to the corrective action has been performed.

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- Verification that all other deliverables has been completed.
- Verification that the basic causal factors have been submitted for trend analysis.

4.5 Guidance for Verification of Corrective Action Effectiveness

Effectiveness reviews are conducted by Line Management or ESH&A for corrective actions related to events categorized as Ames Locals or ORPS, PAAA-NTS, or ISCs. The following guidance is provided to direct, as applicable, the verification corrective actions.

- Understand the possible causes for an ineffective corrective action.
 - Causal factors were incorrectly identified.
 - Causal factors correctively identified but corrective action is inappropriate.
 - Corrective action is not fully implemented or not implemented as intended.
 - Corrective action was not implemented in a timely manner.
 - Corrective action created new or different problem(s).
 - Organization/personnel lack understanding or have not accepted ownership of issue.
- Review and observe corrective action elements, especially deliverables, to ensure adequacy.
- Determine if corrective action information has been appropriately disseminated.
- Conduct interviews with activity participants and affected personnel about their perceptions of the changes due to the corrective actions.
- If applicable, observe work related to the corrective action.
- Identify, review, and analyze trends in performance data related to the corrective action.

The following guidance is provided to direct the conclusion of an effectiveness review of corrective actions. The following conclusion should be documented in ALCATS:

- **Effective** = Corrective action can be closed and the issue(s) is primarily resolved. No new corrective action is recommended.
- **Partially Effective** = Corrective action can be closed and the issue(s) are partially resolved, but additional corrective action is recommended.
- **Ineffective** = Corrective action should not be closed and the issue(s) are not effectively resolved. Additional corrective actions are required.

5.0 Post Performance Activity

Following the completion of the corrective action, ESH&A is responsible for the following actions:

- File and maintain all documentation related to the identification, closeout and verification of the corrective action.
- Provide closeout notification to appropriate Program/Department and/or DOE.