

# NNSA Production Office

## Y-12 NATIONAL SECURITY COMPLEX NUCLEAR CRITICALITY SAFETY (NCS) PROGRAM AND DISCIPLINED OPERATIONS

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**APPROVED FOR PUBLIC RELEASE**  
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Date: 04/12/2021

This document has been reviewed by a CNS Dual Authority DC/RO and confirmed to be UNCLASSIFIED and contains no UCNI.  
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# Discussion Topics

## NPO Oversight

- Lessons Learned post Uranium Accumulation Events (1b)
- Managing, Evaluating, and Improving Y-12 NCS Program Performance (1b)
- NCS Program Health (1)

## Y-12 NCS Improvement Actions

- Key CNS Programmatic Improvements since 2017 (1a)

## Key Focus Areas

- Disciplined Operations
  - Personnel Error-related NCS Infractions (2c)
  - Organizational Interface Issues (2b)
- Training
- Process Drift
- Large Geometry Exclusion Area Program (2a)
- Out of Service Equipment
- Criticality Safety Evaluations (2d)
- Repeat infractions (2e)

\*Item in parenthesis correlates discussion topic to those listed on briefing agenda provided by DNFSB 3/1/21

## Conclusions

## Other Topics

- Contract Transition (1c)
- Disciplined Operations Council (3)
- Contamination Events (4)

# NPO Oversight – Lessons Learned post Uranium Accumulation Events

- Uranium accumulation events highlighted areas of needed improvement within CNS, and also with NPO oversight
- Key Lessons Learned from events and identified contributing causes distilled into oversight focus areas of:

***Urgency***

***Accountability***

***Integration***

***Engagement***

***Transparency***



# NPO Oversight - Managing, Evaluating, and Improving Y-12 NCS Program Performance

## NPO oversight model executed with greater depth and increased frequency

- Continued working level monitoring of NCS program execution
- Enhancement of routine Executive Leadership Team NCS program monitoring
- Engagement of independent assessors (NA-50)
- Integration of NCS oversight across NPO disciplines
- Increased NPO NCS Subject Matter Expert(s) presence in the field
- Real-time evaluation of emerging infractions
- Critical review of CNS corrective actions from development to implementation



# NPO Oversight – NCS Program Health

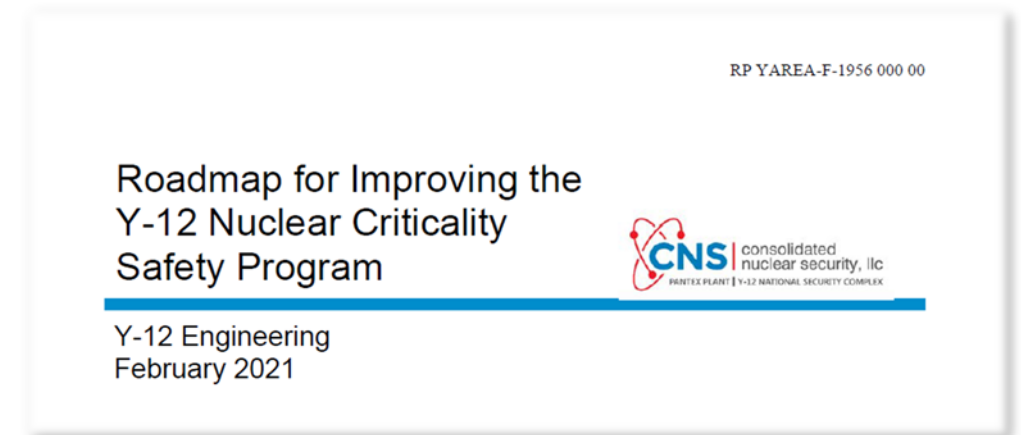
- **The NCS Program at Y-12 is increasing in health**
  - E-SD-2026, *Enterprise Nuclear Criticality Safety Program Description*
  - Non-compliances are being identified and resolved
  - NCS corrective actions are being aggressively managed, and seen to completion
  - Responsibility for NCS is increasing across organizations
  - Infraction severity is decreasing
  - Organizational culture improving toward NCS

**The NCS Program at Y-12 is being implemented  
in a manner that ensures safe operations**

# Y-12 NCS Improvement Actions

**“Roadmap” document provides an excellent overview of NCS program improvements – both completed and planned.**

- Key program improvements include:
  - Greatly increased executive level engagement by both CNS and NPO
  - Enhanced, transparent and aggressive management of criticality safety related corrective actions and improvements via the CNS integrated schedule
    - Concept initiated and closely monitored by NPO
  - Standup of a new CNS organization, led by a Senior Director, to manage and champion site-wide NCS integration
  - Establishment of the Disciplined Operations Council (DOC)
  - Myriad actions to improve and strengthen elements relied upon by the NCS program, such as: IAPP, LGEA, Conduct of Operations, Training, NCS Evaluations



# Key Focus Areas – Disciplined Operations

## Background

- Disciplined Operations –driving towards a culture of organizational learning that will lead to sustained excellence

## NPO Oversight Actions

- Opened NPO Management Concern (MC) to address increased rate of infractions due to personnel error
  - Feedback focused on greater urgency and depth of analysis
  - Driving streamlined material handling practices and metrics enhancements
- NPO identified recent NCS infractions that highlighted organizational interface issues

## CNS Actions

- CNS is actively working actions to institutionalize new organizational interface practices, material handling practices, and metrics

# Key Focus Areas – Training

## Background

- Focus on improving operator knowledge of NCS controls and recognition of abnormal conditions

## NPO Oversight Actions

- NPO oversight has been substantial, shaping corrective action timeliness and effectiveness
  - FY19 independent assessment of NCS and conduct of operations training identified MC
  - Feedback spanned technical to managerial improvements
  - Accelerated rollout of more in-depth NCS training

## CNS Actions

- CNS is nearing full deployment of new on-the-job training framework that will deliver a greater depth of knowledge in a more structured environment





# Key Focus Areas – Unintended Process Change (Process Drift)

## Background

- Identified as a primary contributing factor to Uranium Accumulation issues

## NPO Oversight Actions

- NPO assessments highlighted a lack of progress on process drift actions
  - Feedback cited strategic issues
  - Drove completion of a barrier analysis and documented, controlled strategy

## CNS Actions

- CNS is nearing completion of actions to strengthen process engineer knowledge and field presence, including:
  - Formal qualification, to include process-specific NCS and more in-depth process training
  - Enhanced expectations for upkeep and detail in process descriptions
  - Statistical process control for early identification of trends that may indicate drift



# Key Focus Areas – Large Geometry Exclusion Area (LGEA) Program

## Background

- Assessments conducted in August 2018 (NPO) and January 2020 (CNS) identified a number of issues with the LGEA program

## NPO Oversight Actions

- Reactive assessment by NPO as a result of two deficiencies encountered Aug.-Sept. 2020
- Reactive Assessment concluded corrective actions taken to date did not appear effective
  - Additional corrective actions remain to be completed
  - NPO will reassess in 4<sup>th</sup> quarter FY2021
- Since reactive assessment:
  - NPO oversight in this areas has increased by conducting focused facility walkdowns
  - Trend of infractions has improved

## CNS Actions

- Significant number of actions completed as a result of CNS LGEA assessment January 2020
- Corrective actions identified as a result of each noncompliance

# Key Focus Areas – Out-of-Service (OOS) Equipment

## Background

- Accumulation concerns progressed to OOS equipment after evaluation of active equipment

## NPO Oversight Actions

- Close monitoring of OOS equipment EOC reviews, establishment of analysis, and completion of corrective actions
- Encouraged CNS urgently characterize and/or cleanout identified deposits in OOS processes of concern
- Frequent communication with CNS coupled with NPO walkdowns on recent “legacy items” non-compliances
- NPO recommended establishment of a comprehensive “legacy item” plan and schedule

## CNS Actions

- New comprehensive analysis built to modern standards for OOS equipment
- Cleanout and physical isolation of OOS systems from active systems occurring at greater pace
- Development of comprehensive plan for legacy items



# Key Focus Areas – Criticality Safety Evaluations

## Background

- NPO has grown concerned over CSE Update progress

## NPO Oversight Actions

- Concern communicated to CNS with expectation for greater progress and urgency
- Two NPO integrated assessments of CSEs underway, with focus areas of:
  - CSE prioritization and quality
  - CSE requirements implementation
- Monthly schedule status briefing in place at NPO ELT request

## CNS Actions

- FY21 commitment to update 25 CSEs
- All CSE Updates loaded into the integrated schedule
- Criticality Safety Program Description revised to include 5 year CSE update goal



# Key Focus Areas – Repeat Infractions (Recurrence)

## Background

- Issue recurrence is an area of focus as it provides a potential indicator of broader issues

## NPO Oversight Actions

- NPO review of all non-compliances and incorporation of review into standard escalation meeting with NPO mgmt.
  - Each review and communication focused on safety considerations of event and adequacy of CNS actions underway
- Routine questioning to CNS on recurrence and expanded applicability of corrective actions
- NPO is closely engaged with CNS to ensure effective formal metrics are established and exercised for noncompliance trending

## CNS Actions

- Part of CNS Corrective Action Review Board function to track and trend non-compliances, including examination of recurrence
- Generation of new metrics in Roadmap

## Conclusions

- **The Y-12 NCS Program assures safety and is improving**
  - The NCS Program at Y-12 is being implemented in a manner that ensures safe operations
  - The NCS Program at Y-12 is increasing in health
  - NPO and CNS have a common vision for program excellence
  - NPO is committed to advancing the NCS program to be the benchmark for the DOE complex
  
- **NPO oversight of the NCS program is effective**
  - Expectations for depth and frequency of NPO oversight are higher
  - NPO oversight is pushing improvements to be realized in NCS program
  - Building on LLs to increase awareness of the NCS program from working level to senior leadership

# Other Topics

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- Contract Transition
- DOC
- Contamination Events

