



**Department of Energy**  
**National Nuclear Security Administration**  
Washington, DC 20585

November 4, 2005

OFFICE OF THE ADMINISTRATOR

The Honorable A.J. Eggenberger  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, N.W.  
Suite 700  
Washington, D.C. 20004-2901

Dear Mr. Chairman:

Enclosed is the Los Alamos National Laboratory (LANL) Corrective Action Plan (CAP) for the DOE Order 5480.20A Training Review conducted by the Los Alamos Site Office (LASO) and the National Nuclear Security Administration (NNSA) Service Center. This CAP provides the results of the site-wide evaluation of the training and qualification program for LANL committed to in my letter of September 17, 2004, in response to your letter of August 6, 2004. LASO has reviewed this with your staff. NNSA Headquarters and LASO management will work with the Board to ensure continuity and progress toward addressing identified training issues within the context of the Operation Efficiency project.

Please contact me, or have your staff contact Gerald Schlapper, LASO Senior Safety Advisor, at (505) 665-7111 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "LFB".

Linton F. Brooks  
Administrator

Enclosure

cc:

E. Wilmot, NNSA/LASO  
G. Schlapper, NNSA/LASO  
M. Whitaker, DR-1



Printed with soy ink on recycled paper

# memorandum

National Nuclear Security Administration  
Los Alamos Site Office  
Los Alamos, New Mexico 87544

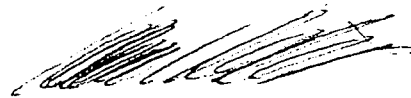
DATE: OCT 04 2005  
REPLY TO: S&H:1GS-017  
ATTN OF: S&H:1GS-017  
SUBJECT: Transmittal of the LANL CAP for the 5480.20A Training Review

TO: Thomas D'Agostino, Acting Administrator for Defense Programs, NA-10, HQ/FORS

Attached is the Los Alamos National Laboratory (LANL) Corrective Action Plan (CAP) for the 5480.20A Review of Training that was conducted by the Los Alamos Site Office (LASO) with assistance from the NNSA Service Center and support contractor, ESS Incorporated. While I fully support LANL's efforts, I note the concerns expressed by the LASO Senior Safety Advisor, Gerald Schlapper, in the attached memorandum.

During a recent visit to LANL, the Defense Nuclear Facilities Safety Board (DNFSB) staff was provided information concerning this issue. LASO considers this item to be closed. However, we are willing to revisit this issue should the DNFSB feel it is necessary. I recommend transmittal of this plan to the DNFSB. LASO fully commits to keeping the DNFSB staff informed of progress on a routine basis.

If you have any further questions, please feel free to have your staff contact Gerald Schlapper, Senior Safety Advisor for LASO, at (505) 665-7111.



Edwin L. Wilmot  
Manager

Attachment

cc w/o attachment:  
X. Ascanio, NA-124, HQ/GTN  
S. Pierpoint, NA-125.2, HQ/GTN  
M. Schoenbauer, NA-12, HQ/FORS  
M. Whitaker, DR-1, HQ/FORS  
G. Schlapper, OOM, LASO  
F. Bell, OFO, LASO  
C. Steele, SBT, LASO  
A. Jordan, DNFSB  
C. Keilers, DNFSB

# memorandum

National Nuclear Security Administration  
Los Alamos Site Office  
Los Alamos, New Mexico 87544

DATE: SEP 29 2005  
REPLY TO: S&H:IGS-016  
ATTN OF: S&H:IGS-016  
SUBJECT: Comments on the LANL CAP for the 5480.20A Training Review

TO: Edwin L. Wilmot, Manager, Los Alamos Site Office

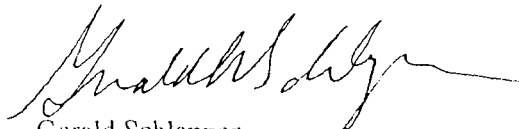
From the presentations it is clear that the priorities and schedule for Corrective Action Plan (CAP) implementation were crafted specifically to account for three factors; competing institutional priorities, finite resources, and forthcoming contract change. In light of significant competing institutional priorities, Los Alamos National Laboratory (LANL) Senior Management has sanctioned the defined path forward for FY06 CAP Implementation. This Plan of action is integrated with the Operational Efficiency (OE) project. Although those actions appear limited in scope in the context of the overarching CAP, they focus on critical institutional training priorities, including the upgrade of nuclear facility training programs and worker qualification/authorization. Nonetheless, in some cases the efficacy of completed actions will be compromised given their interdependency with open actions. Continued emphasis by the Site Office will be required to ensure effectiveness.

The training element of OE received, in total, \$1.4M of the \$4.9 allocated for OE in March 2005; this was the largest allocation to OE project elements in FY05. The bulk of this funding was used to implement actions that were subsequently included within the CAP. The training element of OE is targeted to receive \$4M of the \$8M OE project allocation for FY06. As for FY05, this exceeds the allocations provided to any of the other seven OE elements, testifying to the recognition of the importance of resolving the Laboratory's training deficiencies.

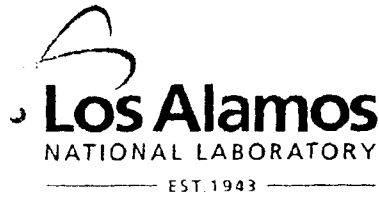
The Laboratory Director reacted favorably to the concept of centralizing training authorities in a single organization in a recent meeting with the Group Leaders Advisory Council and the Institutional Training Program Manager. Doing so will enhance the quality of institutional training programs and training policy. This initiative will be pursued in the coming months.

Full implementation of the training CAP will require long-term investment of significant resources at both the institutional and line organization levels. The Laboratory is not in a position to commit to long-term investment beyond the duration of the current contract. Upon contract transition, the CAP will provide the new contractor a baseline for scheduling and implementing training program corrective actions.

If you have any further questions, I can be reached at (505) 665-7111.



Gerald Schlapper  
Senior Safety Advisor



The World's Greatest Science  
Protecting America  
*Office of the Director*

August 22, 2005

Mr. Edwin Wilmot, Manager  
National Nuclear Security Administration  
Los Alamos Site Office, MS A316  
Los Alamos, NM 87544

Handwritten signature and initials in black ink, appearing to read 'Signed for' followed by a signature and the initials 'ES'.

**Subject: Transmittal of Integrated Institutional Training Corrective Action Plan**

Dear Mr. Wilmot:

This letter formally transmits the institutional training corrective action plan addressing the NNSA/LASO assessment of the Laboratory's nuclear facility training program, the resumption process, and other assessments conducted since 2003. The comprehensive, integrated corrective action plan identifies ten institutional issues formulated from 635 findings and substantive observations. Given forthcoming changes in the management of the Laboratory, the corrective action plan does not include a detailed implementation schedule. Pending that contract change, implementation of priority actions will be addressed through the training element of the Operational Efficiency Project.

Sincerely,

signature on file

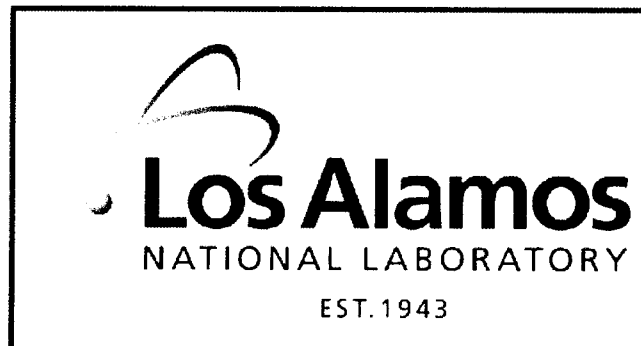
Donald D. Cobb  
Deputy Director (Acting)

Attachment: Los Alamos Institutional Training Program Corrective Action Plan, August 2005

Cy: G. Schlapper, DOE/NNSA-LASO, A316  
C. Mangeng, ADTS, A104  
B. Stine, ADTS, A104  
J. Angelo, PS-DO, C347 (w/o att.)  
B. Zwick, PS-DO, C347 (w/o att.)  
J. Andersen, PS-TIO, M588 (w/o att.)  
IM-9, A150  
PS-DO File  
DIR-05-308 File

**LOS ALAMOS NATIONAL LABORATORY  
INSTITUTIONAL TRAINING PROGRAM  
CORRECTIVE ACTION PLAN**

*August 2005*



**THIS PAGE INTENTIONALLY LEFT BLANK**

## Approvals

signature on file _____ Jay R. (Skip) Andersen LANL Training Program Manager <i>Training Integration Office</i>	8/19/05 _____ Date
signature on file _____ Bill D. Zwick, Deputy Division Leader <i>Performance Surety Division</i>	8/19/05 _____ Date
signature on file _____ James Angelo Division Leader <i>Performance Surety Division</i>	8/19/05 _____ Date
signature on file _____ Carolyn A. Mangeng Associate Director <i>Technical Services Directorate</i>	8/22/05 _____ Date
signature on file _____ Donald Cobb Deputy Director (Acting) <i>Los Alamos National Laboratory</i>	8/22/05 _____ Date

**THIS PAGE INTENTIONALLY LEFT BLANK**



## Table of Contents

<b>Approvals .....</b>	<b>3</b>
<b>Table of Contents .....</b>	<b>5</b>
<b>List of Tables.....</b>	<b>6</b>
<b>Executive Summary.....</b>	<b>8</b>
<b>Introduction to the Institutional Training CAP .....</b>	<b>10</b>
Background.....	10
CAP Goals .....	11
Business Case for Performance Improvement.....	11
Benefits .....	11
Summary.....	12
<b>CAP Development Methodology.....</b>	<b>13</b>
Institutional Issues.....	13
<b>Corrective Actions.....</b>	<b>14</b>
1. Policy and Procedures for Training and Qualification .....	16
2. Systematic Approach to Training .....	20
3. Training Program Maintenance.....	23
4. Nuclear Facility Training Program Design and Documentation .....	24
5. Training Staff Qualification.....	26
6. Training Resources .....	29
7. Training Data Management System.....	31
8. On-the-Job Training (OJT) and Mentoring.....	34
9. Training Management, Organization, Infrastructure, and Oversight .....	36
10. Management and Supervisory Training .....	38
<b>Appendix A – References .....</b>	<b>40</b>
Assessments.....	40
Performance Improvement .....	40
<b>Appendix B – DOE Orders, Guides, and Standards.....</b>	<b>41</b>
<b>Appendix C – PS-2 Assessment Results .....</b>	<b>42</b>
<b>Appendix D – AA-2 Assessment Results.....</b>	<b>43</b>
<b>Appendix E – LASO Assessment Results .....</b>	<b>44</b>
<b>Appendix F – Management Self-Assessment Results.....</b>	<b>52</b>
<b>Appendix G – ICAP Resource and Duration Estimates .....</b>	<b>54</b>

---

## List of Tables

Table 1: Priorities, Costs, and Cumulative Costs .....	9
Table 2: ICAP Integration with OE Training Project.....	14

**THIS PAGE INTENTIONALLY LEFT BLANK**

## Executive Summary

Since 2003, 635 training findings and observations have been identified in seven internal and external training assessments at the Laboratory. Absence of formality, ineffectiveness of training, and non-compliance with internal, contractual, and regulatory training requirements are common themes in the findings and observations. These training deficiencies contribute to incremental costs associated with worker injuries, safety and security incidents, work suspensions, facility down-time, and unplanned rework. Further, the absence of an effective training organization, infrastructure, and policy results in misapplication of limited institutional training resources. As a result, the Laboratory's ability to accomplish its scientific and technical mission in a safe, secure, compliant, and cost-effective manner is compromised.

Ten institutional issues have been derived from the 635 findings and observations. These issues, listed below, are integrated with both the Laboratory's Integrated Safety and Security Management (ISSM) program and the Operational Efficiency (OE) project. Each issue is supported by representative findings and observations, causal factors, and corrective actions.

### Institutional Training Issues

1. Policies And Procedures For Training
2. Systematic Approach To Training (SAT)
3. Training Program Maintenance
4. Nuclear Facility Training Program Design And Documentation
5. Training Staff Qualification
6. Training Resources
7. Training Data Management System
8. On-the-Job Training (OJT) And Mentoring
9. Training Organization, Infrastructure And Oversight
10. Management And Supervisory Training

The business case for addressing the Laboratory's institutional training deficiencies is compelling. Implementation of this institutional corrective action plan (ICAP) will result in a training program that is compliant with contractual and regulatory drivers. More importantly, there will be greater assurance that workers possess the skills, knowledge, and abilities necessary to meet the Laboratory's programmatic obligations. The costs for implementing the actions defined in this plan are estimated at \$44.2M with a task duration of four years (see Appendix G). Additional organization- and facility-specific (i.e., local) corrective actions have also been identified as part of the resumption process and are integrated into local corrective action plans and Operational Efficiency Project implementation plans. These local corrective actions are not addressed in this plan.

Uncertainties associated with forthcoming changes in the contract for the management of the Laboratory preclude definition of a schedule for full implementation of the corrective action plan. Implementation priorities, however, have been identified (Table 1) and have been integrated with the training element of the Operational Efficiency Project.

Preliminary funding projections for FY06 indicate \$6–8M will be appropriated for the Operational Efficiency Project, of which approximately \$4.5M will be allocated to training. This allocation will be augmented by funding dedicated to address Price-Anderson Amendments Act (PAAA) non-compliances to provide for implementation of the three highest priorities: (1) procedure and systems implementation for worker qualification and authorization, (2) a baseline assessment of systematic approach to training (SAT) implementation (at no additional cost), and (3) improving compliance with nuclear facility training requirements. Identification of resources to implement the remaining priorities and the balance of the corrective action plan will be discussed in the contract transition period.

**Table 1: Priorities, Costs, and Cumulative Costs**

Priority	Corrective Action Description	Cost (\$K)*	Cumulative Cost (\$K)*	
1	Develop institutional training policy and procedures	1,144	1,144	FY06 Funding Identified
1a	• Develop IPP for worker authorization system	114	1,258	
1b	• Worker authorization system implementation	3,142	4,400	
2	Systematic approach to training (SAT) implementation	0	4,400	
3	Upgrade nuclear facility training compliance with DOE-O-5480.20A	295	4,695	
4	Upgrade institutional ES&H courses (PS-13)	867	5,562	Implementation Schedule Pending
5	Training staff qualification assessment and remediation	877	6,439	
6	Training resources to support implementation of institutional training policies and procedures	841	7,280	
6a	• Develop institutional training staffing plan	72	7,352	
7	Training data management system implementation†	4,313	11,655	
7a	• Develop training data management system recommendations	74	11,739	
8	On-the-job training and mentoring implementation	0	11,739	
9	Facility training organization and oversight implementation	0	11,739	
10	Management and supervisor training needs analysis	55	11,794	

\*Unburdened costs

†Does not include cost of hardware and software

## Introduction to the Institutional Training CAP

### Background

The Defense Nuclear Facilities Safety Board (DNFSB) noted in a July 9, 2003 letter to NNSA that various Site Offices had failed to perform periodic systematic assessments of training and qualification programs in accordance with DOE-STD-1070-94, *Guidelines for Evaluation of Nuclear Facility Training Programs*, and DOE O 5480.20A, *Personnel Selection, Training and Qualification Requirements for DOE Nuclear Facilities*. In response to these concerns, the National Nuclear Security Administration (NNSA) directed the Los Alamos Site Office (LASO) to conduct the required assessments.

LASO planned the assessments in two phases. Phase I focused on a high-level review of administrative controls, policies, and procedures relating to DOE O 5480.20A. This was to be followed a short time later by a Phase II assessment to concentrate on nuclear facility training program implementation. The Phase I assessment was conducted during February and May of 2004. A final assessment report was released to LANL on 23 June 2004. The report detailed a significant number of findings and weaknesses across multiple LANL Divisions.

On 16 July 2004, the Director suspended all non-essential activities to address continuing performance issues throughout the Laboratory. Organizations were directed to conduct management self-assessments (MSAs) and, for higher-hazard facilities, Laboratory readiness reviews (LRRs). The formal resumption process required organizations to develop comprehensive, resource-loaded corrective action plans to address post-start findings and substantive observations identified in the MSAs and LRRs. The Laboratory was fully engaged in the resumption process when the corrective action plan addressing the NNSA/LASO Phase I assessment was completed. Significant training deficiencies were discovered in the MSAs and LRRs and it became apparent that implementing the Phase I corrective action plan would be premature until all the MSAs, LRRs, and the LASO Phase II assessment could be completed and the full scope of findings could be identified. The MSAs and LRRs were completed about the same time the Phase II LASO assessment was started in February 2005. The Phase II assessment was completed in April 2005 and identified additional training deficiencies. The findings validated deficiencies already identified in the Phase I assessment and further indicated that the problems were widespread and affected almost every aspect of the Laboratory's training program.

This corrective action plan builds on the original causal analysis and corrective actions identified in the Phase I corrective action plan and also addresses institutional findings identified in related assessments conducted since 2003; these include:

- Institutional Training Program Self-Assessment, PS-DO, September 2003
- Non-nuclear Facility Training Assessment (AA2-04-03), AA-2, March 2004
- NNSA/LASO TA-16 WETF Operational Readiness Review, 2004
- Management Self-assessments, All LANL Divisions, July to December 2004
- Laboratory Readiness Reviews for Level 3 Activities, August to December 2004
- NNSA/LASO Effectiveness Assessment of Radiological Worker II Training, March 2005

A complete list of the assessment findings addressed by this CAP can be found in *Appendix A – References, Assessments*.

## **CAP Goals**

When implemented, the actions detailed in the *Corrective Action Plan* section of this document, will result in an institutional training program that meets contractual and regulatory drivers. Training policies and procedures for nuclear and non-nuclear facilities will be developed, implemented and overseen from a centralized program to facilitate economy of scale and consistent implementation. Placing training under the umbrella of a centralized training organization provides for increased effectiveness of limited resources and consistent—but graded—implementation of expectations for a trained and qualified workforce.

The institutional program will address training, qualification, and On-the-Job-Training (OJT) policies for nuclear facilities that are consistent with the requirements of DOE O 5480.20A. The program will also address a Training Staff Qualification Program that meets applicable requirements for training managers, instructors and other training staff. The institutional program will include training, qualification and OJT policies for non-nuclear facilities that are consistent with applicable contractual and regulatory drivers and, as appropriate, incorporate best practices from industry, business, and academia for training and education.

## **Business Case for Performance Improvement**

From a business perspective, continuing with the Laboratory's current approach to training will cost the more than implementing an effective centralized training program that is integrated into an overarching performance improvement strategy. The following list provides a breakdown of the benefits that will be realized by implementing the corrective actions detailed in this plan. While the list is qualitative in nature and certainly not all inclusive, it illustrates the advantages of implementing the corrective actions within a performance improvement framework.

## **Benefits**

Benefits realized from implementation of this CAP include:

### *Avoidance of Actual Costs and Provide Increases in Productivity*

- Avoid the cost of occurrence investigations
- Avoid the cost of work stoppages
- Avoid the costs of developing and tracking corrective actions
- Reduce down-time
- Reduce medical costs for injuries
- Avoid rework due to inadequate training and performance

### *Improvement in Services to Clients*

- Employees receive and can apply the knowledge and skills needed to perform work
- Employees enjoy training more
- Overall time spent in training is reduced
- Access to training is improved

- Access to training records, documentation, and worker qualification/authorization is improved and meets the need of the RLMs and PICs

## Summary

The corrective actions identified in this plan are designed to resolve identified training deficiencies and create a manageable, value-added, and compliant program. The training program to be developed through implementation of this CAP is consistent with the ideals of performance improvement promoted by the International Atomic Energy Agency<sup>1</sup> (IAEA) and the Institute for Nuclear Power Operations<sup>2</sup> (INPO).

Investment in this CAP will provide a trained and qualified work force in an effective and efficient manner. The reduction in cycle time resulting from fewer incidents, work stoppages, and rework will restore confidence in LANL's programmatic customers, stakeholders, and oversight organizations. Implementation of this CAP will make LANL stronger, thereby providing the opportunity to better serve the nation.

---

<sup>1</sup> IAEA-TECDOC-1204 "A Systematic Approach to Human Performance Improvement in Nuclear Power Plants: Training Solutions"

<sup>2</sup> Excellence in Human Performance (INPO, September 1997)



## CAP Development Methodology

During the period 2003–2005, a series of internal and external assessments identified hundreds of training deficiencies. The Performance Surety Division’s Training Integration Office (PS-TIO) reviewed these deficiencies and combined them into ten institutional issues (see below), each having a common and over-arching theme. These ten issues and the proposed corrective actions were validated with a representative sample of Laboratory customers, stakeholders, and sponsors. The corrective actions address findings identified in the assessments listed in Appendix A; the findings from each assessment are included in Appendices C through F.

### Institutional Issues

- 1 Policy and Procedures for Training and Qualification
- 2 Systematic Approach to Training (SAT)
- 3 Training Program Maintenance
- 4 Nuclear Facility Training Program Planning, Design and Documentation
- 5 Training Staff Qualification
- 6 Training Resources
- 7 Training Data Management System
- 8 On-the-Job Training (OJT) and Mentoring
- 9 Training Management, Organization, Infrastructure, and Oversight
- 10 Management and Supervisory Training

In April of 2005, PS-TIO wrote a corresponding institutional level finding for each group of deficiencies and published these in the “*Institutional findings Resulting From Assessments of Training At Los Alamos National Laboratory From 2003 to April 2005*” (April 28, 2005). Beginning in June 2005, Edgewater Technical Associates (ETA) began developing a Corrective Action Plan based on the 10 deficiency statements.

A prior study of the training-related findings was conducted by Mike Davis of the PANTEX Site. In his report, titled “*June 2004 Nuclear Facility Training & Qualification Phase I Assessment Report (8 September 2004)*,” Mr. Davis conducted extensive interviews and research at LANL to develop appropriate corrective actions and an implementation strategy with assigned timelines and resources. However, the “Event Questions” determined by Mr. Davis do not directly correlate with the institutional level findings subsequently developed by PS-TIO. Using a broader set of training findings, the resources and timelines that were extensively researched and established by Mr. Davis were adjusted, regrouped and then assigned to appropriate corrective action statements.

For the Worker Qualification/Authorization (WQA) and Training Data Management System (TDMS) related corrective actions, the team used the timelines and resources defined in the Operational Efficiency Project. Other corrective action implementation resources were determined by benchmarking training resources at other DOE defense complex sites. Effective trainee to trainer ratios and training material development ratios were obtained from training management experts at Savannah River Site, Idaho National Laboratory, and Rocky Flats Environmental Technology Site. The team then reviewed the resources and timelines in a roundtable session and, by consensus, made appropriate adjustments to finalize the CAP implementation plan.

Note that the training-related DOE Handbooks provide guidance for developing and implementing training programs. A listing of these guides can be found in *Appendix B – DOE Orders, Guides, and Standards*.

## Corrective Actions

This plan identifies each institutional issues, supporting findings and observations, causal factors, and proposed corrective actions. The corrective actions listed on the following pages detail the controls, resources, and management organization necessary to develop and implement a centralized training organization that can implement and sustain a Systematic Approach to Training (SAT) in all aspects of the Laboratory’s training program. The actions for each institutional issue have been tailored to address the specific issue. Some actions are cross-cutting in nature and contribute to multiple (or, in some cases, all) institutional issues.

The corrective actions and the resource-loaded schedules are integrated with the Operational Efficiency (OE) Training Project. Absent OE Training Project funding, another funding source will have to be identified. The completion of these corrective actions and the OE Training Project will require a transition to long-term funding of the training program at levels that maintain the organizations, systems, processes, and resources implemented by these corrective actions to (1) prevent a recurrence of the circumstances that created the training deficiencies, and (2) perpetuate performance improvement.

Table 2 (below) shows the integration of the corrective actions into the Operational Efficiency Training Project work breakdown structure.

**Table 2: ICAP Integration with OE Training Project**

<b>Institutional Issue and Corrective Action</b>	<b>Operational Efficiency Training Project Task</b>
Policy and Procedures for Training and Qualification	01.5.8.05 Institutional Training Program Manual
Systematic Approach to Training (SAT)	01.5.8.02.04 Complete Institutional Training Corrective Actions 01.5.8.03 Institutional Training Staffing
Training Program Maintenance	01.5.8.02.04 Complete Institutional Training Corrective Actions 01.5.8.03 Institutional Training Staffing
Nuclear Facility Training Program Planning, Design and Documentation	01.5.8.02.04 Complete Institutional Training Corrective Actions 01.5.8.03 Institutional Training Staffing 01.5.8.05 Institutional Training Program Manual
Training Staff Qualification	01.5.8.02.04 Complete Institutional Training Corrective Actions 01.5.8.05 Institutional Training Program Manual
Training Resources	01.5.8.02.04 Complete Institutional Training Corrective Actions

Institutional Issue and Corrective Action	Operational Efficiency Training Project Task
Training Data Management System	01.5.8.04 Training Data Management Systems 01.5.8.06 Worker Qualification and Authorization System
On-the-Job Training (OJT) and Mentoring	01.5.8.02.04 Complete Institutional Training Corrective Actions 01.5.8.05 Institutional Training Program Manual
Training Management, Organization, Infrastructure, and Oversight	01.5.8.01 Institutional Training Program Strategic Plan 01.5.8.02.04 Complete Institutional Training Corrective Actions
Management and Supervisory Training	01.5.8.02.04 Complete Institutional Training Corrective Actions

Appendix G, *ICAP Resource and Duration Estimates*, provides a preliminary estimate of the required resources and the associated duration required for implementing the corrective actions.

Note that the durations listed in Appendix G are tentative, contingent on funding availability. Initially, resources and baseline change control will be managed through the OE Project.

**Issue:**

**1. Policy and Procedures for Training and Qualification**

LANL Institutional Training Policy, Procedures, and support documents do not prescribe specific processes, standards, requirements, guidance, and tools necessary for the planning, management, conduct, and administration of performance based training at LANL in a manner that establishes, maintains, and improves human performance standards and capabilities, while ensuring compliance with regulatory and contractual requirements.

<b>Issue 1: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
There is no procedural requirement/guidance that prescribes the development and implementation of a technical staff training and qualification program that meets the intent and requirements contained in DOE O 5480.20A.	LASO Phase II
There is no evidence of formal process documentation describing the training and qualification of training staff based upon assigned jobs and duties.	LASO Phase II
There is no defined process, based upon analyzed position requirements and training program objectives, that evaluate trainee education, experience, and training prior to assignment to any of the crafts positions.	LASO Phase II
The Laboratory contractual requirements related to training and qualification of personnel are not all reflected in Laboratory implementing documents. Additionally, not all Laboratory required actions have been implemented.	PS-ITPA-03
Institutional training and qualification requirements were not clearly defined nor communicated.	MSA
There is no policy governing worker disqualification following failure of required training courses. This could result in non-qualified workers performing work in the field.	PS-ITPA-03
LANL training requirements conflict with DOE O 5480.20A.	MSA
KSL has no defined training and qualification processes for the use of subcontracted or vendor training.	LASO Phase II
Training and Qualification program procedures are not at the necessary prescriptive level to ensure a standards-based program is in place, which meets the intent of DOE O 5480.20A.	LASO Phase I
There is no documented process for the establishment, maintenance, or update to entry-level requirements based upon analyzed job requirements or job performance for nuclear and non-nuclear facilities.	LASO Phase I & 2
Implement the training and qualification reciprocity program as outlined and intended by DOE.	LASO Phase II
LANL is not meeting the requirements of DOE O 5480.20A, Chapter I.3 for oversight of KSL training and qualification.	LASO Phase II
PTLA did not provide professional training to managers as required.	MSA

<b>Issue 1: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
Management did not have formal root cause training, which may have led to the development of ineffective corrective actions.	MSA

<b>Issue 1: Causal Factors</b>
<ol style="list-style-type: none"> <li>1. No instructional system design (ISD), such as the DOE endorsed SAT standards-based system has been routinely applied at LANL. Instead it is routinely stated that an "expert-based" system is used, where experts in the various subject matter know what needs to be taught and how to teach it. This expert based system is not truly a recognized system at all, is not documented nor formally implemented by personnel with knowledge of or expertise in the SAT method.</li> <li>2. Lack of recognition and understanding of DOE O 5480.20A requirements.</li> <li>3. Inadequate allocation of resources to implement a SAT-driven training program.</li> <li>4. Lack of institutional staff to support the development and maintenance of institutional training policies and procedures.</li> <li>5. Inability to match LANL positions with the positions specified in DOE O 5480.20A requiring qualification because they have different titles.</li> <li>6. DOE orders (i.e., DOE O 5480.20A) detailing specific training and qualification requirements for training staff are being improperly applied to justify not formalizing a qualification process for those people that perform training functions at non-nuclear facilities.</li> <li>7. Poor understanding of the differences between education and training.</li> <li>8. A systematic needs analysis of individual job positions has never been performed, thus the human performance capabilities and relevant job entry prerequisites have never been formally established.</li> <li>9. The Laboratory does not typically utilize the concept of job or position qualification, and instead relies on a diverse collection of task training that may not fully represent the job duties.</li> <li>10. A consistent formalized curriculum for job positions does not exist. Managers want the flexibility to hire employees to perform the tasks they assign. These tasks may be different for personnel of the same job title even within the same organization.</li> <li>11. This lack of job consistency is also a reason entry-level requirements are not standardized for the same job title and often lack clarity. This makes it difficult to design cost effective training for job positions (every instance of a job must be analyzed.)</li> <li>12. No single clear way of designing training and qualification programs or determining when they are needed.</li> <li>13. The process of task analysis is needed to derive the skills and knowledge required to perform a job. Task elements resulting from task analysis are used to develop course objectives. Without course objectives it is difficult to compare the outcomes of on-site courses with outside courses.</li> <li>14. No oversight at institutional level.</li> <li>15. Lack of clear concept of how training and qualification supports the institutional mission and can be used as an effective means of improving performance by decreasing costly mistakes.</li> <li>16. Lack of an effective work authorization system that tracks qualification for performing job tasks.</li> <li>17. Lack of clear understanding of DOE O 5480.19 and DOE O 5480.20A requirements regarding worker authorization and qualification.</li> <li>18. LIRs meant to cover the LANL training and qualification requirements in lieu of DOE Orders.</li> <li>19. Institutional leadership cancelled compliant SAT policy and procedures.</li> <li>20. Lack of LANL guiding policy on subcontractor / vendor requirements for proof of qualifications.</li> </ol>

**Issue 1: Causal Factors**

21. Lack of job title and job function consistency. Entry-level requirements are different for the same job title in different organizations.
22. Professional development training not at priority level to receive adequate funding.
23. Staffing inadequate to allow time to pursue professional training if funding had been available.
24. Crisis management not allowing time to develop or attend courses which would reduce or eliminate the cause of the crisis in the first place.
25. Lack of clear understanding of organizational missions, how departments support missions, how requirements are set for jobs, how performance is monitored and how problems are related to job requirements.
26. Needs analysis not performed to identify regulatory requirements in accordance with DOE O 5480.20A

**Issue 1: Corrective Actions**

- 1.a. Develop an institutional training policy requiring all training and qualification activities to be: 1) performance based, and 2) analyzed, designed, developed, implemented, and continuously evaluated in accordance with the systematic approach to training (SAT) as specified in DOE orders, standards, and guides. Responsible org.: PS-TIO.
- 1.b. Develop institutional procedures to implement the training policy. These will be mandatory documents providing consistency across all training programs and will also be based on established DOE Orders, Standards, and Guides for training and qualification, as well as leading training, education, and performance improvement methods. Responsible org.: PS-TIO.
  - o Institutional training and qualification procedures will specifically address the selection, training, and qualification process for personnel supporting nuclear facilities in the following technical areas; management/supervision, operations personnel, maintenance personnel, technical staff and training staff.
  - o Utilizing a graded approach, non-nuclear facility training programs will mirror nuclear programs when appropriate in order to maintain consistency and cost effectiveness.
- 1.c. Develop an institutional Worker Qualification/Authorization system to include the use of standardized qualification cards. The software-driven system will be electronically instituted, will track worker job and task qualification, and provide a one-location tool to be used for verifying worker qualification. Responsible org.: PS-TIO.
- 1.d. Organize and charter an Institutional Training Oversight Board to assist PS-TIO in the development, piloting, and implementation of training policy for the Laboratory. Responsible org.: PS-TIO.

**TIO will include the requirements for the following items in institutional training policy and procedures:**

- 1.e. Specific Line Manager training roles, responsibilities, authorities and accountabilities (R2A2) and training-related functions;
- 1.f. The R2A2 for all training-related positions and performance standards for those positions;
- 1.g. Formally establish the position of Institutional Training Director;
- 1.h. Invoke protocols requiring involvement and oversight for all decisions involving training on management boards and organizations at all levels;

**Issue 1: Corrective Actions**

- 1.i. R2A2 for senior training management will include participation in the project management process to ensure that project-related training is included in the project management planning process;
- 1.j. A method of determining entry-level requirements that meets the requirements of DOE O 5480.20A where required, and is used in the hiring process to ensure a baseline of skills and knowledge is possessed before a person is hired;
- 1.k. Job descriptions are derived from a task list developed from a job analysis performed in accordance with the SAT process on all jobs at LANL;
- 1.l. The standardization of a curriculum design for jobs, e.g., core requirements, LANL requirements, and facility-specific requirements and job/task-specific requirements;
- 1.m. Training and qualification programs at LANL will be based on the LANL standardized curriculum design;
- 1.n. The process for training and qualification program review, monitoring and updating;
- 1.o. The organizational template for training departments in all LANL organizations to maintain consistency, ease of monitoring, and ease of training position inter-site transfers;
- 1.p. The training requirements for vendors including the documentation they are required to possess to indicate compliance;
- 1.q. The specific requirements for refresher/continuing training and requalification using the SAT definitions "train and overtrain." Skill and knowledge enhancement beyond the train/overtrain requirements for tasks derived from job analysis will be defined by each organization for each job;
- 1.r. A formal on-the job training (OJT) process to meet all DOE O 5480.20A requirements where applicable;
- 1.s. Mentoring and OJT policies indicating when each is to be used and how they are to be implemented, monitored, and updated based on evaluations;
- 1.t. Establish formal policy and method for exam challenge and test-out of required training;
- 1.u. Establish formal policy and procedures for the format, content, documentation, and use of lesson plans;
- 1.v. Establish formal policy and procedures for the configuration management of all training materials;
- 1.w. Establish formal policy and procedures for the granting of equivalency based on education and experience followed by demonstrated competence and proficiency, formally evaluated and documented.

**Issue:**

**2. Systematic Approach to Training**

The systematic approach to training (SAT) is not being used by LANL organizations to develop and present training as required by DOE Orders and LANL policy and procedures.

<b>Issue 2: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
Nuclear and non-nuclear training and qualification programs are not based on a systematic approach to training and are not the result of a systematic analysis of jobs or tasks.	LASO Phase I LASO Phase II MSA PS-ITPA-03
TA-8 lesson plans do not include learning objectives.	LASO Phase I LASO Phase II
Task-to-training (TTM) matrices were inadequate.	MSA
There was no formal process for continuing training.	LASO Phase I LASO Phase II MSA
The systematic approach to training (SAT) is not being utilized institutionally as required by LIR 300.00.04.1, Laboratory Training: A Graded and Systematic Approach to a Qualified Workforce.	PS-ITPA-03
Management did not review and approve training materials.	MSA
Implementation of procedures as written will not result in an effective training evaluation program.	LASO Phase I
A comprehensive evaluation of individual training programs is not being conducted by qualified individuals on a periodic basis to identify program strengths and weaknesses.	LASO Phase II PS-ITPA-03 AA2-04-03
There is no procedural documentation that provides for the development, approval, security, administration and maintenance of oral examinations and performance evaluations in accordance with DOE O 5480.20A. Without this documentation, the consistency of trainee evaluation cannot be achieved.	LASO Phase I
The LANL Leadership/management training was not effective.	MSA
Comprehensive written examinations are not conducted for certified operator and supervisor positions as required by Chapter I, Section 8, of DOE O 5480.20A.	LASO Phase II

**Issue 2: Causal Factors**

1. Failure to recognize or understand DOE O 5480.20A requirements



**Issue 2: Causal Factors**

2. "Expert-based" system accepted in lieu of standards-based system as required by DOE orders and outlined in DOE standards, guides, and handbooks.
3. The SAT process is not sufficiently understood and therefore, the benefit in supporting the necessary initial and continuing resources to establish and implement sound training programs is not recognized.
4. Lack of institutional and line organization instructional development staff to perform analysis and design phases of SAT.
5. Lack of instructional evaluation/training effectiveness staff to evaluate the effectiveness of institutional, facility-specific, and job/task/activity-specific training.
6. The importance of learning objectives is not understood.
7. No task analysis to the level of task elements, skills, and knowledge was performed to supply the material for writing objectives.
8. Lack of understanding the purpose of task-to-training matrices and using them as a mechanism to update courses based on task changes.
9. Lack of understanding how SAT keeps workers qualified and in compliance with DOE requirements, and helps ensure workers can perform assigned tasks with higher quality and fewer mistakes.
10. Continuing training and requalification requirements not clearly defined by policy.
11. No perceived consequence for non compliance.
12. Training manager entry-level requirements did not fit the roles and responsibilities of the job.
13. Roles and responsibilities for managers inadequately defined.

**Issue 2: Corrective Actions**

- 2.a. Develop and execute an implementation plan to upgrade all nuclear facility training and qualification programs to satisfy DOE O 5480.20A standards in accordance with revised institutional policy and procedures. PS-TIO to monitor individual facility implementation. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 2.b. Develop and execute an implementation plan to upgrade all non-nuclear training and qualification programs in accordance with revised institutional policy and procedures. PS-TIO to monitor and approve final implementation. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.

**Additionally, PS-TIO will ensure the following requirements are addressed in the revised institutional Training Policy and procedures:**

- 2.c. Implementation and monitoring of a standardized SAT process including consistent use of forms, templates, and other tools to consistently implement, maintain, and revise SAT processes;
- 2.d. The SAT requirements for the design, maintenance and modifications of on-the-job training (OJT) incorporating formative, summative and post-course evaluations;
- 2.e. The use of needs assessments, risk assessments, the frequency of task performance, and the complexity of tasks to determine the status of initial and continuing/refresher training (Train - No Train - Overtrain);
- 2.f. The use of a graded approach to determine the level of detail in the task analysis, and alternative methods to be used to identify the best delivery method;

**Issue 2: Corrective Actions**

- 2.g. The use of standardized task-to-training matrices to identify the courses where task changes need to be made. They will be required to reside in an electronic training data management system;
- 2.h. The use of formative, summative and post-course evaluations which will be standardized for instructor/course, and post-training assessments;
- 2.i. The standardized processes by which training materials are modified (change control) as well as the identification of the R2A2 of the personnel responsible for these activities;
- 2.j. A standardized process for review and approval of all training materials and evaluation instruments. Responsibilities for these will be assigned and monitored;

**In addition:**

- 2.k. Establish and staff a training Help Desk to answer training-related questions. Responsible org.: PS-TIO.
- 2.l. Develop a training methods manual to promote and facilitate consistent application of SAT. Responsible org.: PS-TIO.

<p><b>Issue:</b></p> <p><b>3. Training Program Maintenance</b></p> <p>Training and qualification programs are not maintained and updated as needed or required.</p>
---

<b>Issue 3: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
There is no programmatic documentation specifying the review, approval, and control requirements for training materials.	TA-16 ORR LASO Phase II

<p><b>Issue 3: Causal Factors</b></p> <ol style="list-style-type: none"> <li>1. Lack of understanding of the benefits of supporting the necessary initial and continuing resources required to establish and implement sound training programs based on the SAT model.</li> <li>2. Lack of differentiation between “position qualification” and “task qualification”, combined with failure to qualify positions to all core tasks required of the position.</li> <li>3. Inadequate allocation of resources to implement a SAT-driven training program.</li> <li>4. Course feedback not incorporated into lesson plan.</li> </ol>
---

<p><b>Issue 3: Corrective Actions</b></p> <p>3.a. Develop a schedule to review existing LANL training programs based on their relative risk significance and conduct high-level reviews to identify significant areas that may require immediate compensatory measures, while all programs are being upgraded to revised institutional standards; Responsible org.: PS-TIO.</p> <p><b>Additionally, PS-TIO will ensure the following requirements are addressed in the revised institutional Training Policy and procedures:</b></p> <p>3.b. The use of a formative evaluation process for evaluation of all training materials during creation and the assignment of these responsibilities to appropriate personnel. (<i>This requires materials to be reviewed and approved before implementation. The sequence of developing training materials will be identified in the SAT process at the Laboratory level.</i>);</p> <p>3.c. Training program review cycles and who will perform the review;</p> <p>3.d. Inclusion of learning strategies in the lesson plan design of the Training Staff Qualification Program;</p> <p>3.e. The use of course piloting to identify course delivery issues before courses are fully implemented;</p> <p>3.f. Identify DOE requirements for nuclear and non-nuclear facilities and the plans to make appropriate requirement-driven updates as soon as available. These requirements will be used to track training programs and the Laboratory’s compliance with all requirements. Responsible org.: PS-TIO.</p>
--

**Issue:**

**4. Nuclear Facility Training Program Design and Documentation**

Training Implementation Matrices (TIMs) and Training Implementation Plans (TIPs) are either non-existent, not approved, outdated, inaccurate, take inappropriate exceptions, or incorrectly identify requirements as not applicable.

<b>Issue 4 Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
Systemic Finding 2: Many of the TIMs are not up to date.	LASO Phase I MSA
No formal process exists to address change control for the Institutional TIM.	LASO Phase I
Systemic Finding 3: The Laboratory has incorrectly categorized DOE requirements as "not applicable" or taken exceptions without documented justification in the Institutional TIM.	LASO Phase I
Lack of formal documentation and/or justification for the exceptions taken for the entry level requirements of DOE O 5480.20A.	LASO Phase I
The TIM presently in use at LANSCE is not current with the existing conditions at LANSCE and has not been approved by DOE.	LASO Phase II

**Issue 4: Causal Factors**

1. Failure to recognize or understand DOE O 5480.20A requirements at all levels of training and management.
2. Lack of resources to develop and support nuclear facility training program management, planning, and program documentation.
3. Lack of LANL policy requiring the TIM to be updated once created see Issue #1.
4. Lack of clear conditions for granting waivers for requirements.
5. Lack of clear review policy and method to perform review and make changes.

**Issue 4: Corrective Actions**

4.a. Develop and execute an implementation plan to develop or revise all TIMs to meet DOE O 5480.20A requirements. Plan to include provisions for items listed below. Responsible org.: PS-TIO.

- o Near term review of existing TIMs to identify instances of inappropriate exceptions or applicability determinations.
- o Assist facilities with significant errors with timely revisions.

**Additionally, PS-TIO will ensure requirements for the following items are included in the revised institutional Training Policy and procedures:**

4.b. The use of a standardized TIM development template;

**Issue 4: Corrective Actions**

- 4.c. The LANL nuclear facility and institutional review and approval process for TIM implementation based on DOE O 5480.20A requirements;
- 4.d. A standardized process for keeping TIMs current including specification of the review frequency and process;
- 4.e. The review and approval process for taking exceptions to, or obtaining waivers for, DOE O 5480.20A requirements;
- 4.f. Assignment of review, contractor approval, and DOE submission responsibilities.

**Issue:**

**5. Training Staff Qualification**

Training, qualification, and continuing/refresher training programs for training staff and other personnel who develop, conduct, document, or manage training are weak and inadequate.

<b>Issue 5: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
There are no approved Laboratory or Facility program documents or written requirements that if implemented would result in trained and qualified instructors that meet the requirements of DOE O 5480.20A or certified instructors who meet the requirements of LIR 300.00.04.	LASO Phase I & 2 AA2-04-03
There are no approved program documents or written requirements that, if implemented as written, would result in a continuing instructional skills training program that maintains, improves, and updates the knowledge and skills of incumbent training staff.	LASO Phase I & II
Establish a process for documenting management and/or supervisor evaluation as part of the final qualification for training staff positions.	LASO Phase I AA2-04-03
Not all OJT instructors and evaluators conducting training and signing qualification cards for 1L facility operators are formally trained as OJT instructors.	LASO Phase II
There is a lack of documentation to prove that designated instructors at the TA-8 possess the required instructional and technical knowledge and skills to perform the required tasks as instructors.	LASO Phase II MSA
Documentation of instructor qualifications not easily found.	MSA
Workers did not know how to access training records.	MSA
No evidence was presented that describes the details of a continuing training program for training staff.	LASO Phase I
Goals, objectives and plans are not in place to support the implementation of the training and qualification programs.	PS-ITPA-03
The facility-specific (non-core) RCT Training program is not adequately addressed in the RCT training program documents, and managements' roles and responsibilities in the initial non-core RCT training are not defined.	LASO Phase II
The content of written examinations at WETF is not changed and exams are therefore subject to compromise.	LASO Phase II

**Issue 5: Causal Factors**

1. Training and qualification perceived as necessary only for entry-level personnel with little or no SAT experience.
2. SMEs are not required to attend training qualification because the "expert-based" system assumes SMEs intrinsically understand what is needed to design, develop, deliver, evaluate, and maintain training. SMEs

**Issue 5: Causal Factors**

- are incorrectly assumed qualified to train based on their expertise in the job.
3. Inadequate funding due to the concept that training is only a collateral duty of an SME and no independent training funding is needed.
  4. Unclear training positions and roles and responsibilities for those positions.
  5. No defined training needs assessment or continuing training program for training personnel.
  6. Inadequate funding for training staff qualification positions and programs, including continuing/refresher training
  7. Inadequate funding for professional development and continuing education for training personnel.
  8. No continuing training seen as necessary if training staff already possessed some kind of educational experience or credentials.
  9. Continuing training requirements are not clearly defined.

**Issue 5: Corrective Actions**

- 5.a. Establish an interim qualification standard for all training staff positions and all personnel conducting training or qualification activities in the field. This will be a high level safety net to ensure reasonable competence, while formalized institutional policy and procedures are being implemented. Responsible org.: PS-TIO.
- 5.b. Develop and maintain a list of qualified individuals will be developed and maintained based on management review of personnel compatibilities against interim qualification standards, based on individual roles and responsibilities. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 5.c. Develop and execute an implementation plan to transition from interim qualifications as institutional procedures become affective. Personnel not meeting interim qualification standards will not be permitted to conduct activities for which they are not approved. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 5.d. Conduct an organizational training job analysis to identify the duties and tasks of training personnel at all levels. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 5.e. Develop a hierarchy of training staff positions with titles, position descriptions, and their associated roles, responsibilities, authorities, and accountabilities to form a basis for the structure of the training staff qualification program. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 5.f. Develop and execute formal continuing training for all personnel performing training duties at LANL based on a needs assessment that identifies needed areas of improvement. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.

**Additionally, PS-TIO will ensure the following requirements are addressed in the revised institutional Training Policy and procedures:**

- 5.g. The Training Staff Qualification Program (TSQP) including initial and continuing training for all training department positions will be determined by a job task analysis (JTA) and incorporate the use of a graded approach;
- 5.h. All TSQP courses will, at a minimum, meet all DOE regulatory requirements for qualified training

**Issue 5: Corrective Actions**

personnel;

- 5.i. The TSQP will include courses in determining when and how to use alternative approaches to training;
- 5.j. Training departments with part-time instructors will maintain a current list of qualified instructors;
- 5.k. All classroom and OJT instructors performing training for qualification requirements will be qualified both in training and in the content they are instructing;
- 5.l. Entry-level requirements for training personnel will consider the candidate's ability to implement top-of-the-line training, education and performance improvement methodologies;
- 5.m. The training staff qualification program will include an equivalency policy for prior documented education and experience followed by an evaluation of the individual's ability to perform to the training program standards;
- 5.n. All training positions, both institutional and at the facility and group levels, will be required to attend the course(s) for their position before they can perform training responsibilities. This includes part-time instructors;
- 5.o. All facilities will identify part-time OJT instructors and schedule them for the appropriate TSQP course(s) before assigning them training responsibilities;
- 5.p. Requirements for continuing/refresher training for all personnel conducting training at LANL.



**Issue:**

**6. Training Resources**

Resources allocated to support training are not sufficient to support the training required for performance improvement and compliance.

<b>Issue 6: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
Not all Laboratory organizations are effectively organized, staffed, and managed to facilitate planning, directing, evaluating and controlling a systematic training process that supports the Laboratory's missions.	PS-ITPA-03 LASO Phase II MSA
There is a need for a more timely availability of training courses.	MSA
Currently the spaces being used for classroom training are only marginally effective because of inadequacies in lighting, working space, ventilation, and outside noise control. (FWO.)	MSA LASO Phase II

**Issue 6: Causal Factors**

1. Training and qualification not a priority.
2. No consequences to failing to fund required training.
3. False assumption that the current training staff and facilities are adequate for the volume of training required at LANL.
4. Training is seen as an overhead cost for compliance, not as an organizational performance improvement tool.
5. Willingness to let students, workers, and scientists find information through their own research instead of providing it to them efficiently through training and development methods.

**Issue 6: Corrective Actions**

- 6.a. Develop and submit staffing plan as needed to implement and maintain the policy and procedures recommended in this corrective action plan. Staffing requirement calculations will consider the positions and number of personnel needed for those positions to support the mission of the organization and will include cost estimation. Responsible org.: PS-TIO.
- 6.b. Hire instructional technologist/training specialist expert in DOE O 5480.20A training requirements as an institutional resource to support, guide, and coordinate nuclear facility training operations. Responsible org.: PS-TIO.
- 6.c. Establish and staff a Training Effectiveness Evaluation Team for the evaluation of training at LANL. Responsible org.: PS-TIO.
- 6.d. Implement the Institutional Support Organization (ISO) model for the Laboratory training staff. Responsible org.: PS-TIO.

**Issue 6: Corrective Actions**

- 6.e. Hire instructional technologists/training specialists required to support the full development and execution of SAT for the centralized training program. Responsible org.: PS-TIO.
- 6.f. Hire instructional technologists/training specialists to support the development, maintenance, and delivery of the Training Staff Qualification Program. Responsible org.: PS-TIO.
- 6.g. Design institutional, directorate, division and facility training departments to implement and maintain the SAT process efficiently. Because training personnel will be required to attend the site training program courses, they will be using the same training methodology and training departments can share training resources more cost effectively than having fully independent training departments. Responsible org.: PS-TIO.
- 6.h. Conduct a needs analysis to identify requirements for physical resources to conduct site training mission. This will include the need for centralized and satellite facilities. Responsible org.: PS-TIO.
- 6.i. Submit CD-0 package for new construction in accordance with LANL LIR-220-01-01.6 "Construction Project Management". Responsible org.: PS-TIO.

**Issue:**  
**7. Training Data Management System**  
 Training Electronic Data Management Systems are inadequate and antiquated.

<b>Issue 7: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
Task order contract and other contractor training was not tracked or verified.	MSA
The division Worker Authorization System (WAS) that was developed as a management tool to enable line management to review worker tasks, training and qualifications, and the worker authorization was not adequate.	MSA
EDS was not coordinated with other training tracking systems and produced inconsistent results.	MSA
The Enterprise Project (EP) Training Administration module may not have a complete design specification list that clearly communicates performance requirements.	PS-ITPA-03
Training questionnaire is out of date and not functioning.	MSA
There was no process to validate qualify/training requirements when workers transferred organizations or were from the union.	MSA
Completion of ChemLog training was not tracked in EDS.	MSA
Teams were unable to easily retrieve personnel training records, status, history, and requirements.	MSA
Multiple Laboratory-wide databases that contained personnel training records. The databases were often not aligned and showed differing information. PTLA used five different automated systems to retrieve training records.	MSA
Crypto cards are required for on-line training course access, yet most students, affiliates, and foreign nationals were not allowed to be issued the crypto cards.	MSA
Course content materials, slides, handouts, etc., were maintained by the training personnel instead of a document control system.	MSA
Managers did not ensure that workers received all required training.	MSA AA2-04-03

**Issue 7: Causal Factors**

- Historically, dispersed training programs have established individual methods for tracking worker training and qualification. A central database has never successfully captured the complete set of training and qualification requirements to address the entire Laboratory population.
- Multiple databases and multiple platforms have developed independently without a LANL standard to ensure compatibility.
- A centralized organization has not existed to enforce a set of standards concerning compatibility of the

**Issue 7: Causal Factors**

various computerized systems.

4. A centralized organization has not sought to identify the training data needs of the users and provide them that data in an efficient and cost effective manner that reduces the work hours required to enter, access, and manage training data. This has resulted in the program or programmers dictating the program structure and capabilities, instead of the user needs guiding the program structure and capabilities.
5. Insufficient resources have been allocated institutionally to provide adequate institution-wide training data systems.
6. An institutional willingness to "let EP handle it" when training was not in the scope of the current EP project.
7. Inconsistent Work Authorization System methods.
8. Training and qualification methods vary across the Laboratory preventing a system design which tracked training requirements consistently.
9. Too much antiquated code makes it difficult to keep code current when changes are made.
10. Too many duplicate courses make it difficult to assign courses for specific positions.
11. Lack of resources to supply data entry personnel
12. Personnel untrained on system.
13. EDS does not the meet the needs of diverse training methods.
14. LANL security level decisions applying safeguards to computer database access.
15. No change control in place to inform training of need to modify training materials for facility, procedure changes, etc.

**Issue 7: Corrective Actions**

- 7.a. Develop and execute an implementation plan to select, procure, install, and transition to a new, EP-compliant Training Data Management System to include the features and capabilities listed below.  
Responsible org.: PS-TIO.
  - Utilize a user-friendly, reliable, and accurate Training Data Management System that registers workers and schedules courses, keeps training status current, notifies workers of training requirements that are soon to expire and training requirements that have changed due to procedure and operational changes.
  - Ability to evaluate LANL and non-LANL course equivalencies.
  - Have report tools for all functions it manages. This system tracks course changes and produce a course history file.
  - Ability to report on training costs.
  - Utilize a worker qualification and authorization status system that relates currency of qualification to tasks and can be used to assign workers to jobs for which they are qualified.
  - Ability to store test items in an exam bank and make it possible to generate tests by randomizing test items.
  - Ability to store all regulatory requirements dealing with training and/or qualification.

**Issue 7: Corrective Actions**

- Ability to track JTA tasks, elements, and S/Ks so that redundant task components can be grouped and courses created that span the Laboratory. When new tasks components are entered the system searches its existing database for existing task components and identifies existing courses where changes can be made or existing courses can be used.

**Issue:**  
**8. On-the-Job Training (OJT) and Mentoring**  
 On-the-job-training (OJT) and mentoring are inadequate.

<b>Issue 8: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
The mentor program was not defined and lacked formality.	MSA
On-the-job training evaluations are not based on a set of documented learning objectives, and no written standards are provided for acceptable performance.	TA-16 ORR LASO Phase II
The OJT performance evaluation process is not consistent with the administrative procedure NMT-AP-016. The purpose of using a performance checklist is to provide useful feedback to the employee each step of the way toward a qualification. NMT groups use the checklist to document completion of the evaluation, but not the learning process along the way. This assessment did not provide the opportunity to fully determine the cause for the deviation from the procedure and further study is warranted.	LASO Phase II
FWO & TA-18 OJT is not consistently developed, implemented, evaluated, or documented.	LASO Phase II
On-the-job training at the job and task level for craftsmen is entirely informal mentoring with no documentation, or controls to ensure that training is consistently presented.	LASO Phase II
OJT packages were not reviewed by SMEs.	MSA
OJT training requirements were not met.	LASO Phase II MSA 2004-RP-01
No documentation process for performance evaluations.	MSA
OJT lesson plan materials lack adequate lesson plan detail to ensure consistent delivery of required training.	LASO Phase II MSA

**Issue 8: Causal Factors**

1. Failure to utilize SAT process. Specifically the design phase of SAT, where the appropriate methods (i.e. OJT and mentoring) would be selected for development and implementation.
2. Unclear and undefined roles, responsibilities, authorities and accountabilities as well as interfaces.
3. Inadequate resources dedicated to the development of OJT and mentoring programs in line organizations.
4. Lack of understanding of OJT and mentoring requirements.
5. Skill of craft misinterpreted and over-used.
6. Tasks analysis needed to identify specific skills needed for maintaining LANL systems. Without this, no pre-evaluations can be designed to ensure those skills are present.

**Issue 8: Corrective Actions**

- 8.a. Require line organizations to provide a schedule to review and revise OJT lesson plans and evaluations to ensure they're based on the SAT process. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 8.b. Define a method that identifies OJT as a delivery method by using a graded approach and applicable DOE requirements. OJT evaluations will be designed to meet DOE qualification and certification standards. Responsible org.: PS-TIO.
- 8.c. Reference and use Laboratory procedures for designing and implementing OJT and mentoring programs for all facility training and qualification programs. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 8.d. Perform mentoring or OJT to qualify and certify professional and technical staff to meet DOE O 5480.20A requirements and the SAT process. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.

**Issue:**  
**9. Training Management, Organization, Infrastructure, and Oversight**  
 Training organization, infrastructure, and oversight are inadequate.

<b>Issue 9: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
Non-PS-13 line management responsible for PS-13 sponsored courses are not sufficiently involved in all phases of the training process to ensure training adequacy and worker qualification.	PS-ITPA-03 LASO Phase II MSA
There was only one designated OJT SME for this facility; this was considered a vulnerability to the training program.	MSA
Managers and workers are not aware of training requirements.	MSA
Need for training was not communicated until after a document has been implemented.	MSA
Goals, objectives and plans are not in place to support the implementation of the training and qualification programs.	PS-ITPA-03
Changes, e.g., facility, safety basis, procedures, etc., that impacted training were not communicated to the training staff for training revision.	MSA
Line management has not approved training material used at TA-8.	LASO Phase II
Course content materials, slides, handouts, etc., were maintained by the training personnel instead of a document control system.	MSA
Neither the FWO nor the facility-owner Division (NMT or N-2) are taking responsibility for ensuring that the FWO personnel who are deployed into the TA-18/LACEF, TA-55, or CRM facilities are properly trained and qualified to perform their job functions.	LASO Phase I
Training could not be verified by documentation.	MSA

**Issue 9: Causal Factors**

**Causal Factors:**

1. Roles and responsibilities regarding training and qualification issues not clearly assigned.
2. Training department design inconsistent.
3. Resource loading low because training "expert-based" system does not use SAT standards-based system which requires more resources.



**Issue 9: Causal Factors**

4. Lack of resources to establish and provide infrastructure and oversight.
5. Not a priority due to heavy management loads.
6. Lack of understanding how training and qualification supports the institutional mission.
7. Lack of understanding the consequences of not being involved in training and qualification decisions.
8. No institutional centralized training organization with the R2A2 to ensure quality, standardization, and consistency.

**Issue 9: Corrective Actions**

- 9.a. Stipulate the design of all training organizations in an institutional training policy to require the items listed below. Responsible org.: PS-TIO.
  - All training organizations will designate the same jobs, job descriptions, roles and responsibilities to ensure consistent implementation of the Laboratory training policy and procedures. This will also facilitate more effective utilization of trainer staff and allow the seamless transfer of training personnel within the Laboratory to support institutional priorities and emergent training needs.
  - The institutional training organization shall have centralized training authority for Laboratory-wide training programs.
  - The establishment of a centralized training organization to provide the management, oversight, policy, procedures, and support infrastructure for all training. This organization will develop and deliver institution-wide training, deploy personnel to support the responsible division leader facility management and operations, and provide the policy, procedures, and support infrastructure for the divested training resources under the responsible line managers.
- 9.b. Invoke protocols requiring involvement and oversight for all institutional decisions involving training by senior training management. Responsible org.: PS-TIO.
- 9.c. Integrate senior training management into the project management process to ensure that project-related training is included as a line item in the project management planning process. Responsible org.: PS-TIO.
- 9.d. Base training positions on organizational training job and task analysis. Responsible org.: Facility (Responsible Division Leader) Training Managers.
- 9.e. Include a plan for sharing training resources when training audiences and programs do not justify separate fully staffed training departments. Responsible org.: PS-TIO.
- 9.f. Oversee training departments at the institutional level. Responsible org.: PS-TIO.
- 9.g. Manage Laboratory training organizations to support the Laboratory's organizational and operational structure. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 9.h. Define entry-level requirements for all training positions based on the SAT process and each facility's requirements and resources. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.

**Issue:**  
**10. Management and Supervisory Training**  
 Management and leadership training programs for all levels of management from first line supervisor through senior executives are either non existent or inadequate.

<b>Issue 10: Representative Findings, Observations, or Concerns</b>	<b>Assessment</b>
There was a lack of formal training and qualification for RDLs.	MSA
Nuclear facility management, technical staff and supervisor training and qualification programs to support certified and non-certified positions do not meet the requirements of DOE O 5480.20A or were not developed.	LASO Phase II MSA
Management had not met training/qualification/certification requirements.	MSA

**Issue 10: Causal Factors**

1. Lack of understanding of DOE O 5480.20A requirements.
2. Lack of formal needs or functional analysis for manager or supervisor job junctions.
3. Technical staff are considered qualified solely by reason of their credentials.
4. Lack of time.
5. Lack of consequences for not completing training and qualification.

**Issue 10: Corrective Actions**

- 10.a. Identify and designate management and supervisory roles as specific job functions as opposed to ancillary duties. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 10.b. Identify and differentiate between operations management positions and technical staff management positions in accordance with requirements of DOE O 5480.20A. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 10.c. Perform: 1) needs analysis and 2) functional analysis, for all levels of management and supervision, ensuring analysis addresses all regulatory and contractual requirements, and a management directed focus on excellence and leadership. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 10.d. Review industry practices for management and supervisory training among DOE and NRC facilities and identify best practices applicable to LANL. Responsible org.: PS-TIO.
- 10.e. Establish training and qualification requirements for all identified levels of manager and supervisor based on analysis and industry best practices. Responsible org.: PS-TIO.
- 10.f. Design a site level manager/supervisor/leadership training and qualification program. Responsible org.: PS-TIO.
- 10.g. Establish a Management and Supervisory Advisory Council to serve as subject matter experts for

**Issue 10: Corrective Actions**

- validation and approval of needs/functional analysis and initial design and development of manager/supervisor/leadership training and qualification program. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 10.h. Perform a gap analysis of planned program and existing management training. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 10.i. Develop a site-level supervisor/manager/leadership training and qualification program. Responsible org.: PS-TIO.
- 10.j. Implement a site level manager/supervisor/leadership training and qualification program. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 10.k. Integrate the Laboratory systems and processes into the supervisor/manager/leadership training to ensure personnel are proficient in their use, and able to apply knowledge and skills acquired through the training in their work. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 10.l. Revise TIMs, TIPs, Training Policy and procedures as appropriate to address manager and supervisor T&Q process requirements. Responsible org.: Facility (Responsible Division Leader) Training Managers and PS-TIO.
- 10.m. Establish DOE Training and Qualification Reference Repository {training orders, standards and guides} on the PS-TIO website. Additionally, establish intranet hot links from each division's website and inform Laboratory population. Responsible org.: PS-TIO.

## Appendix A – References

### Assessments

- NTS-ALO-LA-LANL-2003-0029, PAAA Non-Compliance Report
- Institutional Training Programs Assessment, Performance Surety Group (PS-2), August 2003.
- Non-nuclear Facility Training Assessment (AA2-04-03), AA-2, March 2004.
- NNSA/LASO TA-16 WETF Operational Readiness Review, 2204.
- NNSA/LASO Nuclear Facility Training and Qualification Phase I Assessment, June 2004.
- Management Self-assessments, All LANL Divisions, July to December 2004.
- Laboratory Readiness Reviews for Level 3 Activities, August to December 2004.
- NNSA/LASO Nuclear Facility Training and Qualification Phase II Assessment, April 2005.
- NNSA/LASO Effectiveness Assessment of Radiological Worker II Training, March 2005.

### Performance Improvement

- Gilbert, Thomas F. Human Competence. McGraw-Hill Publisher, 1978
- IAEA-TECDOC-1204 “A Systematic Approach to Human Performance Improvement at Nuclear Power Plants: Training Solutions”, 2001
- *Excellence in Human Performance* (INPO, September 1997)

## Appendix B – DOE Orders, Guides, and Standards

Where possible, the work products and processes developed to support implementation of the corrective actions will utilize the direction or guidance provided in the DOE Orders, Guides and Standards:

### Regulatory and Contractual Requirements

- DOE O 414.1B: Quality Assurance
- DOE O 470.1 Safeguards and Security Program
- DOE O 5480.19: Conduct of Operations
- DOE O 5480.20A: Personnel Selection, Qualification and Training Requirements for DOE Nuclear Facilities

### Guidance Documents

- DOE-HDBK-1001-96: Guide to Good Practices for Training and Qualification of Instructors
- DOE-HDBK-1002-96: Guide to Good Practices for Training and Qualification of Chemical Operators
- DOE-HDBK-1003-96: Guide to Good Practices for Training and Qualification of Maintenance Personnel
- DOE-HDBK-1078-94: Training Program Handbook: A Systematic Approach to Training
- DOE-HDBK-1074-95: Alternative Systematic Approaches to Training
- DOE-HDBK-1076-94: Table-Top Job Analysis
- DOE-HDBK-1103-96: Table-Top Needs Analysis
- DOE-HDBK-1114-98: Guide to Good Practices for Line and Training Manager Activities
- DOE-HDBK-1115-98: Guide to Good Practices for the Selection, Training and Qualification of Shift Technical Advisors
- DOE-HDBK-1117-99: Guide to Good Practices for Maintenance Supervisor Selection and Development
- DOE-HDBK-1118-99: Guide to Good Practices for Continuing Training
- DOE-HDBK-1119-99: Guide to Good Practices for the Selection, Training and Qualification of Shift Supervisors
- DOE-HDBK-1200-97: Guide to Good Practices for Developing Learning Objectives
- DOE-HDBK-1201-97: Guide to Good Practices: Evaluation Instrument Examples
- DOE-HDBK-1202-97: Guide to Good Practices for Teamwork Training and Diagnostic Skills Development
- DOE-HDBK-1203-97: Guide to Good Practices for Training of Technical Staff and Managers
- DOE-HDBK-1204-97: Guide to Good Practices for the Development of Test Items
- DOE-HDBK-1205-97: Guide to Good Practices for the Design, Development and Implementation of Examinations
- DOE-HDBK-1206-97: Guide to Good Practices for On-the-Job Training

## Appendix C – PS-2 Assessment Results

Finding and Observation Matrix from Institutional Training Programs Assessment, Performance Surety Group (PS-2), August 2003.

Finding Number	Finding
1	Not all Laboratory organizations are effectively organized, staffed, and managed to facilitate planning, directing, evaluating, and controlling a systematic training process that supports the Laboratory missions.
2	The Systematic Approach to Training (SAT) is not being utilized institutionally as required by LIR 300.00.04.1 <i>Laboratory Training: A Graded and Systematic Approach to a Qualified Workforce</i> .
3	To the extent that training evaluations were conducted they were not endorsed at the appropriate management level nor were the evaluation results used to develop corrective action plans.
4	The Laboratory contractual requirements related to training and qualification of personnel are not all reflected in Laboratory implementing documents. Additionally, not all Laboratory required actions have been implemented.
5	Non-PS-13 line management responsible for PS-13 sponsored courses are not sufficiently involved in all phases of the training process to ensure training adequacy and worker qualification.
6	There is no policy governing worker disqualification following a failure of required retraining courses. This could result in non-qualified workers performing work in the field.
<b>Concerns</b>	
1	Goals, objectives and plans are not in place to support the implementation of the training and qualification programs.
2	The Enterprise Project (EP) Training Administration module may not have a complete design specification list that clearly communicates performance requirements.



## Appendix D – AA-2 Assessment Results

Findings and Observation Matrix from Non-nuclear Facility Training Assessment (AA2-04-03), AA-2, March 2004.

Finding Number	Finding
1	Not all managers ensured that their workers received all required training. Of 117 workers, 74 (63%) workers did not have required training. As a result, not all safety information and work performance requirements were communicated.
2	Training documentation was incomplete. Of 66 training courses 39 (59%) did not have formal, documented content analysis and 33 of 63 (52%) did not have an associated lesson plan. Without complete documentation, trainers could not demonstrate that safety and performance information was incorporated into the training materials or communicated to workers.
3	Not all trainers were qualified. Of 62 trainers, 27 (44%) did not complete the Training Staff Qualification Program. Without formally qualified trainers, the required safety and performance information may not be effectively communicated to workers.



## Appendix E – LASO Assessment Results

Findings and Observation Matrix from NNSA/LASO Nuclear Facility Training and Qualification Phase I Assessment, June 2004 and NNSA/LASO Nuclear Facility Training and Qualification Phase II Assessment including the NNSA/LASO TA-16 WETF Operational Readiness Review, 2004.

Assessment	Finding Number	Facility	Finding
LASO Phase I	Systemic 1	FWO	The training and qualification program for Facility and Waste Operations (FWO) personnel deployed to non-FWO facilities is inadequate to meet minimum requirements.
LASO Phase I	Systemic 2	LANL Nuclear Facilities	Many of the Training Implementation Matrices (TIMs) are not up-to-date.
LASO Phase I	Systemic 3	LANL Nuclear Facilities	The Laboratory has incorrectly categorized DOE requirements as "not applicable" or taken exceptions without documented justifications in the Institutional TIM.
LASO Phase I	Systemic 4	LANL Nuclear Facilities	Facility/organization programs that are in place rely on an expert-based versus process or standard-based approach
LASO Phase I	Systemic 5	LANL	Instructor/trainer qualification programs are weak.
LASO Phase I	Systemic 6	LANL Nuclear Facilities	Continuing training programs are weak or not in place.
LASO Phase I	1.1	NMT	The most recently approved TIM provided to the assessment team is not current with existing facility organization and infrastructure.
LASO Phase I	1.1	TA-18	Neither the FWO nor the facility-owner Division (NMT or N-2) are taking responsibility for ensuring that the FWO personnel who are deployed into the TA-18/LACEF, TA-55, or CMR facilities are properly trained and qualified to perform their job functions.
LASO Phase I	1.1	TA-8	The TA-8 Nuclear Facility Training Program does not include training management and process guidance documents of sufficient detail that ensures program execution in accordance with DOE O 5480.20A.
LASO Phase I	1.1	FWO	The FWO Facility Training Program does not include training management and process guidance documents of sufficient detail that ensures program execution in accordance with DOE O 5480.20A.
LASO Phase I	1.1.1	RRES	The RRES-RANT-WCR Facility Training Program does not include training management and process guidance documents of sufficient detail that ensures program execution in accordance with DOE O 5480.20A. (RRES Nuclear Facilities)
LASO Phase I	1.2.1	LANSCE	The LANSCE Facility Training Program does not include training management and process guidance documents of sufficient detail that ensures program execution in accordance with DOE O 5480.20A. (LANSCE Facilities)
LASO Phase I	1.3	TA-16	There is insufficient specificity in existing WETF programmatic documentation to ensure consistency in approach, level of rigor and discipline, and execution of the Training and qualification Program.

Assessment	Finding Number	Facility	Finding
LASO Phase I	2.1	NMT	There are no approved program documents or written requirements that, if implemented as written, would result in a continuing instructional skills training program that maintains, improves, and updates the knowledge and skills of incumbent training staff.
LASO Phase I	2.1.1	RRES	There is no formal process documentation describing the training and qualification of training staff based upon assigned jobs and duties. (RRES Nuclear Facilities)
LASO Phase I	2.1.2	RRES	No evidence was presented that describes the details of a continuing training program for training staff. (RRES Nuclear Facilities)
LASO Phase I	2.2	NMT	There are no approved program documents or written requirements that, if implemented as written, would result in formally qualified instructors as defined in DOE Order 5480.20 CRD section IV.2.g.(2).(c).2 or certified as required by LIR300.00.04.2, Laboratory Training: Essential Requirements
LASO Phase I	2.2.1	TA-18	There are no approved Laboratory or Facility program documents or written requirements that if implemented would result in trained and qualified instructors that meet the requirements of DOE O 5480.20A, Contractors Requirements Document Chapter III, Paragraph 2.g.(2).(c). or certified instructors who meet the requirements of LIR 300-00-04.
LASO Phase I	2.2.1	TA-8	There are no approved Laboratory or Facility program documents or written requirements that if implemented would result in trained and qualified instructors that meet the requirements of DOE O 5480.20A, Contractors Requirements Document Chapter III, Paragraph 2.g.(2).(c). or certified instructors who meet the requirements of LIR 300-00-04.
LASO Phase I	2.2.1	FWO	The Laboratory-wide Instructor Training Program lacks formal documentation describing the process of instructor qualification with regards to the instructor's assigned duties. (FWO Facilities)
LASO Phase I	2.2.2	TA-18	There are no approved program documents or written requirements that, if implemented as written, would result in a continuing instructional skills training program that maintains, improves, and updates the knowledge and skills of incumbent training staff.
LASO Phase I	2.2.2	TA-8	There are no approved program documents or written requirements that, if implemented as written, would result in a continuing instructional skills training program that maintains, improves, and updates the knowledge and skills of incumbent training staff.
LASO Phase I	2.2.2	FWO	There is a lack of formal process documentation describing an instructor continuing training program that addresses any weaknesses in instructional duty performance. (FWO Nuclear Facilities)
LASO Phase I	2.3.1	LANSCE	There is no documentation of a continuing training program for instructional staff that accounts for instructional performance weakness or trainee performance results. (LANSCE Facility)
LASO Phase I	3.1	NMT	A defined and documented process is not in place to ensure that entry-level requirements are systematically established in accordance with the minimum educational, experience, technical, and medical requirements as defined in DOE O 5480.20A Chapter IV.
LASO Phase I	3.1	TA-18	A defined and documented process is not in place to ensure that entry-level requirements are systematically established in accordance with the minimum educational, experience, technical, and medical requirements as defined in DOE O 5480.20A Chapter IV.

Assessment	Finding Number	Facility	Finding
LASO Phase I	3.1	TA-8	A defined and documented process is not in place to ensure that entry-level requirements are systematically established in accordance with the minimum educational, experience, technical, and medical requirements as defined in DOE O 5480.20A Chapter IV.
LASO Phase I	3.1.1	RRES	There is no formal process for the establishment of entry-level requirements based upon job requirements, nor is there a process for updating entry-level requirements based upon training and job performance. (RRES Nuclear Facilities)
LASO Phase I	3.1.1	FWO	There is no documentation that entry-level requirements have basis in analyzed job requirements. (FWO Nuclear Facilities)
LASO Phase I	3.2	NMT	There is no defined and documented process in place to ensure that if adequately implemented, personnel selected for and/or assigned to the operating organization meet the prescribed entry-level requirements in the Job Announcement or DOE O 5480.20A Chapter IV prior to being assigned to a position.
LASO Phase I	3.2	TA-18	There is no defined and documented process in place to ensure that if adequately implemented, personnel selected for and/or assigned to the operating organization meet the prescribed entry-level requirements in the Job Announcement or DOE O 5480.20A Chapter IV prior to being assigned to a position.
LASO Phase I	3.2	TA-8	There is no defined and documented process in place to ensure that if adequately implemented, personnel selected for and/or assigned to the operating organization meet the prescribed entry-level requirements in the Job Announcement or DOE O 5480.20A Chapter IV prior to being assigned to a position.
LASO Phase I	3.3	NMT	There is no defined and documented process in place to ensure that entry-level requirements for LANL positions are reviewed and revised as necessary based on evaluation of trainee performance.
LASO Phase I	3.3	TA-18	There is no defined and documented process in place to ensure that entry-level requirements for LANL positions are reviewed and revised as necessary based on evaluation of trainee performance.
LASO Phase I	3.3	TA-8	There is no defined and documented process in place to ensure that entry-level requirements for LANL positions are reviewed and revised as necessary based on evaluation of trainee performance.
LASO Phase I	3.3.1	FWO	The necessary documentation describing the process of evaluating entry-level requirements based upon training and job performance could not be provided. (FWO Nuclear Facilities)
LASO Phase I	3.3.1	LANSCE	There is no documented process for the establishment, maintenance, or update to entry-level requirements based upon analyzed job requirements or job performance at the LANSCE facility. (LANSCE)
LASO Phase I	4.1	TA-18	There is a lack of procedural guidance/direction relative to job and/or task analysis.
LASO Phase I	4.1	TA-8	There is a complete lack of procedural guidance that would ensure program content for competent job performance is identified, documented, and included in the training programs.
LASO Phase I	4.1.1	LANSCE	There is a complete lack of procedural guidance/direction relative to job and/or task analysis. (LANSCE)
LASO Phase I	4.1.1	RRES	There is a lack of procedural guidance/direction relative to job and/or task analysis. (RRES Nuclear Facilities)

Assessment	Finding Number	Facility	Finding
LASO Phase I	4.2	FWO	Neither FWO nor N-2 management are ensuring that the FWO personnel who are deployed into the N-2 organization are trained and qualified to perform their assigned duties and responsibilities
LASO Phase I	4.2.1	RRES	There is a lack of procedural guidance/direction relative to initial and continuing training. (RRES Nuclear Facilities)
LASO Phase I	4.3.1	FWO	There is no procedural requirement/guidance that prescribes the development and implementation of a Technical Staff training and qualification program that meets the intent and requirements contained in DOE O 5480.20A. (FWO Nuclear Facilities)
LASO Phase I	4.2.1	LANSCE	There is a lack of procedural guidance/direction relative to initial and continuing training leading to reliance upon subjective decisions by technical SMEs. (LANSCE)
LASO Phase I	4.1.1	TA-16	There is no defined process at WETF that will ensure a consistent and systematic approach to job analysis and the resultant development of appropriate learning objectives.
LASO Phase I	5.1	NMT	The lack of adequate program description and guidance in approved programmatic documents adversely impacts the program and has the potential to result in incomplete, inaccurate, and/or ineffective training.
LASO Phase I	5.1	TA-8	There is no evidence of procedural guidance that would ensure training program materials identify and support the knowledge and skills needed by trainees to perform tasks associated with the position for which training is being conducted.
LASO Phase I	5.1.1	RRES	The programmatic documentation supporting RRES' training and qualification program are incomplete and lack the required level of direction/specificity that will ensure predictable and consistent training that enhances worker performance and safety. (RRES Nuclear Facilities)
LASO Phase I	5.1.2	RRES	The lack of adequate program description and guidance in approved programmatic documents relative to the review and approval of training program documentation may result in inaccurate, incomplete, and/or ineffective training program materials being issued for use. (RRES Nuclear Facilities)
LASO Phase I	5.1.1	LANSCE	The lack of adequate program description and guidance in approved programmatic documents relative to a continuing training program has the potential to adversely impact otherwise good training and qualification program by permitting incomplete, inaccurate, untimely, and/or ineffective continuing training. (LANSCE)
LASO Phase I	5.2	TA-8	There is no available evidence of procedural guidance that would ensure the content of initial training prepares the trainee to perform the job for which the candidate is being trained.
LASO Phase I	5.3	TA-8	There is no available evidence of procedural guidance available that would ensure the content of continuing training maintains and improves incumbent job performance.
LASO Phase I	ORR 5.1.1	TA-16	Although learning objectives are present in the training materials reviewed, there is no WETF training programmatic document that defines the process for developing learning objectives.
LASO Phase I	ORR 5.2.1	TA-16	Lesson plans are not developed and used for the various OJT Instructor/Evaluator documents.

Assessment	Finding Number	Facility	Finding
LASO Phase I	ORR 5.3.1	TA-16	There is no programmatic documentation specifying the review, approval, and control requirements for training materials.
LASO Phase I	ORR 5.4.1	TA-16	A continuing training program is implemented, but not specifically defined in training programmatic documents.
LASO Phase I	6.1	NMT	There is no procedural documentation that provides for the development, approval, security, administration and maintenance of oral examinations and performance evaluations. Without this documentation, the consistency of trainee evaluation cannot be achieved.
LASO Phase I	6.1	TA-8	There is no evidence that division or group-wide procedures exist that ensure individual trainees are examined and/or evaluated on a consistent and regular basis to ensure that learning is taking place and that trainees are acquiring the knowledge and skills required to work efficiently and safely at their jobs.
LASO Phase I	6.1.1	FWO	Training and qualification program procedures are not at the necessary prescriptive level to ensure a standards-based program is in place, which meets the intent of DOE O 5480.20A. (FWO Nuclear Facilities)
LASO Phase I	6.1.1	RRES	Division or group-wide procedures do not contain the necessary guidance to ensure individual trainees are examined and/or evaluated on a consistent and regular basis to ensure that learning is taking place and that trainees are acquiring the knowledge and skills required to work efficiently and safely at their jobs. (RRES Nuclear Facilities)
LASO Phase I	ORR 7.1	TA-16	WETF training does not currently have any programmatic document that establishes, specifies, or otherwise identifies the requirements for developing, reviewing, approving, revising, and controlling examinations.
LASO Phase I	7.1	NMT	Implementation of procedures as written will not result in an effective training evaluation program.
LASO Phase I	7.1	FWO	The available procedural guidance available lacks the necessary prescriptive-level of detail required that would ensure a systematic evaluation of training effectiveness and its relation to on-the-job performance is used to ensure that the training program conveys all required skills and knowledge. (FWO Nuclear Facilities)
LASO Phase I	7.1.1	RRES	The available procedural guidance available lacks the necessary prescriptive-level of detail required that would ensure a systematic evaluation of training effectiveness and its relation to on-the-job performance is used to ensure that the training program conveys all required skills and knowledge. (RRES Nuclear Facilities)
LASO Phase I	7.11	LANSCE	There is no evidence available of procedural that would ensure a systematic evaluation of training effectiveness and its relation to on-the-job performance is used to ensure that the training program conveys all required skills and knowledge. (LANSCE)
LASO Phase II	Systemic 1	LANL	Insufficient training staff at the Training Integration Office (TIO), certain nuclear facilities, and nuclear support organizations is a contributing factor in LANL's deficiencies in meeting the requirements of DOE O 5480.20A.

Assessment	Finding Number	Facility	Finding
LASO Phase II	Systemic 2	LANL	Instructor training programs, continuing training, and instructor performance evaluation are weak.
LASO Phase II	Systemic 3	LANL Nuclear Facilities	Nuclear facility training programs are not based on a systematic approach to training and are not the result of a systematic analysis of jobs or tasks.
LASO Phase II	Systemic 4	LANL Nuclear Facilities	Nuclear facility management and supervisor training and qualification programs do not meet the requirements of DOE O 5480.20A.
LASO Phase II	Systemic 5	LANL Nuclear Facilities	Training materials do not support the consistent, effective delivery and evaluation of classroom and on-the-job training
LASO Phase II	Systemic 6	LANL Nuclear Facilities	Nuclear facility management does not have a defined process for the systematic evaluation of training programs, nor are evaluations performed with any regularity, or with a focus on training effectiveness or training's impact on operational performance.
	1.1	TA-8	Facility management is not involved in the review and approval of NDT training program content.
LASO Phase II	1.3	KSL	LANL is not meeting the requirements of DOE O 5480.20A, chapter I.3 for oversight of KSL training and qualification.
LASO Phase II	2.1	TA-8	There is a lack of documentation to prove that designated instructors at TA-8 possess the required instructional and technical knowledge and skills to perform the required tasks as instructors.
LASO Phase II	3.1	KSL	There is no defined process, based upon analyzed position requirements and training program objectives, that evaluates trainee education, experience, and training prior to assignment to any of the crafts positions.
LASO Phase II	4.1	TA-8	Adequate job and task analysis has not been performed as required by DOE O 5480.20A. Training material is not based on the results of a job task analysis.
LASO Phase II	4.2	NMT	Management and supervisor training and qualification programs to support both certified and non-certified positions do not meet the requirements of DOE O 5480.20A.
LASO Phase II	4.3	NMT	The certification process used at NMT does not meet the requirements as specified in DOE O 5480.20A, Chapter I, Section 6.
LASO Phase II	4.4	NMT	NMT does not uniformly use detailed qualification cards and qualification standards to guide the qualification of nuclear personnel as required by DOE O 5480.20A, Chapter I, Section 5.
LASO Phase II	4.5	NMT	NMT has not used a formal, documented approach to determine training and qualification activities based on an analysis of job tasks.
LASO Phase II	4.6	KSL	KSL does not have an effective process for ensuring that training program content is developed and maintained based on a systematic approach to training and the analysis of jobs.
LASO Phase II	4.7	LANSCE	Nuclear facility operator training is not based on a documented systematic analysis of job requirements.
LASO Phase II	4.8	LANSCE	The TIM presently in use at LANSCE is not current with the existing conditions at LANSCE and has not been approved by DOE.
LASO Phase II	4.9	TA-18	The TIM presently in use at TA-18 has not been approved by DOE.

Assessment	Finding Number	Facility	Finding
LASO Phase II	4.10	TA-18	The certification process used at TA-18 for crew members and fissile material handlers does not comply with the requirements of DOE Order. Certification is completed prior to completion of all qualification activities.
LASO Phase II	4.11	TA-18	TA-18 team leads, crew chiefs, and principal investigators are not required to be trained in management and supervisory skills as required by DOE O 5480.20A.
LASO Phase II	4.12	TA-18	Technical staff, including engineers, maintenance staff, and some technicians, do not have a formal process or job-specific training analysis and not training was found at the task or job level at the facility.
LASO Phase II	4.13	FWO	Adequate job and task analysis has not been performed as required by DOE O 5480.20A for FOS and NOW Division personnel
LASO Phase II	5.1	TA-8	Lessons learned do not include learning objectives
LASO Phase II	5.2	TA-8	Line management has not approved training material used at TA-8.
LASO Phase II	5.3	TA-8	There is no continuing training program.
LASO Phase II	5.4	NMT	The continuing training program for qualified and certified positions does not meet the content requirements for DOE O 5480.20A.
LASO Phase II	5.5	NMT	NMT does not sufficient procedural direction for maintaining certified position proficiency per the requirement of DOE O 5480.20A.
LASO Phase II	5.6	LANSCE	Training for 1L Target Facility operators conducted in accordance with the 1L Target Facility Operator Qualification Card does not include learning objectives and written training materials are not employed.
LASO Phase II	5.7	KSL	KSL does not have a planned, continuing training program that maintains or improves incumbent job performance.
LASO Phase II	5.8	FWO	Training materials are not based on the results of a job and task analysis and does not contain learning objectives.
LASO Phase II	5.9	FWO	There is not continuing training program in place for FOS & NWO personnel that meets the requirements set forth in DOE O 5480.20A.
LASO Phase II	6.1	LANSCE	Not all OJT instructors and evaluators conducting training and signing qualification cards for 1L Facility operators are formally training as OJT instructors.
LASO Phase II	6.2	KSL	KSL has neither developed nor implemented a process for ensuring that training materials are current and approved.
LASO Phase II	6.3	KSL	On-the-job training as the job and task level for craftsmen is entirely informal mentoring with no documentation, or controls to ensure that training is consistently presented.
LASO Phase II	6.4	FWO	OJT is not consistently developed, implemented, evaluated, or documented.
LASO Phase II	7.1	TA-8	Examinations used to evaluate NDT personnel do not met the requirements of DOE O 5480.20A.
LASO Phase II	7.2	NMT	Comprehensive written examinations are not conducted for certified operator and supervisor positions as required by Chapter I, Section 8, of DOE O 5480.20A.
LASO Phase II	7.3	LANSCE	On-the-job training evaluations are not based on a set of documented learning objectives, and no written standards are provided for acceptable performance.

Assessment	Finding Number	Facility	Finding
LASO Phase II	7.4	KSL	KSL has not developed nor implemented a formal, comprehensive process to ensure that individual trainees are examined and/or evaluated on a consistent and regular basis and to ensure that learning is taking place, and that trainees are acquiring the knowledge and skills required to work efficiently and safely at their jobs.
LASO Phase II	7.5	RCT	HSR-1 does not provide adequate formal controls for the development, approval, security, administration, and maintenance of written examinations and OJT evaluations.
LASO Phase II	7.6	FWO	Individual trainees are not examined and/or evaluated on a consistent and regular basis to ensure that learning is taking place and that trainees are acquiring the knowledge and skills required to work efficiently and safely at their jobs.
LASO Phase II	8.1	TA-8	There is no systematic process, either prescribed or implemented, to ensure that the elements of training and qualification programs are evaluated, the results reported, or the results utilized in the maintenance and improvement of training.
LASO Phase II	8.2	NMT	NMT Management does not have defined process for the systematic evaluation of training programs at NMT, nor are evaluations performed with any regularity or focus on training effectiveness or operations performance.
LASO Phase II	8.3	LANSCE	LANSCE does not have a defined process for the systematic evaluation of training programs, nor are evaluations performed with any regularity or focus on training effectiveness or operations performance.
LASO Phase II	8.4	KSL	KSL does not have a defined process for the systematic evaluation of training programs, nor are evaluations performed with any regularity or focus on training effectiveness or operations performance.
LASO Phase II	8.5	TA-18	Management does not perform periodic nor systematic assessments of the nuclear facility training and qualification programs in accordance with DOE O 5480.20A.
LASO Phase II	8.6	FWO	There is no systematic process, either prescribed or implemented, to ensure that the elements of training and qualification programs are evaluated, the results reported, or the results utilized in the maintenance and improvement of training.
LASO Phase II	8.7	RCT	There is no systematic process, either prescribed or implemented, to ensure that the elements of the RCT training and qualification programs are evaluated, the results reported, or the results utilized in the maintenance and improvement of RCT training.



## Appendix F – Management Self-Assessment Results

Findings and Observation Matrix from Management Self-assessments, All LANL Divisions, July to December 2004 and Laboratory Readiness Reviews for Level 3 Activities, August to December 2004.

Finding	Number of times this finding occurred in the MSA or LRR
A Systematic Approach to Training (SAT) was not implemented or training LIR requirements were not fully implemented. Organizations did not have a formalized process for following the SAT. Management was not involved in the SAT. The organizational training program was not fully implemented. Training materials were not maintained. Line managers did not evaluate training effectiveness. Management was not involved in the verification and approval of training packages. The qualification program was informal. There was no formal training program. A formal process for documenting training and qualification changes based on changes to facility, SB documents, operations, etc. was not implemented. Work instructions lacked the detail to ensure worker mastery of learning objectives.	96
The mentoring program was not defined and lacked formality.	16
Training plans (TPs) were not managed. TPs were not developed, current, or did not reflect worker responsibilities. TPs were expired or incomplete. TPs were delinquent because training was not available; TPs were incomplete due to the recency of personnel assignment that created the appearance of a deficiency. The LANL training questionnaire was not completed for all workers. Management did not always ensure that all employees were appropriately trained and prepared for each job task	70
The training staff personnel that were involved in worker qualification training were not TSQP qualified, the training records were deficient, or the training process was lacking. Trainers did not participate in continuing training. A formal trainer training program was not established (NTS). Documentation of OJT instructor qualifications was not easily auditable.	38
Worker training was not developed and/or effective for job-related responsibilities.	34
On-the-job training requirements were not met. OJT was informal. The OJT program being developed at Atlas needed to be implemented prior to additional acceptance testing. Independent SMEs did not review OJT packages as recommended by LIG300-00-04. There was no documentation process for performance evaluations of OJT.	40
EDS was not coordinated with other training tracking systems and produced inconsistent results or made the determination of worker qualification difficult	16
Institutional training and/or site-specific training did not meet the needs of workers (e.g., security refresher, laser, escort training) or training was outdated. Site-specific training was too general and tests were weak. Institutional required training was often offered infrequently or in inconvenient locations and employees had trouble registering due to full classes	13
There was no formal documented training qualification program for managers; management did not ensure training/mentoring of managers. Managers did not complete all required training. There were no institutional training requirements for group level managers in nuclear facility operations. Management had not met training/qualification/certification requirements. Supervisors were not provided supervisory training. There was a lack of formal training for RDLs. Training plans for group-level managers did not fully	22

Finding	Number of times this finding occurred in the MSA or LRR
<p>address either the full suite of their responsibilities or the requirements that they were responsible for. Management could not ensure that the training plans for managers were adequate to attain and retain competency related to nuclear facility operations duties. The LANL leadership/ management training was not effective. LANL's required management training did not include key topics necessary for managers to be successful in the current environment (e.g., teaming and collaboration, employee motivation, prioritization based on risk). PTLA did not provide professional training to managers and supervisors as required.</p>	
<p>The number of training staff workers was not sufficient to meet the training needs. A training manager position was open for one year and still not filled. A vacant training coordinator position was forcing workers to assume some of the training responsibilities. The organization needed to allocate training resources. The support given to training specialists was inadequate. A dedicated training staff was needed to develop, implement, and maintain DOE O 5480.20A compliant programs. There was inadequate support to conduct training (e.g., training space, equipment, and materials), insufficient staffing to conduct training, and inadequate supervisor training.</p>	14
<p>Personnel did not have all required training to conduct their jobs. Workers were not formally qualified or certified as required. Workers were not trained to work in other facilities. Division managers often did not attend special contracted organizational training.</p>	12

## Appendix G – ICAP Resource and Duration Estimates

Corrective Action Category	FTEs	Duration (years)	Cost (\$K) <sup>†</sup>
<b>Institutional Training Policy and Procedures</b>			
• Development	4	1	\$1,203
• Review and approval		0.5	
• Implement	7	2.5	\$5,910
• Worker Qualification and Authorization (WQA) System Development & Maintenance	1	4	\$1,104
o WQA Facility/Group Implementation Labor (from OE projection)		1	\$2,698
			<b>\$10,915</b>
<b>Systematic Approach to Training (SAT) Implementation</b>			
• Nuclear facility implementation	14	2.75	\$7,020
• Non-nuclear facility implementation	12	2	\$4,446
• Help Desk	1	2.5	\$458
• Training Methods Manual	note <sup>1</sup>	0.04	\$8
			<b>\$11,932</b>
Upgrade Institutional ES&H Training Courses (PS-13)	note <sup>1</sup>	1	\$838
			<b>\$838</b>
Upgrade Nuclear Facility Training (5480.20A Compliance)	note <sup>1</sup>	1	\$340
			<b>\$340</b>
Current Training Staff Qualification Assessment and Remediation	3	4	\$2,473
			<b>\$2,473</b>
<b>Training Resources to Support Implementation of Institutional Training Policies and Procedures</b>			
• 5480.20A Institutional Resource	1	3	\$486
• Training Effectiveness Evaluation Team	3	4	\$2,473
			<b>\$2,959</b>
<b>Training Data Management System Implementation<sup>*note 2</sup></b>			
• TDMS Project Management	1	4	\$824
• TDMS Implementation	note <sup>2</sup>		\$8,189
			<b>\$9,013</b>
OJT and Mentoring Implementation	note <sup>1</sup>		
Facility Training Organization and Oversight Implementation	note <sup>1</sup>		
<b>Management and Supervisor Training Needs Analysis</b>			
• Job Analysis	note <sup>1</sup>	0.5	\$153
• Training Program Analysis and Design	note <sup>1</sup>	0.25	\$101
• Training Program Development and Implementation	12	2.5	\$5,491
			<b>\$5,745</b>
	<b>59</b>		<b>\$44,215</b>

<sup>†</sup>Unburdened costs

<sup>\*note 1</sup> To avoid double counting, FTEs working multiple issues have been represented only once

<sup>\*note 2</sup> TDMS costs are from the OE project estimates and include implementation and conversion labor but do not include cost of hardware or software