Independent Assessment of the Training and Qualification Program at the Los Alamos National Laboratory

January 2025

U.S. Department of ENERGY | Office of Enterprise Assessments

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Acronyms

ALDWP	Associate Laboratory Directorate for Weapons Production
ATL	Assessment Team Lead
CT	Continuing Training
DOE	U.S. Department of Energy
EA	Office of Enterprise Assessments
EDRMS	Electronic Document and Records Management System
FMH	Fissionable Material Handler
FY	Fiscal Year
HR-ITS	Human Resources – Institutional Talent Management Services
iLINK	Triad's Issues Management Software Tool
IQPA	Institutional Quality and Performance Assurance
KSA	Knowledge, Skill, and Ability
LANL	Los Alamos National Laboratory
NA-LA	NNSA Los Alamos Field Office
NET	New Employee Training
NNSA	National Nuclear Security Administration
OFI	Opportunity for Improvement
OJT	On-the-Job Training
PF-4	Plutonium Facility
QA	Quality Assurance
SAT	Systematic Approach to Training
SD	Supplemental Directive
SME	Subject Matter Expert
T&Q	Training and Qualification
TA-55	Technical Area 55
TPP	Training Program Plan
Triad	Triad National Security, LLC
TSR	Technical Safety Requirement
UTrain	Triad's Learning Management System
WMS	Weapons Mission Services
WQAS	Worker Qualification and Authorization System

INDEPENDENT ASSESSMENT OF THE TRAINING AND QUALIFICATION PROGRAM AT THE LOS ALAMOS NATIONAL LABORATORY

Executive Summary

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment of the training and qualification (T&Q) program for nuclear facility operations implemented by Triad National Security, LLC (Triad) at the Los Alamos National Laboratory from July to September 2024. Institutional training for the Laboratory is managed by the Human Resources – Institutional Talent Management Services (HR-ITS) organization and training for nuclear personnel within weapons production is implemented by the Weapons Mission Services (WMS) organization. The assessment also evaluated the effectiveness of the National Nuclear Security Administration Los Alamos Field Office (NA-LA) oversight of the Triad T&Q program.

EA identified the following strengths:

- Triad provides training facilities, equipment, and materials that adequately support training activities for nuclear workers. For example, Technical Area 55-specific on-the-job training is conducted on actual equipment using two newer training facilities (i.e., TRIDENT and the New Employee Training academy).
- WMS personnel attend "fact finding" meetings following facility events and perform a needs analysis to identify any training gaps that could have caused this or a similar event.
- Based on feedback from the line organization, HR-ITS personnel conducted a training needs analysis of the lockout/tagout training program, resulting in meaningful upgrades to the program.
- NA-LA has a designated nuclear facility training subject matter expert who regularly interacts with Triad's T&Q program counterparts to discuss training-related issues.

EA also identified several weaknesses, including four findings, that are contributing to a T&Q program that is not fully effective, as summarized below:

- Triad has not documented specific aspects of the systematic approach to training process as it relates to six reviewed nuclear facility positions. For example, qualification standard procedures, technical tasks related to the performance of surveillances and the basis for some task-to-training matrices are missing. (Finding)
- Weaknesses exist in Triad's continuing training program for Fissionable Material Handler Operator and Supervisor and Operations Center Operator and Supervisor, including outdated training materials and incomplete training curriculum. (Finding)
- Triad does not align tasks with the necessary knowledge and abilities to perform the tasks or the identified training objectives in the task-to-training matrices portion of the qualification standard for six reviewed nuclear facility positions. (Finding)
- Multiple Triad organizations have not implemented an adequate change control process to ensure T&Q programs are consistent with planned facility operations and/or process conditions. (Finding)
- Interviews and observations demonstrated a lack of collaboration between Triad's HR-ITS and WMS training organizations to effectively implement the T&Q program.

In summary, Triad has established programmatic processes and procedures that generally flow down the requirements of DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*, and has initiated improvement efforts to address some

implementation concerns. Additionally, NA-LA is generally adequately performing Federal oversight of Triad's T&Q program. However, weaknesses were identified in the implementation of the systematic approach to training process as it relates to the design and development of training and position qualification standards, the content of training, change control processes, and organizational collaboration effectiveness. Without management attention and cross-organizational cooperation to increase the effectiveness of Triad's T&Q program, assurance that personnel are qualified to safely and effectively perform job tasks in support of the pit production mission may be significantly diminished.

Recommendation

EA recommends that Triad improve the integration of its training organizations to increase the effectiveness and consistency of training program implementation, including establishing a training review board comprised of all training organizations, to evaluate impacts of training changes, develop related implementation plans as needed, and collaborate on training-related issues.

INDEPENDENT ASSESSMENT OF THE TRAINING AND QUALIFICATION PROGRAM AT THE LOS ALAMOS NATIONAL LABORATORY

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Nuclear Safety and Environmental Assessments, within the independent Office of Enterprise Assessments (EA), conducted an assessment of the training and qualification (T&Q) program for nuclear facility operations at the Los Alamos National Laboratory (LANL). LANL is managed and operated by Triad National Security, LLC (Triad) for the National Nuclear Security Administration (NNSA) and overseen by the NNSA Los Alamos Field Office (NA-LA). This assessment was identified as a follow-up action in EA report *Independent Assessment of the Triad National Security, LLC Management of Nuclear Safety Issues at the Los Alamos National Laboratory, January 2024*. Assessment activities were conducted from July to September 2024.

Consistent with the *Plan for the Independent Assessment of the Training and Qualification Program at the Los Alamos National Laboratory, August 2024*, this assessment evaluated the effectiveness of Triad's program to manage and maintain the Associate Laboratory Directorate for Weapons Production (ALDWP) T&Q performance. This assessment also evaluated the NA-LA oversight of Triad's T&Q program. ALDWP programs support multiple aspects of the national security mission, including producing plutonium pits, detonators, and non-nuclear components; materials management; and waste operations. ALDWP is independently responsible for training functions supporting employees performing work activities conducted at ALDWP-managed facilities, including the Technical Area 55 (TA-55) Plutonium Facility (PF-4). The Weapons Mission Services (WMS) Division, within ALDWP, implements the training function and is responsible for the qualified staff who support training operations for nuclear facilities and programs. As part of the overall training program at the Laboratory, the Human Resources – Institutional Talent Management Services (HR-ITS) Group, within the Triad Human Resource Division, serves as the central training authority and delivers laboratory-wide training courses that apply to all workers (institutional training).

2.0 METHODOLOGY

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*, which EA implements through a comprehensive set of internal protocols, operating practices, assessment guides, and process guides. This report uses the terms "best practices, deficiencies, findings, opportunities for improvement (OFIs), and recommendations" as defined in the order.

As identified in the assessment plan, this assessment considered requirements specified in the contractor requirements document (adopted in Triad's management and operating contract) of DOE Order 426.2, Chg. 1, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*, and Federal requirements specified in DOE Order 426.2A. EA used the following objectives from DOE-STD-1070-94, *Criteria for Evaluation of Nuclear Facility Training Programs*, which is invoked by DOE Order 426.2: 1 (*Management and Administration of Training and Qualification Programs*), 4 (*Determination of Training Program Content*), 5 (*Design and Development of Training Programs*), 6 (*Conduct of Training*), and 8 (*Training Program Evaluation*).

EA examined key documents, such as procedures, program documents, manuals, policies, training material, and T&Q records. EA also interviewed key personnel responsible for developing and executing the associated programs; observed T&Q activities; and walked down portions of PF-4, focusing on aspects related to the ALDWP T&Q program. The members of the assessment team, the Quality Review Board, and the management responsible for this assessment are listed in appendix A.

There were no previous findings for follow-up during this assessment.

3.0 RESULTS

3.1 Management and Administration of Training and Qualification

This portion of the assessment evaluated Triad's programmatic procedures and processes; training goals, objectives, and plan; and T&Q records management.

Triad's programmatic procedures and processes generally adequately implement DOE Order 426.2, attachment 1, to support ongoing work at PF-4. Triad has delegated to the Human Resources Division the responsibility to administer and implement the Laboratory training program through a hierarchy of documents: PD781, *Training Program Management*; P781-1, *Conduct of Training*; ITS-FSD-001, *Human Resources Division Conduct of Training Manual*; and other supporting processes. Implementation of the Laboratory training program by each Laboratory directorate is accomplished through a required training program plan (TPP). ALDWP has established PA-PLAN-01676, *ALDWP Training Program Plan (TPP*), and PA-AP-01031, *ALDWP Training Process*, both of which appropriately implement P781-1 and ITS-FSD-001. WMS's suite of training metrics demonstrates effective monitoring of training performance.

Triad's strategic plan for fiscal year (FY) 2024 appropriately included a training program element to support pit production goals, as evidenced by the identification of a New Employee Training (NET) academy. Additionally, reviewed documents, such as PA-PLAN-01676, adequately described the selection, qualification, certification, and training requirements that support weapons production. Interviewed training program managers for HR-ITS and WMS discussed many goals and objectives that demonstrated their vision for the future of their organizations, and the multiple projects working simultaneously in support of that vision.

Triad has implemented a generally adequate T&Q records management program, as required by DOE Order 426.2, attachment 1, chapter I, section 10, through P1020-1, *Laboratory Records Management*; PA-PLAN-01840, *ALDWP Training Records*; and PA-AP-01249, *ALDWP Training Records Protocol*. P781-1, section 3.6, provides adequate criteria, that if properly applied, would ensure that records of required Triad employee training courses and programs are appropriately maintained. Triad has implemented generally adequate systems for storing records, documenting qualifications, and authorizing work performance, i.e., electronic document and records management system (EDRMS); learning management system (UTrain); and worker qualification and authorization system (WQAS). WQAS is an efficient software tool for managers to determine employee qualifications, certifications, and proficiency prior to job assignment.

While Triad's programmatic procedures, processes, documented plans, and T&Q records management generally meet the requirements of DOE Order 426.2, the following weaknesses related to program implementation were identified:

- Contrary to P322-4, *Issues Management*, section 3.3, Triad did not adequately address the closure of three of nine findings (1.0, 4.1, and 5.1.1) from the most recent TA-55/PF-4 T&Q program

assessment, LANL assessment number 2021-0143, *DOE-STD-1070 Assessment Report of the TA-55/PF-4 Training and Qualification Program*, to correct the issues, address causes, and prevent or reduce the likelihood of recurrence. (See **Deficiency D-Triad-1**.) Not appropriately resolving identified issues can lead to recurrence and inadequate performance. Specifically, although Triad entered the findings into Triad's issues management software tool (iLINK) as conditions (LANL-C-2022-8251, LANL-C-2022-8853, and LANL-C-2022-8254), subsequently, WMS inappropriately determined that these three conditions were not "issues" and were closed without further action (no issues established, causal analyses, corrective actions, or extent-of-condition evaluations were made).

These three issues identified in LANL assessment 2021-0143 were related to Triad's systematic approach to training (SAT) process being in violation of DOE Order 426.2, including inconsistent/incomplete training analysis, and incomplete/improper job task analysis. They are recurring and unresolved ongoing issues as identified in this report (see Finding F-Triad-1 in section 3.2, Findings F-Triad-3 and 4 in section 3.3, and Deficiency D-Triad-5 in section 3.4). Further, interviews demonstrated that training personnel do not understand the issues management system or how to make entries, and personnel are not trained on the use of iLINK. This observation is consistent with Finding F-Triad-2 from EA report *Independent Assessment of the Triad National Security, LLC Management of Nuclear Safety Issues at the Los Alamos National Laboratory, January 2024*. Triad is currently implementing corrective actions to address this EA finding.

- Contrary to DOE Order 426.2, attachment 1, chapter I, section 10, and P781-1, section 3.6.2, Triad is not consistently maintaining comprehensive, retrievable, and easily auditable qualification and certification records for nuclear workers at PF-4. (See **Deficiency D-Triad-2**.) Qualification and certification records for nuclear workers that cannot be easily retrieved, viewed, or audited could result in compliance issues or workflow inefficiencies. Specifically, some of the records for 4 of 15 sampled certified PF-4 fissionable material handler (FMH) operators/supervisors were not in EDRMS or UTrain and were unavailable to view. The responsible WMS manager explained that the locations of the missing records were not known but were likely in the large backlog of scanned electronic records that have not been uploaded to EDRMS, or were older legacy paper records stored outside of EDRMS in one of the offsite document repositories used by LANL, or in some instances were stored by HR-ITS at the NET academy outside of EDRMS. However, no evidence of unqualified personnel performing work was observed during this assessment.

- Contrary to DOE Order 414.1D, *Quality Assurance*, attachment 2, section 4; P1020-2, *Laboratory Document Control*, section 3.1.1; and PA-AP-01000, *Document Control Processes*, section 5.9.1, HR-ITS does not maintain all training program templates/forms within a formal document control system. (See **Deficiency D-Triad-3**.) Use of uncontrolled templates/forms could result in the loss of important information. Specifically, at least 13 templates, including those for the TPP, SAT checklist, task-to-training matrix, job task analysis worksheet, and lesson plan were uncontrolled.

- Contrary to DOE Order 414.1D, attachment 1, section 1.b, and attachment 2, and P1040, *Software Quality Management*, section 5.2, Triad has not applied its established graded approach to ensure that the quality of training-related software is managed in accordance with its approved quality assurance (QA) program. (See **Deficiency D-Triad-4**.) Use of software that does not meet QA requirements can negatively impact functionality, reliability, safety, and security. DOE Order 414.1D, attachment 1, section 1.b, requires all software, whether safety software or not, to meet applicable QA requirements in attachment 2 of the order, using a graded approach. Triad provided no evidence that WQAS and UTrain have been appropriately evaluated in accordance with DOE Order 414.1D, attachment 1, section 1.b. WQAS accesses data from UTrain to determine nuclear worker qualification status. During observed shift turnovers, Triad managers used WQAS as the only available tool to confirm that operators met proficiency requirements and were qualified to stand watch.

- As recommended in DOE-STD-1070-94, criterion 1.3, which is invoked by DOE Order 426.2, attachment 1, chapter I, section 4.a.(3), Triad does not have formalized written goals and objectives for its strategic training initiatives and projects to help ensure adequate T&Q program execution and performance. (See **OFI-Triad-1**.) Although interviewed training program managers for HR-ITS and WMS communicated excellent goals and objectives, none were formally recorded. DOE Order 426.2, attachment 1, chapter I, section 4.a.(3), requires contractors to perform periodic systematic evaluations of T&Q programs using DOE-STD-1070-94. Previous DOE-STD-1070-94 evaluations performed by HR-ITS in 2019 and 2022 for TA-55/PF-4 did not identify this as a weakness.
- Triad has not performed management self-assessments or independent assessments of EDRMS to validate the maintenance and accuracy, completeness, and format of required records to support the LANL training program. (See **OFI-Triad-2**.)
- The requirements for document storage in P1020-1, section 3.3, include no time limits for the final storage of training records at LANL once they are created. (See **OFI-Triad-3**.)
- Interviews and observations demonstrated a lack of collaboration between HR-ITS and WMS to maintain configuration control of qualification programs, effectively implement new initiatives, and apply lessons learned. (See **Recommendation R-Triad-1**.) Specifically:
    - The lack of an integrated approach to training and strained working relationships between HR-ITS, WMS, and other line organizations exhibited during interviews and observations were indicative of challenges in the safety culture attribute of teamwork and respect. Some employees expressed frustration with what they saw as leadership not working cohesively to implement established training programs that align institutional and organizational roles, responsibilities, authorities, and accountabilities for training.
    - Interviewees stated that efforts to collaborate on the resolution of gaps in HR-ITS's "train the trainer" qualification program for onboarding learning specialists lacked adequate communications and coordination at the management and working levels.
    - HR-ITS was not aware of the recent Newport News Nuclear BWXT Los Alamos, LLC (N3B) (a contractor that supports the Office of Environmental Management's Los Alamos Field Office) programmatic training breakdown reported in the Occurrence Reporting and Processing System. In contrast, WMS recognized the significance of this condition and initiated an extent-of-condition review, without sharing this information with other Triad organizations. (See **OFI-Triad-4**.)
    - HR-ITS reported they are working on developing institutional-level metrics; however, these efforts are not being integrated with established WMS training-related metrics. (See **OFI-Triad-5** and the discussion in section 3.5.)

Management and Administration of Training and Qualification Conclusions

Triad's programmatic procedures, processes, plans, and T&Q records management are generally adequate to support ongoing work at PF-4. However, weaknesses were identified in the areas of T&Q program corrective actions, document control, software QA, and collaboration between HR-ITS and WMS.

3.2 Training Program Content

This portion of the assessment evaluated Triad's implementation of the SAT process for ALDWP in creating training program content as it relates to job identification and the analysis of positions selected for certification and qualification.

Triad has identified positions that require qualifications as appropriate for a hazard category 2 nuclear facility in accordance with DOE Order 426.2. Triad has also properly identified in the documented safety analysis, and included in its training program, the positions of FMH Operator and Supervisor to require certification. Further, Triad appropriately added two positions to the certification process, Operations Center Operator and Supervisor, given the significance of the activities associated with those positions to maintaining facility nuclear safety.

Triad has recently established two new practices to support worker performance. Based on an effort initiated by the ALDWP Chief Operations Officer, WMS has established "learning teams" to address areas in need of performance improvement. An ongoing learning team was established to look at the "Person-In-Charge Duty Area" to review the adequacy of position designation and qualification requirements. Additionally, WMS personnel attend "fact finding" meetings following facility events and perform a needs analysis to identify any training gaps that could have caused this or a similar event.

ITS-FSD-001 provides appropriate direction for performing job and task analysis and developing a task-to-training matrix. The job and task analysis for the four positions requiring certification and an additional two positions (TA-55 Technical Safety Requirement [TSR] Surveillance Performer and Glovebox Operator) were generally adequate to ensure that the individuals were appropriately qualified to perform their duties. The processes for requalification and recertification are adequately defined in ITS-FSD-001; a continuing training (CT) program is appropriately identified as a key element of the requalification and recertification processes.

While most training program content was adequate, the following weaknesses were identified:

- Contrary to ITS-FSD-001, sections 7.1.3, 7.1.4, and 7.1.5, which implement DOE Order 426.2, attachment 1, chapter I, section 4.a, and chapter II, sections 6.a, 6.b, and 6.c, Triad has not documented specific aspects of the SAT process as it relates to six reviewed nuclear facility positions (FMH Operator and Supervisor, Operations Center Operator and Supervisor, TA-55 TSR Surveillance Performer, and Glovebox Operator). (See **Finding F-Triad-1**.) Not fully documenting the SAT process precludes the ability to maintain the configuration management of training programs to ensure personnel have requisite knowledge, skills, and abilities (KSAs) to safely and effectively perform key job tasks. Specifically:
    - No process or procedure exists for developing a qualification standard. With the exception of the FMH Operator and Supervisor qualification standards, four others (Operations Center Operator and Supervisor, TA-55 TSR Surveillance Performer, and Glovebox Operator) vary in the type of content and level of detail and do not include an adequate task-to-training matrix (an essential element of the SAT process). These matrices lacked sufficient detail (i.e., KSAs and associated learning objectives) to relate the identified task to specified training.
    - The TA-55 TSR Surveillance Performer task list identifies only administrative tasks; no technical tasks related to the performance of surveillances are included to verify system knowledge and skills. For example, tasks to manipulate valves and switches and add lube oil or engine coolant are not identified in the task list.
    - The FMH Operator qualifications do not include Glovebox Operator as a prerequisite even though all fissile material handling occurs within a glovebox.
    - Not all task-to-training matrices contain a difficulty/importance/frequency score or basis for determining training requirements, as required by ITS-FSD-001, section 7.1.4.
- Contrary to ITS-FSD-001, sections 4.15 and 5.8, which implement DOE Order 426.2, attachment 1, chapter I, section 7, the Triad CT program for FMH Operator and Supervisor and Operations Center Operator and Supervisor lacks required elements. (See **Finding F-Triad-2**.) Not addressing all CT

program elements for each position could result in workers retaining qualification or certification status without having satisfied mandated retraining requirements, leading to potential degradation of KSAs required for the safe and effective execution of key job tasks. Specifically:

- Some of the reviewed CT material for all four positions (e.g., curriculum, lesson plans, self-study documents) was older than two years; ITS-FSD-001, sections 4.15 and 5.8, requires CT material to be updated or replaced every two years.
- UTrain, which tracks worker completion of CT program elements, does not specify a two-year retraining periodicity (except for operational drill requirements) in accordance with ITS-FSD-001, sections 4.15 and 5.8.
- The CT curriculum for Operations Center Operators does not include all required items (e.g., training in significant facility system and component changes, applicable procedure changes, or applicable industry operating experience) as specified in ITS-FSD-001, sections 4.15 and 5.8.
- The CT requirements for FMH Operator and Supervisor and Operations Center Operator and Supervisor do not address fundamentals training in accordance with ITS-FSD-001, sections 4.15 and 5.8.
- The CT programs for FMH Operator and Supervisor are missing 10 overtrain (OT) tasks (i.e., tasks that are sufficiently important that workers need to be refreshed) and 11 OT tasks, respectively, that are identified in the position qualification standards; ITS-FSD-001, section 4.15, requires all OT tasks to be included in the CT program.

Training Program Content Conclusions

The identification of training program content is generally adequate as it relates to the conduct of job and task analysis. Triad has taken some actions to improve its processes. However, weaknesses associated with the training program content development for position qualifications and CT programs for positions requiring certification were identified.

3.3 Design and Development of Training Programs

This portion of the assessment evaluated Triad's implementation of the SAT process for ALDWP as it relates to the design and development of training materials for positions selected for T&Q.

The development of training program materials is appropriately addressed in ITS-FSD-001. The content of reviewed initial training programs appropriately prepares trainees to perform the tasks associated with their assigned job. For example, feedback from the operating organization appropriately identified gaps in the lockout/tagout training program, which was effective in initiating a training needs analysis, conducted by HR-ITS, resulting in notable improvements. These improvements were acknowledged during interviews with supervisors and workers. Additionally, the WMS training organization has appropriately initiated several efforts for improving training program design and development and identified gaps in qualifications requiring corrective action. The Triad training process has appropriately developed training qualification standards to address those positions that are identified in the ALDWP TPP. These standards are generally adequate in cross referencing tasks and specifying training methods and materials. However, the following weaknesses were identified:

- Contrary to ITS-FSD-001, section 7.1.9, which implements DOE Order 426.2, attachment 1, chapter I, section 4.a, qualification standard task-to-training matrices do not always align tasks with necessary knowledge and abilities and identified training objectives. (See **Finding F-Triad-3**.) As a result, it is not clear how training meets the specific needs of a job, and the ability to perform required reviews and to maintain configuration of the program design could be impacted. Specifically, none of the six

reviewed qualification standard task-to-training matrices included knowledge and ability requirements or associated learning objectives derived through the SAT process.

- Contrary to ITS-FSD-001, section 7.1.13, which implements DOE Order 426.2, attachment 1, chapter I, section 4.a, multiple Triad organizations have not implemented an adequate change control process to ensure T&Q programs are consistent with planned facility operations and/or process conditions. (See **Finding F-Triad-4**.) Training program curricula changes that are not effectively communicated and evaluated for impacts by all training organizations subverts the SAT process and could impact worker qualifications and their ability to safely perform assigned work activities. Specifically, because of the Triad matrixed organizational structure, the ALDWP task analysis for qualifications under its control includes materials (curricula) that are controlled by another organization, e.g., HR-ITS. However, P-781-1, *Conduct of Training,* does not include a responsibility and protocol for change control for such curricula revisions. As a result, changes to those curricula by the owner can impact the qualifications of the user. Triad has acknowledged this weakness but has not addressed it. For example, during the assessment, a change to curricula not controlled by ALDWP invalidated the qualifications of nuclear managers and supervisors, impacting their ability to perform tasks associated with those qualifications.
- WMS has appropriately identified gaps in its training programs and is taking actions to implement improvements. However, these issues have not been entered into iLINK or otherwise formally documented to evaluate causes and extent of conditions, which should guide corrective actions. In addition, compensatory actions have not been evaluated and the ongoing corrective actions are not a part of an approved corrective action plan with specific tasks and deadlines. (See **OFI-Triad-6**.)

Design and Development of Training Programs Conclusions

Triad is generally effective in designing and developing training programs. However, weaknesses associated with qualification standard task-to-training matrices and the configuration management of training programs were identified.

3.4 Conduct of Training

This portion of the assessment evaluated Triad's training of nuclear facility personnel identified in TPP PA-PLAN-01676.

Triad's conduct of training procedure, P781-1, defines adequate processes to ensure that nuclear facility personnel have the KSAs to perform their assigned duties. ITS-FSD-001, a lower-level procedure, provides adequate instructions for workers involved with the development and maintenance of training programs.

Triad conducts generally appropriate training, including on-the-job training (OJT), using methods most suitable for the training content. Observed training was presented in a consistent, effective manner. Reviewed T&Q records for 15 certified personnel who work at PF-4 documented the timely completion of required training and completed OJT. Most TA-55-specific training is conducted as OJT appropriately within the TA-55 facilities on actual equipment and using two newer training facilities (TRIDENT and the NET academy facilities). Observations of three PF-4 glovebox OJT instruction sessions, including hands-on performance demonstrations, were consistent with the prescribed training objectives. Reviewed lesson plans were well-developed and consistent with the detailed operating procedures. Observed instructors were knowledgeable, appropriately followed training materials, shared best practices and personal experiences, and effectively encouraged student participation and discussion.

Two observed classroom training sessions, the *TA-55 PF-4 Initial FMH Operational Evaluation and Walkthrough* (including an oral exam), and the *Initial FMH – TA-55 Operating Electronic Balances* class, were adequately conducted with correct lesson plans and hands-on demonstrations with PF-4 prototypic equipment to replicate actual job conditions. The instructors facilitated direct trainee participation and practice demonstrations. However, contrary to ITS-FSD-001, sections 7.1.12 and 7.4.10, lesson plans for three other observed training classes were either not current, lacked necessary details, or were not followed in the classroom when training was conducted. (See **Deficiency D-Triad-5**.) Training nuclear workers with deficient lesson plans may invalidate training and individual's qualifications, and adversely impact work performance. Specifically:

- The lesson plan for observed lesson PA-LP-43862, *Contamination Monitor Training*, was not present during the training. Also, some lesson plan objectives were not covered, and, contrary to the lesson plan, not all trainees demonstrated each of the monitor's capabilities. Further, a recent configuration change in the field for the monitor was not addressed in the lesson plan or for the classroom configuration of the monitor; the instructor knew of the change but was not familiar with how it affected the monitor use.
- Course evaluation criteria in the lesson plans for observed lesson 36169, *Phase I, Initial TA-55 Material Handling and Movement*, were not completed during the training.
- Observed lessons 53982, 53983, and 53874, *Phase 2, TA-55 Material Handling and Movement Practice Session*, were impacted by materials that were out-of-date or missing. Nuclear contamination survey postings were missing for almost all workstations; the wrong version of the operator data sheet was used; the location report had the wrong material code; and the manual contained sections that were no longer in the course. Also, the instructions for hands-on practice exercises had been removed from the manual, which was discovered by the instructor as he was teaching. As a result, the instructor continued to teach the class without the needed instructions for the students, improvising their practice material movement assignments from memory.
- As confirmed in interviews of training program managers and procedure reviews, there is no requirement or expectation for management to observe the instructors except for the three-year instructor requalification requirement. (See **OFI-Triad-7**.)

Conduct of Training Conclusions

Triad conducts generally appropriate training, including OJT, using the methods most suitable for the particular training content. However, weaknesses were identified in the lesson plans for three observed training classes.

3.5 Training Program Evaluation

This portion of the assessment evaluated Triad's systematic evaluation of nuclear facility training programs.

Procedures P781-1 and P328-5, *Assessments*, adequately implement the DOE Order 426.2 and DOE-STD-1070-94 requirement that nuclear facility training programs are to be evaluated on a triennial basis. As identified in P781-1, HR-ITS is the responsible organization, independent of the work or process being evaluated, that conducts these assessments in accordance with P328-5 and DOE-STD-1070-94. Reviewed assessment schedules for FYs 2021 through 2023 and FYs 2024 through 2026 demonstrate that HR-ITS is meeting the DOE-STD-1070-94 requirement to ensure that all nuclear facilities and nuclear safety management training programs are assessed on a triennial basis. Three reviewed independent assessments (RCT 2023-0600, *DOE-STD-1070-94 Assessment Report of the Radiological Control Technician Training and Qualification Program*; ITS-RPT-001, *Management*

Assessment Report of the DOE-STD-1070-94 Training and Qualification Assessment for the Institutional Nuclear Training Program; and 2021-0143, *DOE-STD-1070-94 Assessment Report of the TA-55/PF-4 Weapons Production Directorate Facility and Programmatic Operations Training and Qualification Program*) demonstrate that assessments are identifying training-related issues and HR-ITS is entering them into iLINK for evaluation and corrective action as required by P322-4.

Overall, assessment reports are detailed and well documented. Reviewed iLINK reports for findings demonstrate that assessed organizations are generally adequately addressing training-related issues. However, WMS and other assessed organizations have routinely dismissed findings without corrective actions (as an example, see the Deficiency D-Triad-1 discussion in section 3.1). Also, DOE-STD-1070-94 assessment results are not formally shared by HR-ITS across LANL directorates to improve training programs laboratory-wide. (See **OFI-Triad-4**.) HR-ITS is currently implementing initiatives to address this issue and improve the effectiveness of resolving training assessment findings. These initiatives include developing a review process to ensure that results are handled consistently across all Triad training organizations, and a new requirement to obtain HR-ITS concurrence on the closeout of medium and high significance findings.

As required by DOE-STD-1070-94, P328-5 appropriately establishes T&Q requirements for independent assessment team leads (ATLs) and assessment team members. Assessors are appropriately required to read P328-5 and be technically qualified in the area they assess. A review of assessments revealed that the team makeup is heavily weighted towards training expertise rather than the technical area being assessed. DOE-STD-1070-94, section 5.2, recommends that the team be an appropriate balance of personnel with training and technical backgrounds. Additionally, the T&Q requirements are less rigorous than those required for independent assessments conducted by Institutional Quality and Performance Assurance (IQPA). (See **OFI-Triad-8**.) Specifically, IQPA requires ATLs for IQPA-performed independent assessments to be American Society of Mechanical Engineers Nuclear Quality Assurance (NQA)-1 lead auditor certified and to co-lead one assessment prior to full qualification, and ATLs and assessment team members have minimum requirements for education and nuclear experience.

Currently, HR-ITS conducts self-assessments that are documented as management assessments. However, HR-ITS is not independently assessed by external organizations, such as IQPA. (See **OFI-Triad-9**.) According to SD-320, *Contractor Assurance System*, independent assessments provide an objective evaluation of the laboratory's mission; science, technology, and engineering; and operational performance.

HR-ITS has not established institutional-level performance metrics for the conduct of training. This was identified as a finding during a recent contractor assurance system assessment conducted by NA-LA. As a corrective action, HR-ITS is developing institutional-level metrics that will be tracked on the LANL executive dashboard. Contrarily, WMS has established an effective program to monitor training-related metrics. Seven key performance indicators (KPIs) are tracked and trended during monthly management review board meetings. Two additional KPIs are planned although WMS continues to encounter challenges with data access, lack of standard tools, and lack of support/authorization. (See the OFI-Triad-5 discussion in section 3.1.)

Training Program Evaluation Conclusions

Triad is generally effective at conducting evaluations of nuclear training programs. HR-ITS is meeting the DOE-STD-1070-94 requirement to ensure that all nuclear facilities and nuclear safety management training programs are assessed on a triennial basis. Overall, assessment reports are detailed and well documented.

3.6 Federal Oversight

This portion of the assessment evaluated the effectiveness of NA-LA's oversight processes related to Triad's T&Q program.

The NA-LA oversight program implements DOE Policy 226.1B, *Implementation of Department of Energy Oversight Policy*, and NNSA supplemental directive (SD) 226.1C, *NNSA Site Governance*, through management procedure (MP) 00.08, *Implementation of NA-LA Line Oversight*. NA-LA has a designated position as the nuclear facility training subject matter expert (SME), responsible for general oversight of Triad's T&Q program. As outlined in MP 00.08, oversight is conducted through a variety of activities, including independent assessments, shadow assessments, document reviews, and operational awareness activities. The reviewed NA-LA site integrated assessment plan identified planned assessments of training. This was accomplished primarily through shadowing Triad's DOE-STD-1070-94 assessments to verify implementation of the DOE Order 426.2 requirement to assess training programs every three years. In accordance with DOE Order 426.2A, NA-LA has reviewed and approved the most recent revision of the ALDWP TPP and other Triad TPPs. NA-LA has also appropriately approved Triad procedure 701-3, *Exceptions to Training, Education, and/or Experience Requirements for Nuclear Facility Workers*, as required by DOE Order 426.2A.

The NA-LA training SME shadowed all five reviewed Triad DOE-STD-1070-94 assessments conducted in FY 2024 in accordance with NA-LA work instruction (WI) 00.04, *Assessment Shadow Activity Reporting*. Reviewed training-related shadow activity reports documented on WI 00.04 form A, *Assessment Shadow Record Form A*, and form B, *Assessment Final Report Review Form B*, effectively captured numerous issues and weaknesses that were identified by the SME during the Triad assessment. During shadow assessments, the SME is not actively assessing the training organization to confirm whether an objective is met, but notes weaknesses in the shadow activity reports. (See **OFI-NA-LA-1**.) Issues identified by NA-LA and Triad are appropriately tracked in the NA-LA Tracking and Handling Oversight Records system; Triad also tracks its assessment findings in iLINK.

NA-LA personnel conduct oversight of Triad's T&Q program activities in training-specific assessments and as a part of broader functional area assessments. At the time of this assessment, NA-LA was concluding an assessment of the contractor training program. Reviewed assessments in which the NA-LA training SME was a team member were thorough and adequately documented. For example, an August 2023 NA-LA assessment of nuclear criticality safety integration into FMH training resulted in nine findings. Additionally, a May 2024 assessment to evaluate contractor assurance system performance metrics for SMPs identified one finding and two observations related to the lack of institutional metrics for the conduct of training, as discussed in section 3.5. The NA-LA training SME meets regularly with Triad training organization personnel, including weekly with HR-ITS and ALDWP, and bi-weekly with Associate Laboratory Directorate for Facilities and Operations counterparts to discuss training-related issues. The SME is routinely engaged and provides feedback. For example, the SME reviewed the FY 2024 integrated assessment schedule submitted by Triad and identified gaps that necessitated a revision to ensure that all areas were assessed during the three-year period.

NA-LA has three fully qualified Facility Representatives (FRs) and one interim qualified FR assigned to PF-4. The FRs are qualified pursuant to DOE-STD-1151-2019, *Facility Representative Functional Area Qualification Standard*, and the NA-LA FR program facility-specific qualification for PF-4. The FY 2023 staffing analysis identifies the need for six qualified FRs to maintain continual oversight of PF-4; however current staffing is not at this level. FRs maintain operational awareness during PF-4 observations and spot check worker qualifications in UTrain to verify that those personnel assigned to tasks in PF-4 are qualified to perform those tasks.

Federal Oversight Conclusions

NA-LA has implemented a generally adequate oversight program for evaluating the effectiveness of Triad's T&Q program that meets DOE requirements. NA-LA personnel conduct oversight of Triad's T&Q program activities and provide the results to Triad to improve safety and mission performance.

4.0 BEST PRACTICES

No best practices were identified during this assessment.

5.0 FINDINGS

Findings are deficiencies that warrant a high level of attention from management. If left uncorrected, findings could adversely affect the DOE mission, the environment, the safety or health of workers and the public, or national security. DOE line management and/or contractor organizations must develop and implement corrective action plans for findings. Cognizant DOE managers must use site- and program-specific issues management processes and systems developed in accordance with DOE Order 226.1 to manage the corrective actions and track them to completion.

Triad National Security, LLC

Finding F-Triad-1: Triad has not documented specific aspects of the SAT process as it relates to six reviewed nuclear facility positions (FMH Operator and Supervisor, Operations Center Operator and Supervisor, TA-55 TSR Surveillance Performer, and Glovebox Operator). (DOE Order 426.2, att. 1, ch. I, sec. 4.a, and ch. II, secs. 6.a, 6.b, and 6.c; ITS-FSD-001, secs. 7.1.3, 7.1.4, and 7.1.5)

Finding F-Triad-2: Triad has not established an adequate CT program for FMH Operator and Supervisor and Operations Center Operator and Supervisor. (DOE Order 426.2, att. 1, ch. I, sec. 7, and ITS-FSD-001, secs. 4.15 and 5.8)

Finding F-Triad-3: Triad's qualification standard task-to-training matrices do not always align tasks with necessary knowledge and abilities and identified training objectives. (DOE Order 426.2, att. 1, ch. I, sec. 4.a, and ITS-FSD-001, sec. 7.1.9)

Finding F-Triad-4: Triad has not implemented an adequate change control process to ensure T&Q programs are consistent with planned facility operations and/or process conditions. (DOE Order 426.2, att. 1, ch. I, sec. 4.a, and ITS-FSD-001, sec. 7.1.13)

6.0 DEFICIENCIES

Deficiencies are inadequacies in the implementation of an applicable requirement or standard. Deficiencies that did not meet the criteria for findings are listed below, with the expectation from DOE Order 227.1A for site managers to apply their local issues management processes for resolution.

Triad National Security, LLC

Deficiency D-Triad-1: Triad did not adequately address the closure of three of nine findings from LANL assessment 2021-0143. (P322-4, sec. 3.3)

Deficiency D-Triad-2: Triad is not consistently maintaining comprehensive, retrievable, and easily auditable qualification and certification records for nuclear workers at PF-4. (DOE Order 426.2, att. 1, ch. I, sec. 10, and P781-1, sec. 3.6.2)

Deficiency D-Triad-3: Triad HR-ITS does not maintain at least 13 training program templates/forms within a formal document control system. (DOE Order 414.1D, att. 2, sec. 4; P1020-2, sec. 3.1.1; and PA-AP-01000, sec. 5.9.1)

Deficiency D-Triad-4: Triad has not applied its established graded approach to ensure that the quality of all software items is managed in accordance with its approved QA program. (DOE Order 414.1D, att. 1, sec. 1b, and att. 2; and P1040, sec. 5.2)

Deficiency D-Triad-5: Triad's lesson plans for three observed training classes were not current, lacked necessary details, or were not followed in the classroom when training was being conducted. (ITS-FSD-001, secs. 7.1.12 and 7.4.10)

7.0 RECOMMENDATION

EA identified one recommendation for consideration by senior line management. Recommendations do not require formal resolution through a corrective action process and are not intended to be prescriptive or mandatory. Rather, they are suggestions derived from the aggregate results of an assessment that may assist senior line management in improving the effectiveness of programs or site management.

Triad National Security, LLC

Recommendation R-Triad-1: Triad should improve the integration of its training organizations to increase the effectiveness and consistency of training program implementation, including establishing a training review board comprised of all training organizations, to evaluate impacts of training changes, develop related implementation plans as needed, and collaborate on training-related issues.

8.0 OPPORTUNITIES FOR IMPROVEMENT

EA identified the OFIs shown below to assist cognizant managers in improving programs and operations. While OFIs may identify potential solutions to findings and deficiencies identified in assessment reports, they may also address other conditions observed during the assessment process. These OFIs are offered only as recommendations for line management consideration; they do not require formal resolution by management through a corrective action process and are not intended to be prescriptive or mandatory. Rather, they are suggestions that may assist site management in implementing best practices or provide potential solutions to issues identified during the assessment.

Triad National Security, LLC

OFI-Triad-1: Consider developing comprehensive formalized goals and objectives for Triad's strategic training initiatives and projects.

OFI-Triad-2: Consider performing periodic assessments of the accuracy, completeness, and format of required records in EDRMS to support Triad's T&Q program.

OFI-Triad-3: Consider revising procedure P1020-1 to specify the maximum allowable time to archive training records in their final, permanent storage location (e.g., EDRMS) once they are created.

OFI-Triad-4: Consider formally sharing DOE-STD-1070-94 assessment results and lessons learned across LANL directorates to improve training programs laboratory-wide.

OFI-Triad-5: Consider standardizing metrics across all Triad training organizations to provide a consistent method for evaluating overall T&Q program health.

OFI-Triad-6: Consider developing a formal plan to address improvement efforts in training program design and development.

OFI-Triad-7: Consider developing and instituting a program for managers to observe instructors conducting training classes more frequently than every three years.

OFI-Triad-8: Consider requiring (1) HR-ITS ATLs performing DOE-STD-1070-94 assessments to meet the minimum T&Q requirements established for IQPA ATLs, and (2) assessment teams to be balanced with respect to training and technical SMEs.

OFI-Triad-9: Consider performing external/IQPA independent assessments of the HR-ITS organization at an established frequency.

NNSA Los Alamos Field Office

OFI-NA-LA-1: Consider performing more frequent targeted assessments of Triad's T&Q program when shadow assessments indicate areas of weakness.

9.0 ITEMS FOR FOLLOW-UP

EA, in coordination with NA-LA, will schedule an independent safety culture assessment of Triad's training organizations laboratory-wide, considering Recommendation R-Triad-1 of this report.

Appendix A
Supplemental Information

Dates of Assessment

July 30 to September 10, 2024

Office of Enterprise Assessments (EA) Management

John E. Dupuy, Director, Office of Enterprise Assessments
William F. West, Deputy Director, Office of Enterprise Assessments
Kevin G. Kilp, Director, Office of Environment, Safety and Health Assessments
David A. Young, Deputy Director, Office of Environment, Safety and Health Assessments
Thomas E. Sowinski, Director, Office of Nuclear Safety and Environmental Assessments
Kimberly G. Nelson, Director, Office of Worker Safety and Health Assessments
Jack E. Winston, Director, Office of Emergency Management Assessments
Brent L. Jones, Director, Office of Nuclear Engineering and Safety Basis Assessments

Quality Review Board

William F. West, Advisor
Kevin G. Kilp, Chair
Thomas C. Messer
Christopher E. McFearin
William A. Eckroade

EA Site Lead for Los Alamos National Laboratory

Tamara D. Powell

EA Assessment Team

Tamara D. Powell, Lead
Brannen J. Adkins
Keith E. Boring
Frank A. Inzirillo
Gregory L. Smith