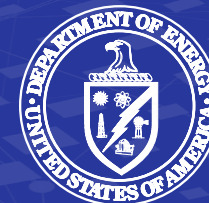


National Criticality Experiments Research Center Criticality Safety Program at the Nevada National Security Site (NNSS)

Response to DNFSB Letter dated June 16, 2022



Introduction

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- On June 16, 2022, DOE (S-1) received the DNFSB's results of the of Nevada National Security Site (NNSS) National Criticality Experiments Research Center (NCERC) criticality safety program.
- Several issues were identified including:
 1. Inconsistencies between the integrated criticality safety program used at NCERC and the applicable LANL corporate program:
 - Procedure Development for Fissionable Material Operations
 - Annual Fissionable Material Operation Review (FMOR);
 2. Inadequate consideration of the impact of changes in the site-specific seismic hazard on NCERC's criticality safety evaluations;
 3. Insufficient metrics for federal safety oversight to measure health of the integrated criticality safety program; and
 4. Insufficient criticality safety analyst (CSA) support at NCERC.
- On October 6, 2022, NA-1 responded via letter and enclosure to the DNFSB issues (including DNFSB's three safety questions).

NNSA Contributors for Board Briefing

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- Dr. Kelli Markham, Acting Deputy Associate Administrator, NNSA (NA-ESH-20)
- Dr. Angela Chambers, DOE NCSP Manager, NNSA NA-ESH-21
- Mr. Chris Fischahs, Nuclear Engineer, NNSA Los Alamos Field Office (NA-LA)
- Mr. Brian Clifton, Assistant Manager for Operations and Safety, NNSA Nevada Field Office (NA-NV)

NCERC Background

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- Mission Support Test Services, LLC is the primary operator of NNSS and the DAF, Los Alamos National Laboratory (LANL) operates the NCERC under a secondary real estate operations permit with MSTTS.
- NCERC is a unique and irreplaceable national asset for:
 - Providing hands-on training for DOE NCS engineers and evaluators;
 - Providing criticality safety training for emergency responders, operations supervisors, managers, criticality safety officers, and fissile material handlers;
 - Conducting nuclear accident dosimetry exercises;
 - Conducting integral experiment campaigns to validate NCS evaluations and nuclear data
- NCERC Federal Oversight Activities (Memorandum of Agreement).
 - The day-to-day operational oversight of criticality safety activities conducted by Los Alamos are performed by the Nevada Field Office
 - The programmatic oversight of the overall crit safety program utilizes the oversight conducted by the Nevada Field Office at NCERC in addition to the activities overseen at other NA-LA facilities to provide the basis for the oversight of the LA crit safety program

DNFSB Reporting Requirements

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Safety Question 1 – In light of the identified safety concerns and inconsistencies between the integrated criticality safety program used at NCERC and the applicable LANL corporate program, what is NNSA's evaluation of the criticality safety program implemented at NCERC?

Response to DNFSB Safety Question 1

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- NNSA's Evaluation of NCERC Criticality Safety Program
 - Bottom Line: NNSA's review of DNFSB-identified issues noted weaknesses in the Nuclear Criticality Safety Program at NCERC, but **no immediate safety issues**.
 - All of the DNFSB-identified issues, including the procedural issues, have been or are being addressed.
 - NNSA is taking measures to enhance safe and efficient work practices at NCERC (**see Responses to Safety Questions 2-3**).
 - NA-LA has scheduled an independent assessment of the LANL Nuclear Criticality Safety Program (focus on NFO/NA-LA MOA and effectiveness of corrective actions) at NCERC in April 2023.

DNFSB Reporting Requirements

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Safety Question 2 – Considering the safety concerns identified in the attached report regarding federal safety oversight of NCERC operations, what is NNSA's evaluation of the effectiveness of federal safety oversight of the criticality safety program at NCERC?

Response to DNFSB Safety Question 2

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- **Bottom Line:** Federal safety oversight *NCERC* operations is adequate to ensure safe and compliant operations.
- NNSA has identified a need for improving the coordination of DOE/NNSA's oversight of the contractor's performance at NCERC, with NA-LA and DOE/NNSA Headquarters (HQ) augmenting NA-NV's routine oversight activities.
 - DOE/NNSA HQ:
 - increased NCERC LANL Criticality Safety Analyst availability to 0.75 FTE (through the NCSP).
 - will integrate its activities that gather criticality safety program updates at NCERC as it does for all NNSA sites (i.e., the triannual checkerboard)
 - will continue to conduct the BRs that evaluate the effectiveness of field office safety management program oversight
 - will breakout NCERC-related data in the next Annual Criticality Safety Report
 - NFO will continue to coordinate and improve oversight activities (e.g., FRs) w/in DAF (Safety Roles & Responsibilities)
 - NA-LA (lead) will continue oversight of Criticality Safety Program and will better communicate and integrate planned assessments with NFO for CY23 (SIAP).

DNFSB Reporting Requirements

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Safety Question 3 – Based on these evaluations, what safety corrective actions, if any, are being taken by NNSA?

Response to DNFSB Safety Question 3

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Immediate Attention

- NNSA promptly conducted a comprehensive review of the DNFSB's NCERC report and determined **no immediate** compensatory measures were needed.
 - However, NNSA promptly initiated several actions to address DNFSB concerns and developed strategies to address longer term issues

Local and Corporate Program Inconsistency

- LANL will revise CEF-ADM-004, Joint Laboratory Office – Nevada, NCERC Document *Processing and Use*, used at NCERC for developing technical procedures to address inconsistencies between the integrated criticality safety program used at NCERC and the LANL Corporate program.

Seismic concerns

- NNSA evaluated the DNFSB's concern regarding inadequate consideration of impacts of increased seismic hazard and revised the technical document, NCS-TECH-19-014, *Criticality Safety Review of the Fire Suppression System and Seismic Events in the Device Assembly Facility at the Nevada National Security Site*, Revision 0, dated May 12, 2020, to address most of the DNFSB concerns.
 - Revision 1 confirms that the increased seismic hazards have no impact on existing criticality safety evaluations used at NCERC because the evaluations are all bounded by full water flooding and toppling, as applicable.

Response to DNFSB Safety Question 3 (cont'd)

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Insufficient metrics for federal safety oversight

- NA-NV and NA-LA, jointly, introduced new Nuclear Criticality Safety Program metrics tailored specifically towards NCERC and NNSS operations.
 - The new metrics will track such information as Nuclear Criticality Safety criticality safety analyst (CSA) onsite availability and LANL Nuclear Criticality Safety staff qualification at NCERC in addition to the existing metrics that relay information on topics such as the criticality safety infraction index (e.g., control process deviations, infraction severity).
 - Tracking of these new metrics began in October 2022 (FY23); reported quarterly at the site level.
 - Beginning in FY23, the NCS Program at NCERC **will be separately included** in the DNFSB Annual Report for Criticality Safety.

Response to DNFSB Safety Question 3 (Cont'd)

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Addressing Criticality Safety Analyst Staffing at NCERC

- LANL and the NA-LA/NA-ESH evaluated options for increasing the onsite presence of LANL Criticality Safety Analyst availability at NCERC.
 - LANL CSA availability for NCERC was ~ 0.25 FTE. LANL NCSD has committed to providing 0.75 FTE availability of CSA support to NCERC and its operations, procedure review and revisions, and as-needed on-site support.
 - This availability/support is being funded via the NNSA NCSP (Angela Chambers) and being tracked via the quarterly metrics.
- The LANL Nuclear Criticality Safety Division will continue to qualify three (3) Criticality Safety Analysts for NCERC to meet Nuclear Criticality Safety programmatic requirements in the technical aspects associated with NEN activities

Summary

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- Activities and Operations under NNSS' Criticality Safety Program at NCERC are safe to accomplish various missions including:
 - Conduct of experiments to improve criticality safety issues through the complex, and
 - Train DOE/NNSA staff and DNFSB Staff.
- NNSA recognizes specific opportunities for criticality safety program improvement to ensure adequate protection of workers, the public, and the environment.
- NCERC criticality safety program improvements have been implemented or are being implemented.
- NNSS NCERC Criticality Safety Program enhancements will directly address concerns raised by DNFSB staff.

Questions?