

## CONDUCT OF ENGINEERING (CE)

### OBJECTIVE

**CE.1:** NNSA Site Office oversight activities, as supported by appropriate processes and procedures, ensure that nuclear facilities are designed and constructed to ensure adequate protection of the public, workers, and the environment, and that key nuclear facility design requirements are maintained and verified through an effective configuration management (CM) process and system engineer (SE) program.

### CRITERIA

1. NNSA Site Office processes and procedures define roles and responsibilities for engineering duties and tasks such as approval of nuclear safety design criteria, review and approval of preliminary documented safety analyses (PDSAs), and formal design reviews, including design changes and modifications to nuclear facility capital projects and major modifications (10 CFR Part 830.206, NA-1 SD 411.1-1C, , DOE O 414.1C).
2. NNSA Site Office processes and procedures ensure that nuclear safety design criteria selected for safety structures, systems, and components (SSCs) identified in the PDSAs are consistent with the requirements of DOE O 420.1B; that the Central Technical Authority (CTA) formally concurs with deviations from these requirements; and that detailed applications of nuclear facility SSC design requirements are guided by the safety analyses that identify and establish safety SSC functional requirements (DOE O 226.1A, 10 CFR Part 830.206, DOE O 420.1B, NA-1 SD 411.1-1C).
3. NNSA Site Office has established formal expectations for Safety System Oversight (SSO) duties and tasks identified in DOE O 426.11, and personnel are being adequately trained and qualified (DOE O 226.1A, DOE O 426.1, NA-1 SD 226.1A).
4. NNSA Site Office oversight and assessment activities include SSO operability reviews, surveillance of ongoing nuclear safety SSC design, procurement, construction, and acceptance testing and verifying effective implementation of the Site Contractor SE program and CM process in meeting the requirements of DOE O 420.1B (DOE O 226.1A, NA-1 SD 226.1A, DOE O 420.1B).
5. Issues identified during previous reviews (e.g. CDNS Biennial Reviews, HSS reviews, self-assessments) have been appropriately resolved, corrective actions have been completed and are adequate, or a clear path to completion is indicated (DOE O 226.1A; NA-1 SD 226.1A).
6. The Site Office has sufficient staff, and assigned personnel have adequate technical competence, to oversee the performance of the contractor in this functional area (NA-1 SD 411.1-1C).

### APPROACH

#### References:

- 10 CFR Part 830, *Nuclear Safety Management*
- DOE O 226.1A, *Implementation of Department of Energy Oversight Policy*
- DOE O 414.1C, *Quality Assurance*
- DOE O 420.1B, *Facility Safety*
- DOE O 426.1, *Federal Technical Capability*
- NA-1 SD 411.1-1C, *NNSA Safety Management Functions, Responsibilities and Authorities Manual*
- NA-1 SD 226.1A, *NNSA Line Oversight and Contractor Assurance System Supplemental Directive*
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#### Record Review:

- Review Site Office processes and procedures to determine whether roles and responsibilities have been defined for approving nuclear design criteria, PDSAs, and formal design reviews, to include design changes and modifications to nuclear facility capital projects and major modifications.
- Review Site Office project management processes to determine whether they address roles and responsibilities for nuclear facility project management and include steps to ensure that hazards analyses and standards identification are integrated with the appropriate project milestones.
- Review the Site Office TQP program to determine whether it includes SSO training requirements.
- Review the Site Office master assessment schedule to determine the status of the Site Office's evaluation of the contractor's SE program and CM process, particularly in the areas of SSC design, procurement, construction, and acceptance testing.
- Review the NNSA Site Office staffing plan and current staffing levels to determine whether there is adequate and sufficient staff assigned to this functional area.
- Review completed Site Office assessments of the nuclear facility CM process and evaluate whether these assessments verify effective CM process implementation

- Review completed Site Office nuclear facility safety SSC operability assessments and evaluate whether these assessments demonstrate that nuclear facility safety SSCs can perform their intended safety functions when needed.
- Review completed Site Office assessments of the contractor SE program and activities and evaluate whether these assessments demonstrate that the CSEs are effectively performing their required duties and tasks.
- Review selected nuclear facility safety SSC design, procurement, installation, and testing records to determine whether the contractor has effectively incorporated the requirements of DOE O 420.1B in these processes.
- Review Site Office nuclear facility project management oversight plans and assessment schedules to determine whether the planned assessments adequately assess the level of engineering necessary to ensure that installed safety SSCs can perform their required safety functions when needed.

#### Interviews:

- Interview Site Office SSO and project management personnel to assess their understanding and implementation of their duties and responsibilities associated with nuclear facility project management and oversight.
- Interview Site Office personnel to discuss master assessment schedules, periodic assessments performed, status of assessments, and the issues management process.
- Interview Site Office personnel to determine if their workload is consistent with their primary assignments.

#### Observations:

- If possible, observe Site Office oversight of the contractor in this functional area.