



Department of Energy
National Nuclear Security Administration
Washington, DC 20585



March 30, 2022

The Honorable Joyce L. Connery
Chair
Defense Nuclear Facilities Safety Board
625 Indiana Avenue NW, Suite 700
Washington, D.C. 20004

Dear Chair Connery:

Consistent with the Board’s letter dated January 6, 2022, attached please find the Fiscal Year 2021 Annual Metrics Report on the nuclear criticality safety criteria. This metrics report includes a series of tables and satisfies the annual reporting requirement established for closure of Defense Nuclear Facilities Safety Board Recommendation 97-2, *Continuation of Criticality Safety at Defense Nuclear Facilities in the Department of Energy (DOE) Complex*.

If you have any specific questions regarding the report, please contact Kevin Hahn, National Nuclear Security Administration, who has overall responsibility for the consolidated report, at (505) 845-4106. Larry W. Perkins, Office of Environmental Management (EM), (865) 599-3636, is responsible for the EM information; and Joanna Serra, Office of Science (SC), (301) 903-6136, is responsible for the SC information.

Sincerely,

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**2021
ANNUAL METRICS
REPORT**

**To
THE DEFENSE NUCLEAR
FACILITIES SAFETY BOARD
March 2022**

**NUCLEAR CRITICALITY
SAFETY PROGRAMS**



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

Purpose

A Defense Nuclear Facilities Safety Board (DNFSB) letter dated January 6, 2022, requested that the Department of Energy (DOE) provide an annual metrics report on the nuclear criticality safety criteria listed below in its Annual Report on Nuclear Criticality Safety (NCS) Programs. The Board's letter modified the annual reporting requirement established for closure of DNFSB Recommendation 97-2, *Continuation of Criticality Safety at Defense Nuclear Facilities in the Department of Energy (DOE) Complex*, which requires DOE to provide a report and briefing on the requested subject areas for its various NCS programs.

The points-of-contact for this report are Kevin Hahn, National Nuclear Security Administration (NNSA), 505-845-4106, Dr. Larry W. Perkins, Office of Environmental Management (EM), 865-599-3636, and Joanna Serra, Office of Science (SC), 301-903-6136.

The requested metrics include:

1. A **summary of the health of the criticality safety program** as assessed by each DOE field office and DOE program office, consistent with DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*;

- The following qualitative grades are used:
 - Exceeds Expectations
 - Meets Expectations
 - Adequate but needs improvement
 - Does not meet expectations.

The Field Office provides the overall performance of the site which is broken into program health and operational implementation. The DOE program office will either concur with this opinion or provide a different opinion in the summary discussion.

- The program health grade is based on items such as contractor staffing levels, quality, timeliness and backlog of NCS Evaluations, adequate funding, NCS procedures and policies...etc.
 - The operational implementation grade is based on items such as those events and issues affecting the handling and processing of nuclear materials...i.e., infractions, conduct of operations, implementation of NCS in operating procedures...etc.
2. The **number and a short description of criticality safety infractions per site-specific criteria** identified by each of the following: the contractor, DOE field office, and DOE headquarters;
 - Note that the short description (summary) is a Federal point-of-view of the significance of any trends or concerns based on the infractions.
 3. The **number and a short description of identified non-compliances with DOE Order 420.1, Facility Safety**, and the American National Standards Institute/American Nuclear Society-8 series

Annual Report on DOE Nuclear Criticality Safety Programs

of criticality safety standards identified by each of the following: the contractor, DOE field office, and DOE headquarters;

- Note that the short description (summary) is a Federal point-of-view of the significance of any trends or concerns based on the non-conformances.
4. The **total number of criticality safety issues** in the issues management system for each of the following categories: open at the start of the year, added during the year, closed during the year, open for longer than six months, and open for longer than one year. Opportunities for Improvement and Observations shall not be included, and;
 5. **Contractor and federal criticality safety staffing levels**, including the number of qualified staff, average years of experience in criticality safety, the number of staff in training for initial qualification, and the number of vacancies. Also include for each the contractor and federal staff the numbers of staff hired and staff lost during the year.
 - The number of qualified NCS engineers reflects the number of staff qualified to independently perform criticality safety work consistent with site specific criteria.
 - The “experience” metric is an average of the years of experience in criticality safety for the qualified staff at the time of reporting.

The following tables represent the requested data for DOE sites for FY21.

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Lawrence Livermore National Laboratory (LLNL)

1. LLNL Overall Performance

Field & Program Office Assessment	Program Health: Exceeds Expectations
	Operational Implementation: Meets Expectations

Note: The scope of this evaluation includes Nevada National Security Site (NNSS) operations that are executed under the LLNL Nuclear Criticality Safety (NCS) Program.

Summary:

Current program health is strong with quality NCS products such as evaluations and infraction reports that were delivered in a timely fashion. Thirty-one Criticality Safety Administrative Memoranda were issued for work related to equipment installation and process changes in support of three LLNS organizations, and LFO’s functional area review including a sampling of evaluations confirmed overall quality. The NCSD has provided excellent technical support to Superblock, Radioactive & Hazardous Waste Management, and LLNL operations at the NNSS. Major accomplishments included two NCSD staff receiving the LLNL Director’s Institutional Operational Excellence Award for outstanding support to the TRU Waste Campaign, numerous awards from two LLNL organizations, and FY21 NCS performance metrics resulting in an Excellent (highest) grade. The NCSD also supported the Strategic Rollup Zone transition of Superblock, and the new Work Planning and Control (WP&C) process/system’s application to NCS, which included conversion of Integrated Worksheets into Work Control Documents; changes to Operational Safety Procedures for specificity and clarity of NCS controls during the transition to Hazard Control Procedures; "endorsement" for NCS for work planners supporting high hazard facilities, including endorsement incorporation into the Livermore Training Records and Information Network Cert./Qual. module; and improvements to the WP&C Tool such as new material types in the hazards checklist or automatically selecting the "CRTSFTY" hazard discipline when the hazard selected is "Criticality Potential." LLNS is also focused on improving staffing, and faced some delays in hiring due to COVID-19 challenges and budget shortfalls in FY21 to hire additional needed staff (e.g., at least two more mid-career), but these immediate budget issues were resolved in FY22 and the NCSD is interviewing candidates for openings. All LLNS Nuclear Criticality Safety Engineers (NCSEs) were previously reclassified for higher pay scales and some obtained promotions, which was beneficial for retention.

Furthermore, LLNS has gone above and beyond through continued leadership as the NNSA Point of Contact for JOWOG-30-23 supporting NCS benchmarking and best practices across the NNSA Enterprise and Atomic Weapons Establishment through exchanges of personnel and information. LLNL has also assisted SNL and PNNL in completing comprehensive triennial assessments of their NCS programs, as well as assisted, through membership in the DOE Criticality Safety Support Group, the SRPPF with NCS integration into conceptual and preliminary design. These were accomplished while LLNL was short-staffed during a period of increased program demands, thus overcoming challenges that exceeded expectations. LLNL has had a history of stable and excellent CSP performance over the years, and this was continuously improved in FY21.

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While DOE Nuclear Criticality Safety Program (NCSP) work is not considered for this grading, one aspect that reflects the strength and recognized technical expertise of the LLNL CSP is that LLNL is the only NNSA site whose NCS organization is the budget holder for NCSP, which provides significant funding and research and development (R&D) opportunities for LLNL NCS engineers, which contributes to stability, job satisfaction, and retention – all important aspects for securing resources and enhancement of needed NCS skills directly applicable to site NCS program work. This structure serves as a role model for how other NNSA sites do business, since the small programs at Oak Ridge National Laboratory (ORNL) and SNL could be significantly strengthened if this model was adopted at their sites. Furthermore, having LANL NCS staff more involved with DOE NCSP activities could help with staff retention. Thus, given the strong leadership on NCS program best practices, assistance to other sites, and a unique funding management structure enabling significant retention and skill development benefits that other sites might benefit from adopting, performance and health of the LLNL NCS program exceeds expectations as a nearly ideal NCS program serving as a role model for how every other NNSA site should do business.

Operational implementation at LLNL meets expectations as evidenced by very close and effective collaboration between operations personnel and NCS staff. Assessments performed through the year also did not identify any significant issues that would indicate a failure to effectively implement the NCS program.

Additionally, regarding the three issues in metric 4 that have been open for longer than one year, two have corrective actions in progress representing improvements (i.e., for ANS requirements crosswalk documentation, or material accountability software functionality, respectively) with the issues being of lower significance, and the third has since been closed. LFO does not note a significant negative trend or concern among them.

The NNSA Program Office agrees with the grade of “meets expectations” for operational implementation but is hesitant to assess the program health as “exceeds expectations.” However, the Program Office also recognizes that these grading levels need definitions, and conclusive arguments either way are difficult without those definitions.

2. LLNL Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	3	0	0

Summary:

One NCS infraction related to water in a closed loop cooling system exceeding a 4-liter NCS volume control remains open and still under investigation, with a final infraction report and an update to the NCS Evaluation still to be completed. The two other infractions were related to TRU waste drums found without the required Standard Criticality Control Condition (SCCC) label, one of which was inappropriately moved to another workstation. LLNS performed an extent of condition (EOC) for these infractions and no additional drums were identified without labels. As corrective training, RMA workers reviewed their responsibilities in applicable sections of the Operational Safety Plan, Facility Safety Plan, and Move Procedure. There are no significant LFO concerns or trends noted at this time for these three infractions.

3. LLNL Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
1	2	0

Summary:

One non-compliance found is that procedures to detect and characterize accumulations do not currently exist, which is of moderate significance since historic measurements found only small amounts of accumulations. This issue is not considered to represent an imminent risk at this time. Regarding the other two issues, LFO does not note a significant trend or concern.

4. LLNL Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
8	9	8	4	3

5. LLNL Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	5	23	4	3	0	3
Federal	1	1	0	0	0	0

Nevada National Security Site (NNSS)

1. NNSS Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Note: Program Health and Metrics Data is for the NNSS M&O Contractor Mission Support and Test Services (MSTS) only. Other programs that perform work at NNSS such as Los Alamos and Lawrence Livermore report their metrics through their own program mechanisms.

Summary:

The Nuclear Criticality Safety Program at NNSS has successfully supported operations while also completing all required walk-downs and assessments. The criticality safety personnel maintain good relationships with operations and participated in procedure development and training of operations staff. The criticality safety group also is active in the field, observing many operations and startup activities. Additionally, the criticality safety group has maintained qualifications and have recently hired and qualified new personnel. The program health and the operational implementation currently meets the expectations of the Nevada Field Office.

The program office agrees with the information provided and concurs with the overall health assessments.

2. NNSS Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	0	0	0

Summary:

No infractions were recorded for the year.

3. NNSS Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No Program Non-Compliances were identified.

4. NNSS Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
1	1	1	0	0

5. NNSS Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	5	15	0	0	1	0
Federal	1	12	0	0	0	0

Los Alamos National Laboratory (LANL)

1. LANL Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Adequate but needs Improvement

Note: The scope of this evaluation includes Nevada National Security Site operations that are executed under the LANL Nuclear Criticality Safety Program (NCSP).

Summary:

NA-LA oversight of the LANL NCSP and its safety management program (SMP) implementation in applicable DOE nuclear facilities throughout the year indicates that the NCSP health meets expectations. This determination is based upon many factors, including operational awareness activities, DOE and Contractor performed assessments and self-assessments, routine interface between NA-LA criticality safety program oversight staff and their LANL NCS Division counterparts and the FY21 LANL NCSP performance metric ranking of “Satisfactory.”

Notwithstanding the above evaluation, operational implementation of criticality safety evaluations and controls is rated as adequate but needs improvement. This observation has been evident throughout the year, at TA-55 explicitly, as shown in the FY21 metrics (i.e., a continuing need for improvement in criticality safety infraction severity and repeat infractions), the July 19th spill from the wet vacuum seal water tank overflow into a PF-4 glovebox and continued difficulty in implementing a criticality safety transient combustible loading control in affected gloveboxes (i.e., a key element of the TA-55 fire protection SMP).

The one issue open for longer than a year as noted in metric 4 is related to inadvertent accumulations. LANL recently provided an update to the Field Office and Headquarters leadership of the good work being done to address this and intend to close this issue this year. Based on the complexity of the issue, the duration of the open issue is expected.

The NNSA Program Office assesses the operational implementation grade as “meets expectations” based on results of NNSA oversight, as well as reviews of ORPS and DNFSB reports; the Federal oversight system is performing as expected. However, the Program Office is also aware of weaknesses in implementation of the overall Conduct of Operations program and is providing assistance to the Field Office for long term resolution. The NNSA Program Office does agree with the Program Health grade of “meets expectations.”

2. LANL Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	2	0	0
Level 4	21	0	0
Level 5	45	0	0
Program Non-Compliances	1	0	0

Summary:

In FY2021, Revision 8 of LANL SD 130, *Nuclear Criticality Safety Program*, was approved by NA-LA, as required by DOE O 420.1C, *Facility Safety*. One of the changes in this revision affected Table 3, *Nuclear Criticality Safety Event Severity Index*, and how nuclear criticality safety infractions are categorized. In addition to clarifying the infraction severity level 1 thru 4, this change additionally redefined Level 5 as not an infraction because no criticality safety parameter was impacted (which is consistent with infraction reporting with other NNSA sites) and broke up the previous non-compliance (NC) infraction severity level into 3 sub-categories: NC-Low, NC-Medium and NC-High.

As similarly identified by the LANL NCS Division’s performance metrics for FY21, there continues to be areas for improvement for both criticality safety infraction severity as well as recurring/similar infractions. For example, in the fourth quarter of FY21, there were 6 L4 infractions (partial loss of control), 1 L3 infraction and 1 NC-med infraction, which is an indication of underlying Conduct of Operations issues. Individual FY21 metrics similarly show this weakness: both the criticality infraction and the similar infraction indices are identified as ‘needs improvement’. These observations reinforce a continuing need for the NCS program to engage facility, engineering and operations management and all technical staff personnel to ensure their understanding of the responsibilities as defined by LANL SD130, *Nuclear Criticality Safety Program*, and in the flow down of facility-specific NCS implementation policies and procedures.

3. LANL Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No Program Non-Compliances were found.

Note that this metric reports program non-compliances with the standards, typically found through formal assessments. This should not be confused with LANL’s non-compliance category of infractions, which are typically conditions found which indicate a non-compliance with the site’s program (e.g., identifying a process with no controls and/or no evaluations when they should have them).

4. LANL Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
3	16	7	0	1

5. LANL Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	19	6.94	6	5	6	3
Federal	1	15	2	0	0	0

Sandia National Laboratories (SNL)

1. SNL Overall Performance

Field & Program Office Assessment	Program Health: Exceeds Expectations
	Operational Implementation: Meets Expectations

Summary:

The SNL criticality safety program has made significant improvement since initiating a *Program Improvement Plan* started in FY16. The most recent External Triennial Assessment recognized the program had matured significantly. In FY21, procedures, processes, charters, and other documents were provided to LANL, LLNL, SRS, Y-12 and PNNL for benchmarking purposes. SNL assisted Y-12, LANL, and the BWXT Lynchburg facility in completing assessments of their nuclear criticality safety programs. Other noteworthy achievements include establishing a pipeline for graduate students which are already in the qualification process so they will be qualified when they are hired. The Executive Champion for the program is the Deputy Laboratory Director who twice a year is briefed on the status of the program by criticality safety staff and no other safety program is briefed to that high of a level. Finally, the sixth revision of the *Nuclear Criticality Safety Program Improvement & Implementation Plan* containing all findings, issues, non-compliances, and other improvements is reviewed biweekly by criticality safety staff to assure all tasks are being addressed and on schedule.

There is sufficient budget and staff to perform work. The number of infractions and non-compliances for a seventh year was low with one infraction and one non-compliance. Self-assessments of facilities have continued to improve and been on schedule and used for training new engineers. Floor level support (time in facility) especially during operational activities continues to improve. In FY21, SNL initiated criticality safety training of emergency management responders and firefighters for the first time. This training has strengthened relationships not only with those organizations but also with facility line organizations. Although a small program with a low risk, SNL continues to formalize their program and has made efforts to learn from other sites including observing the annual criticality safety drill at the LLNL Superblock facility and performing assessments at other facilities.

The NNSA Program Office agrees with the grade of “meets expectations” for operational implementation but is hesitant to assess the program health as “exceeds expectations.” However, the Program Office also recognizes that these grading levels need definitions, and conclusive arguments either way are difficult without them.

2. SNL Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	1	0	0

Summary:

The root cause for the one level four infraction was that there was a misunderstanding by the operations staff on how the Criticality Safety Index (CSI) value was applied. In the past 16 years, the number of infractions has been either one or none most years and continues this trend in FY21.

3. SNL Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
1	0	0

Summary:

There was one finding for the movement of fissionable material between TA-V Facilities. In the past 16 years, the number of non-compliances has been low (3 or less) and continued this trend in FY21.

4. SNL Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
7	21	6	3	0

5. SNL Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	7	14	3	2	0	1
Federal	1	16	0	0	0	0

Pantex

1. Pantex Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Note: The Program Health grade reflects the combined performance of the contractor at Y-12, Pantex and the Uranium Processing Facility (UPF). However, the Operational Implementation grade is specific to implementation at this site. See the Y-12 section for information on the Program Health grade.

Summary:

The Nuclear Criticality Safety Program (NCSP) at Y-12, Pantex, and UPF is described in document E-SD-2026. At Pantex, the NCS program underwent flux during FY 2021, as the enterprise CSP description (E-SD-2026) was implemented at the site. This was a necessary step for achieving CSP consistency between the sites and realizing improvement for NCS at Pantex. Pantex is in the midst of a large NCS program improvement effort as a result of weaknesses identified in management assessments and issue resolutions from years prior. The plan is comprehensive, and addresses areas including, but not limited to: staffing and qualification, evaluation quality, requirement implementation, and issues management. A number of improvements outlined in the plan were completed in FY 2021, and Consolidated Nuclear Security (CNS) has increased NCS staffing at Pantex in order to support both improvement plan actions and mission needs. While a number of the improvement actions have yet to be completed, the amount of resources and attention that has been dedicated to this plan is indicative of a healthy, self-critical, and continuous improvement-oriented program. Of note, the one issue open for longer than a year is associated with completion of this improvement plan’s actions. Overall, the NCS program health meets expectations.

As mentioned above, a number of the improvement plan actions targeted implementation of NCS requirements, such as establishment of an NCS issues identification process, and evaluating and updating operator and supervisor NCS training. Due to the simplicity of the NCS requirement set at Pantex, NCS infractions are rare. Given that the areas needing improvement have been identified by CNS and are being worked to closure, the operational implementation at Pantex is considered to meet expectations.

The program office agrees with the information provided and concurs with the overall health assessments.

2. Pantex Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Occurrences	0	0	0
Deficiencies	0	0	0
Minor Non-Compliances	0	0	0

Summary:

There were no NCS infractions at Pantex in FY 2021.

3. Pantex Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

There were no identified program non-compliances at Pantex in FY 2021.

4. Pantex Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
1	2	2	1	1

5. Pantex Staffing

Note: Criticality Safety Federal oversight of Pantex, Y-12 and UPF is performed by the NPO.

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	5	9.25	0	0	0	0
Federal	1	12.5	2	1	1	0

Y-12 National Security Site (Y-12)

1. Y-12 Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Note: The Program Health grade reflects the combined performance of the contractor at Y-12, Pantex and the Uranium Processing Facility (UPF). However, the Operational Implementation grade is specific to implementation at this site.

Summary:

The Nuclear Criticality Safety Program (NCSP) at Y-12, Pantex, and UPF is described in document E-SD-2026. At Y-12, the NCS program is very mature and is implemented through a number of organizations and long-established procedures. A number of management oversight processes are in place by CNS to monitor the health of the NCS program, including the Nuclear Criticality Safety Committee (NCSC), the Nuclear Criticality Safety Advisory Council (NCSAC) and the Corrective Action Review Board (CARB). Additionally, CNS has established a number of additional tools for monitoring the performance and health of the NCS program, including the Health Survey tool (since 2019) and the NCS Integrated Schedule (since 2020). The level of oversight and the quality of the oversight provided through CNS’s processes exceeds expectations. A substantial number of improvement efforts have been undertaken in recent years to improve NCS program elements identified as weak following a number of events in 2017 and 2018, and the associated investigations and program reviews that ensued. In February 2021 document YAREA-F-1956, *Roadmap for Improving the Y-12 Nuclear Criticality Safety Program*, was published. This document summarized the corrective and improvement actions across virtually every NCS program element following the 2017 and 2018 events, including those actions completed and those outstanding. CNSs completion of actions identified in the “Roadmap” for FY 2021 was strong, with only a few actions that extended beyond the FY. Many of the completed items were substantial efforts, such as completion of 23 CSE updates during the FY, implementation of all FY 2019 and FY 2020 CSE updates, and execution of a number of personnel training enhancements. These achievements were well beyond those from previous FYs. Given the number of NCS improvement tasks completed and underway, adequacy of program funding is a non-issue. CNS has a large NCS staff, and annually measures staffing needs against the site baseline (i.e. budget and work scope). For the last few years CNS has hired in excess of the mission need to account for NCS engineer attrition, however attrition still remains a program concern. CNS has taken steps to cross train and rotate NCS engineers to meet work load demands across the three sites (Y-12, Pantex, UPF). The staffing element of the program would be graded as adequate, but needs improvement. Overall, the NCS program health meets expectations.

As previously mentioned, the NCSP at Y-12 is implemented via a mature suite of administrative and technical procedures. Incorporation of NCS requirements into work execution and physical configuration documentation is considered excellent, with few issues noted relating to requirement flow-down. Operational execution to NCS requirements presents more issues/concerns. A high level concern that NPO has across both Y-12 and Pantex is regarding disciplined operations (i.e. CONOPS). A joint NPO/CNS “Disciplined Operations Council” is

working improvement actions in this area at both sites, with a focus on training improvements and line management reinforcement of expectations. Additionally, the complexity of certain requirement sets leads to execution issues, particularly regarding fissile material container loading, handling, and storage. Some improvements have been completed, with more underway, to improve execution in container loading, handling and storage activities. While CNS’s progress in FY 2021 was better than in prior years, additional improvement is still needed in this area. A number of examples of a strong questioning attitude by individuals on the floor were observed in FY 2021. This is an encouraging indication that recent actions completed to combat process drift and improve NCS training are producing the desired outcomes. Given the areas of strength, along with the areas of needed improvement, the overall assessment of NCS operational implementation at Y-12 is “meets expectations.”

Table 4 below identifies a number of issues associated with the Y-12 NCS program which have been open for greater than 6 months or a year. In all instances, issue closure is tied to completion of the identified corrective or improvement actions. Upon examination of these issues, no concerning trends are identified. For six of the issues, revision and implementation of the NCS approval documentation was an action, which in most cases involves a considerable duration. Five of the issues are associated with the extensive campaigns to address the accumulation issues from 2018, which have been closely monitored by NPO. Additionally, a number of the issues below represent a considerable scope; in some cases, the issue contains 30-40 individual actions. Based upon the issue significance level, an effectiveness review may be required, which is typically conducted 3-6 months from completion of all actions. This naturally leads to an extended duration for some issues. The duration for a few of the issues noted below is considered by NPO to be unreasonably long, and escalation processes are exercised for those. However, in general, CNS displays reasonably timely issue resolution.

The program office agrees with the information provided and concurs with the overall health assessments.

2. Y-12 Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Occurrences	2	0	0
Deficiencies	24	2	0
Minor Non-Compliances	16	1	0

Summary:

The site-specific definitions for Deficiency and Minor Non-compliance are included below to aid the discussion.

- **Deficiency:** a condition inconsistent with the intended process and resulting in an NCS requirement violation. At least two unlikely, independent, and concurrent changes in process conditions are still necessary before a criticality accident is possible, but there has been a deviation from a Criticality Safety Approval (CSA)/Criticality Safety Requirements (CSR)/Criticality Safety Evaluation (CSE), an NCS-related program, or an NCS-related operating procedure. The conditions resulting from the deviation are not within the normal conditions considered in the supporting CSE. At the discretion of the NCS engineer, a condition that does not meet the above criteria may be elevated to a deficiency if it warrants more attention than that of a Minor Non-compliance.
- **Minor Non-compliance:** an NCS-related condition inconsistent with the intended process, but not significant enough to qualify as an NCS deficiency or NCS occurrence.

Due to the number of fissile material operations, associated NCS requirements, and the site-specific infraction criteria, Y-12 experiences a number of infractions yearly. A total of 45 infractions were identified for FY 2021. For the three prior years the total infractions were: 61 for CY 2020, 57 for CY 2019, and 68 for CY 2018. Container loadings and handling issues accounted for a large number of the infractions (11). This category typically accounts for the highest percentage of violations each year. Progress in prior years to address this area of infractions has been less than adequate, however, this was not considered to be the case for FY 2021. In FY 2021, greater progress was realized on the Container Improvement Plan, general handling procedures were revised toward simplification, and efforts began toward container simplification. Another area of infraction trends was in regard to waste. A campaign was undertaken in FY 2021 to identify “low equity” items throughout the nuclear facilities that historically have been considered to be of no NCS consequence. This campaign resulted in clarifying the NCS program controls for what is considered to be of insufficient fissile material quantity to pose an NCS concern. A third area of infraction trends was in regard to maintenance activities. More specifically, a number of infractions were observed that highlighted communication and coordination concerns between the multitude of organizations involved in the planning, analysis, and execution of maintenance activities. Compensatory actions have been implemented to address the causal factors. However, permanent implementation of corrective measures into command media has yet to take place. Across the year, a strong questioning attitude from a number of organizations was observed by NPO, and responses to site abnormal conditions involving fissile material were conservative and timely. Additionally, infraction severity overall appears to be decreasing.

3. Y-12 Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

There were no identified program non-compliances at Y-12 in FY 2021.

4. Y-12 Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
19	18	18	19	16

5. Y-12 Staffing

Note: Criticality Safety Federal oversight of Pantex, Y-12 and UPF is performed by the NPO.

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	33	14.8	11	6	6	3
Federal	1	12.5	2	1	1	0

Uranium Processing Facility (UPF)

1. UPF Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Note: The Program Health grade reflects the combined performance of the contractor at Y-12, Pantex and the Uranium Processing Facility (UPF). However, the Operational Implementation grade is specific to implementation at this site.

Summary:

The Nuclear Criticality Safety Program (NCSP) at Y-12, Pantex, and UPF is described in document E-SD-2026. The primary focal points for the UPF NCS organization throughout FY 2021 were development of the suite of Criticality Safety Evaluations (CSEs) to support the initial UPF Documented Safety Analysis, and oversight of design, procurement, and construction activities to ensure the requirements set was adequately protected throughout. The UPF project employs the same NCS command media in use at Y-12, with some appropriate adaptations to support a project environment. The suite of command media and guidance documentation at UPF is thorough, and has resulted in the production of high quality CSEs. NCS staffing for the project is adequate, and no issues have been noted with CNS’s ability to modify staffing levels based upon project demand. Overall, the NCS program health meets expectations.

The UPF project has done well in establishing and managing a large set of NCS requirements through the project phases – engineering, procurement, and construction. While ultimate implementation of the vast majority of NCS requirements into verified as-built configurations and operating procedures is years away, the project has already begun to perform NCS requirement implementation tasks to support successful testing and startup. Thus, NCS operational implementation at UPF meets expectations.

The program office agrees with the information provided and concurs with the overall health assessments.

2. UPF Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

There were no identified program non-compliances at the UPF project in FY 2021. The Pantex, UPF, and Y-12 NCS Programs are described in E-SD-2026.

3. UPF Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
1	3	4	1	0

4. UPF Staffing

Note: Criticality Safety Federal oversight of Pantex, Y-12 and UPF is performed by the NPO.

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	20	21	3	11	0	0
Federal	1	12.5	2	1	1	0

Savannah River Plutonium Processing Facility (SRPPF)

1. SRPPF Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: N/A

Summary:

For overall program health of SRNS at SRPPF, NNSA/SRFO gave primarily satisfactory ratings during monthly performance reviews over the reporting period. In one case, SRNS exceeded expectations when staffing up for SRPPF project criticality safety resources. This was shared with the contractor as both project feedback and at one of the criticality safety interface meetings between DOE-SR, NNSA SRFO, and SRNS. An external review conducted by the CSSG identified observations related to project maturity. However, the CSSG did not identify any safety issues. SRNS developed a corrective action plan to address the CSSG observations and after several discussions and comment resolution meetings, NNSA concurred with the CAP via a letter response to the SRNS SRPPF project.

NCS procedures and policies are mature. SRNS NCS conducts its activities in accordance with Criticality Safety Program Description Document (CSPDD) N-NCS-G-00136 revision 6, and Criticality Safety Manual SCD-3 revision 32. The SRNS Nuclear and Criticality Safety Engineering (N&CSE) organization has received adequate funding to support requested staffing levels.

The program office agrees with the information provided and concurs with the overall health assessments.

2. SRPPF Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary: No SRPPF Program non-compliances to report.

3. SRNS SRPPF Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	0	0	0	0

4. SRNS SRPPF Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	7	22.4	4	1	5	0
Federal	1	10	0	0	0	1

Pacific Northwest National Laboratory (PNNL)

1. PNNL Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Summary:

In fiscal year 2021, PNNL implemented a newly revised/DOE approved NCS Program Description and a revised NCS Manual that resolves the Level 1 Finding from the 2018 Pacific Northwest Site Office assessment, 19-PNSO-0151 *Safety System Oversight Report for the Pacific Northwest National Laboratory's Building 325 Criticality Safety Program and Criticality Alarm System*. The program has developed new NCS Evaluations to replace older Basis Memos, reducing operational burden with a mind to reduce Human Performance Errors through removal of unnecessarily prescriptive controls. The program has reviewed all NCS evaluations and retired documents that were no longer applicable. The PNNL NCS Program has hired and is training additional technical staff while managing the shortage in Criticality Safety Engineer-Representatives through dual qualification. Federal program oversight at PNNL has increased through the hiring of a Criticality Safety Specialist by the Field Office. The program continues to hold the NCS Safety Forum and upper management at PNNL continues to be engaged in NCS through the criticality safety committee. The committee is providing more support through communication with mid-level management for research, operations, and facility modifications. New continuous improvement initiatives are in development and work is in progress for completion of those actions this calendar year. The Field and Program Offices are in agreement as to the assessment of the PNNL Program Health and Operational Implementation.

2. PNNL Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Violation	0	0	0
Infraction	0	0	0
Discrepancy	0	0	0
Deviation	2	0	0

Summary:

In March of 2021, there were two instances where the posted fissionable material inventory did not match the inventory in the radiological material tracking (software) inventory. There are no negative trends at this time. The active identification of issues and prompt corrective measures by the contractor demonstrate a good questioning attitude and healthy program.

3. PNNL Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No non-compliances were identified.

4. PNNL Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
1	13	7	4	13

5. PNNL Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	3	16	1	0	1	1
Federal	1	8	0	0	1	0

Environmental Management (EM) HQ Criticality Safety Program

1. Program

The EM conducts field visits and assessments and assists field NCS reviews and assessments. During the pandemic virtual assessments were provided for EM contractors at Idaho, Oak Ridge, Los Alamos, Savannah River, and Hanford.

Topics 2, 3 and 4

N/A

5. EM HQ NCS Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Federal	3	35	0	0.25	0	0

The EM NCS Program Manager has managed NCS programs at two DOE sites and is a member of the department's Criticality Safety Support Group. The EM Field Operations Oversight manager is also qualified to the department's NCS TQP. A third qualified staff was part of the HQ program for three 2021 months and has returned to prior assignment. As noted in the site contractor's conclusions, the HQ and site staff are agreed on status of site NCS programs.

Richland Central Plateau Cleanup Company (CPCCo)

1. CPCCo Overall Performance

Field & Program Office Assessment	Program Health: Exceeds Expectations
	Operational Implementation: Exceeds Expectations

Summary:

The CPCCo criticality safety program was well established and matured with CHPRC prior to contract transition in January 2021. CPCCo retained existing NCS staff and maintained the program for the new contractor. A primary effort is in maintaining the safety management program and ensuring Criticality Safety Engineers will support forecasted work in the future. Criticality Safety Staff have been responsive to DOE and project requests and have self-identified several OFIs. The field office and the program office agree that the NCS program exceeds expectations.

2. CPCCo Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Criticality	0	0	0
Violation	0	0	0
Infraction	0	0	0
Discrepancy	0	0	0
Deviation	0	0	0

Summary:

There were no identified infractions in 2021. Most operations involve less than exempt quantities of fissile material. In the past year, waste drum repackaging operations started up, involving greater than exempt quantities of fissile material. CPCCo is preparing D&D operations of the 224-B, PUREX, and REDOX facilities. These operations have significant potential to exceed exempt quantities of fissile material during D&D of these facilities. CPCCo is working to ensure that the infrastructure is in place before beginning any intrusive activity, including the removal of fissile material.

3. CPCCo Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

Activities beyond surveillance and maintenance are being planned for three former processing facilities. Effort is being made by the CPCCo criticality safety staff to ensure that any activity involving greater than exempt quantities of fissile material adhere to the requirements of the CPCCo Criticality Safety Program. No program non-compliances were identified in 2021. This was expected due to the pace of work in the last year.

4. CPCCo Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	0	0	0	0

5. CPCCo Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	2	30+	0	0	0	0
Federal	2	12	2	0	0	0

Note: Federal staffing is combined for CPCCo, WTP, and Tank Farms.

River Protection WTP

1. WTP Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Not Applicable

Summary:

WTP and its NCS program has not fully transitioned from a construction site to an operational facility. However, as startup begins, the transition of the NCS program for an operating facility may be minimally adequate with respect to staffing. Staff recruitment and turnover is being tracked to monitor these levels for facility startup. The field office and the program office agree that the NCS program meets minimum expectations for construction activities.

2. WTP Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

The contractor provided a self-assessment this year. A scheduled field office and HQ independent assessment was delayed. The contractor has committed to supporting the independent assessment by June 1, 2022.

3. WTP Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	0	0	0	0

4. WTP Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	2	9	0	2	1	0
Federal	2	12	2	0	0	0

Note: Federal staffing is combined for CPCCo, WTP, and Tank Farms.

River Protection Tank Farms

1. Tank Farms Overall Performance

Field & Program Office Assessment	Program Health: Meet Expectation
	Operational Implementation: Meet Expectation

Summary:

The field office and program office agree that the Tank Farms criticality safety program is well established with adequate funding that includes external source funding for retrieval technology development and waste composition benchmarks.

2. Tank Farms Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	0	0	0

Summary:

There were no infractions in 2021.

3. Tank Farms Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	1

Summary:

One non-compliance was identified concerning NCS documentation that does not require a CSER. The contractor is working with DOE to address the issue.

4. Tank Farms Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
4	10	7	9	4

5. Tank Farms Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	2	25	0	1	1	0
Federal	2	12	2	0	0	0

Note: Federal staffing is combined for CPCCo, WTP, and Tank Farms.

Idaho Flour Idaho LLC

1. Flour Idaho Overall Performance

Field & Program Office Assessment	Program Health: Exceeds Expectations
	Operational Implementation: Exceeds Expectations

Summary:

The field office and the program office agree that the ICP Criticality Safety Program is a mature program with a well written DOE-approved Program Description Document. The ICP Criticality Safety Program has satisfied the requirements of the ANSI/ANS 8 series standards reviewed. Documents that were reviewed were found to be satisfactory, appropriately addressing program and operating requirements.

2. Flour Idaho Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	0	0	0

Summary:

The contractor’s self-assessment program is mature and has not identified any significant issues. The field office and the EM program office likewise have not identified any significant issues.

3. Flour Idaho Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No program non-compliances were identified.

4. Flour Idaho Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	0	0	0	0

5. Flour Idaho Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	3	23	0	0	0	0
Federal	1	25	1	0	0	0

Oak Ridge UCOR

1. UCOR Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Summary:

The UCOR NCS program is functioning well and has provided adequate support for the various projects. The UCOR NCS program has had two NCS infractions for 2021 that were independent of one another and does not indicate any negative trend with the program. Overall, the field office and the program office conclude the UCOR NCS program is functioning well.

2. UCOR Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	1	0	0
Level 5	1	0	0

Summary:

The contractor self-identified two nuclear criticality safety infractions for 2021. The two infractions are independent of one another and do not suggest a negative trend with the nuclear criticality safety program. A short description of each of the infractions is listed below:

ACR-OR-21-0001, severity level 5: During a surveillance of the NCS Evaluation (NCSE), it was discovered that TRU waste containers were stored in facilities that were not specifically identified in the NCSE. A control specified that TRU waste containers could be stored at “hillside bunkers”, but there was no explanation in the document of what facilities were hillside bunkers.

ACR-OR-21-0002, severity level 4: Legacy source material was discovered in Building 3001. During a visual inspection by project personnel of a 4-drawer filing cabinet, various items were identified as possibly containing fissile material. The project contacted NCS and an ACR was declared to control the movement of the material in question.

3. UCOR Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No program non-compliances were identified.

4. UCOR Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
1	2	2	1	0

5. UCOR Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	5	15	0	0	1	0
Federal	1	41	3	1	2	0

Note: Federal oversight is combined for UCOR, Isotek Systems, LLC (Isotek), and Transuranic (TRU) Waste Processing Center (TWPC).

Oak Ridge Isotek

1. Isotek Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Summary:

The Isotek NCS program is functioning properly. The past year the Isotek NCS program has developed NCS evaluations for a new operation. The NCS evaluations are well written, and the implementation of the controls has been executed well. The field office and the program office see the Isotek NCS program as functioning well overall.

2. Isotek Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	0	0	0

Summary:

No infractions were identified.

3. Isotek Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No program non-compliances were identified.

4. Isotek Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	0	0	0	0

5. Isotek Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	5	30	0	0	0	0
Federal	1	41	3	1	2	0

Note: Federal oversight is combined for UCOR, Isotek Systems, LLC (Isotek), and Transuranic (TRU) Waste Processing Center (TWPC).

Oak Ridge TWPC

1. TWPC Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Summary:

The field office and the program office agree that the TWPC NCS Program is functioning well overall. It has sufficient staffing for the scope of the project being performed at TWPC.

2. TWPC Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	0	0	0

Summary:

No infractions were identified.

3. TWPC Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No program non-compliances were identified.

4. TWPC Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	0	0	0	0

5. TWPC Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	3	31	0	0	0	0
Federal	1	41	3	1	2	0

Note: Federal oversight is combined for UCOR, Isotek Systems, LLC (Isotek), and Transuranic (TRU) Waste Processing Center (TWPC).

Savannah River Nuclear Solutions (SRNS)

1. SRNS Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Summary:

DOE-SR-EM provides criticality safety coverage for SRNS operating facilities and the Surplus Plutonium Disposition (SPD) project. While SPD is an NNSA project, it is being constructed within an existing operating EM facility and therefore DOE-SR supports criticality safety for SPD.

For overall program health of SRNS, DOE-SR gave primarily satisfactory ratings during monthly performance reviews over the reporting period with one month being rated at a higher grade due to their level of effort to proactively hire NCS staff.

SRNS has maintained its self-assessment schedule on their operating facilities throughout the performance period. NCS procedures and policies are mature. SRNS NCS conducts its activities in accordance with Criticality Safety Program Description Document (CSPDD) N-NCS-G-00136 revision 6, and Criticality Safety Manual SCD-3 revision 32. The SRNS Nuclear and Criticality Safety Engineering (N&CSE) organization has received adequate funding to support requested staffing levels. The program office agrees with this summary.

2. SRNS Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	2	0	0

Summary:

SRNS identified two Level 5 criticality safety infractions. One involved an errant lab sample showing a higher than acceptable mass limit on an evaporator feed tank prior to transfer to the evaporator. The facility notified criticality safety and no transfer of material was undertaken. Further investigation determined the lab sample was in error and no limit had been exceeded. This was cited as a criticality safety infraction since failures in lab sampling has connotations for potentially inaccurate sample results leading to non-conservative operations.

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Another infraction involved a dropped fuel bundle on top of the Bundle Storage Rack while attempting to load the bundle into the rack. Proper actions were taken including a timeout and notifying criticality safety. This upset had been analyzed in the criticality safety evaluation and was determined to not result in a criticality. Both operations and criticality safety staff inspected the dropped bundle and the bundles that were involved for noticeable damage, and no damage was observed. The dropped bundle was safely and properly loaded into the storage rack.

While no adverse trends have been noted, the SRNS program identification of criticality safety infractions will aid in future trending.

3. SRNS Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No Program Non-compliances were identified.

4. SRNS Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
3	7	6	2	2

5. SRNS Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	23	19	10	4	4	5
Federal	3	10	2	0	0	1

Note: Federal oversight is combined for Savannah River Nuclear Solution (SRNS), Parsons Infrastructure and Technology Group, Inc. (Parsons), and Savannah River Remediation (SRR).

Savannah River Parsons

1. Parsons Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Summary:

For overall program health of Parsons, DOE-SR gave satisfactory ratings during monthly performance reviews over the reporting period. The program office agrees.

Parsons has maintained its self-assessment schedule on their operating facilities throughout the performance period. Parsons NCS conducts its activities in accordance with its Criticality Safety Program. The Parsons Nuclear and Criticality Safety Engineering (N&CSE) organization uses augmented staff support to support staffing levels to meet a minimum requirement.

2. Parsons Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	0	0	0

Summary:

No Criticality Safety Infractions were identified.

3. Parsons Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No Program Non-compliances were identified.

4. Parsons Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	0	0	0	0

5. Parsons Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	1	25	0	0	0	1
Federal	3	10	2	0	0	1

Note: Federal oversight is combined for SRNS, Parsons, and SRR.

Savannah River Remediation (SRR)

1. SRR Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Summary:

For overall program health of SRR, DOE-SR gave satisfactory ratings during monthly performance reviews over the reporting period. The program office agrees.

SRR has maintained its self-assessment schedule on their operating facilities throughout the performance period. NCS procedures and policies are mature. SRR NCS conducts its activities in accordance with Criticality Safety Program Description Document (CSPDD) N-NCS-G-00136 revision 6, and Criticality Safety Manual SCD-3 revision 32. The SRR Nuclear and Criticality Safety Engineering (N&CSE) organization has received adequate funding to support requested staffing levels.

2. SRR Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	0	0	0

Summary:

No Criticality Safety Infractions were identified.

3. SRR Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
1	0	0

Summary:

The one non-compliance issue was an administrative error that led to loss of documentation of the review of several procedures that include Criticality Safety implementing steps. A complete

review was performed of the affected procedures and resulted in no significant corrections. The non-compliance issue was closed in FY2021, and a more robust procedure process was implemented to prevent future occurrences.

4. SRR Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
8	2	8	2	2

5. SRR Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	3	15.3	2	0	0	0
Federal	3	10	2	0	0	1

Note: Federal oversight is combined for SRNS, Parsons, and SRR.

Environmental Management Los Alamos (EMLA)

1. EMLA Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Adequate but needs Improvement

Summary:

Contractor N3B inherited a criticality safety program which they wished to upgrade. Visible progress has been made. The Program Descriptive Document outlines a compliant program, and the Criticality Safety Evaluations meet industry standards and regulatory requirements. The Conduct of Operations status regarding NCS limits and controls is better, as evidenced by closure of identified issues, but needs improvement. The contractor has self-identified improvement opportunities with the informal concurrence of EM-LA and is actioning those at an adequate pace. EMLA and N3B held discussions associated with some programmatic and operational issues and N3B subsequently identified some needed corrections and developed a CAP to address those issues. The actions in the CAP have been completed and the program is progressing. The field and program office share this view.

2. EMLA Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	2	0	0
Level 5	0	0	0

Summary:

- Failure to apply twice the Total Measurement Uncertainty (2*TMU) to nondestructive assay (NDA) results for compliance with NCS limits.
- Drum interaction. The 10 ft spacing was not maintained.

3. EMLA Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
2	0	0

Summary:

Both program non-compliances involved not maintaining required spacing between storage containers in area G and uncertainty application.

4. EMLA Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	6	6	0	0

5. EMLA Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	5	14.2	0	1	4	0
Federal	0	N/A	0	0	0	1

Note: EM HQ is providing NCS support as needed to the field office.

Waste Isolation Pilot Plant (WIPP)

1. WIPP Overall Performance

Field & Program Office Assessment	Program Health: Meets Expectations
	Operational Implementation: Meets Expectations

Summary:

The WIPP NCS program is mature and functioning well. No infractions or non-compliances were identified. Overall, the field office and the program office conclude the WIPP NCS program is meeting expectations.

2. WIPP Criticality Safety Infractions

Infraction Category	Identified by:		
	Contractor	Field Office	DOE Headquarters
Level 1	0	0	0
Level 2	0	0	0
Level 3	0	0	0
Level 4	0	0	0
Level 5	0	0	0

Summary:

No infractions were identified.

3. WIPP Program Non-Compliances

Identified by:		
Contractor	Field Office	DOE Headquarters
0	0	0

Summary:

No program non-compliances were identified.

4. WIPP Issues from the Issues Management System

Open at the Start of the Year	Added During the Year	Closed During the Year	Open for Longer than 6 Months	Open for Longer than 1 year
0	7	6	1	0

5. WIPP Staffing

Organization	Qualified	Average Experience	In Training	Staff Lost	Staff Hired	Vacancies
Contractor	2	30	4	2	2	1
Federal	2	20	0	1	0	2