Nuclear Safety Management

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Nuclear Safety Management

- 10 CFR 830 – Nuclear Safety Management
  Subpart A – Quality Assurance Requirements
  Subject B – Safety Basis Requirements

- Subpart B issued February 9, 2001

- Superceded DOE Orders 5480.21, .22, and .23

- Implementation Guides
  DOE G – 421.1 – 2 (DSAs)
  DOE G – 423.1 – 1 (TSRs)
  DOE G – 424.1 – 1 (USQs)

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- DOE O 420.1A (Facility Safety)
- DOE O 425.1C (Startup and Restart of Nuclear Facilities)
- DOE – STD – 1027 (Hazard Categorization)
- DOE – STD – 3009 (SARs)
- DOE – STD – 3011 (BIOs)
- DOE – STD – 1120 (Integration of ESH into Facility Disposition Activities)
- DOE O 460.1B (P&T Safety)

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10 CFR 830, Subpart B

830.200 Scope

Applies only to Hazard Category 1, 2, or 3 Nuclear Facilities

Contractors Must categorizes the facility consistent with DOE-STD-1027-92 based on radionuclide inventory

830.201 Performance of Work

- Contractor responsible for a nuclear facility must perform work in accordance with the Safety Basis for the facility
- The Safety Basis is the Documented Safety Analysis and hazard controls that provide reasonable assurance that the facility can be operated safely **(provides risk envelope approved by DOE)**

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830. 202 Safety Basis

Contractor must

- Define the scope of work and identify and analyze the hazards associated with the work
- Prepare a DSA for the facility
- Establish the hazard controls upon which the contractor will rely
- Maintain the safety basis current

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830. 204 Documented Safety Analysis

Contractor must:

- Develop a DSA using a methodology set forth in Table 2 of Appendix A to the rule or obtain DOE approval of an alternate methodology
- Describe the facility and identify the hazards associated with the facility
- Evaluate normal, abnormal, and accident conditions
- Derive the hazard controls (TSRs or other) necessary to protect workers, the public, and the environment
- Define the Safety Management Programs necessary to ensure safe operation
- Define a criticality safety program, if appropriate

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Safe Harbor Methodologies for DSAs include:

- Nonreactor nuclear facility - DOE-STD-3009
- Limited life nuclear facility - DOE-STD-3009 or DOE-STD-3011
- Deactivation of a nuclear facility – same as above
- Decommissioning of a nuclear facility- DOE-STD-1120 and 29 CFR 1910. 120
- Environmental Restoration activity – same as above
- HC 3 nuclear facility - Chapter 2, 3, 4, and 5 of DOE-STD-3009
- Transportation activities - DOE O 460.1A and guide (SARP – offsite, TSD onsite)

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830. 205 Technical Safety Requirements

Contractor must:

- Develop TSRs derived from the DSA
- Obtain DOE approval of new or revised TSRs prior to use
- Notify DOE of TSR violations

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TSRs are derived from the Hazards and Accidents Analyses, and consist of:

- Safety Limits
- Limited Controls Settings
- Limiting Conditions for Operation
- Surveillance Requirements
- Administrative Controls
- Passive Design Features

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830. 206 Preliminary DSA

For construction of a new nuclear facility or a major modification to an existing facility beginning after 12-11-00, contractor must:

- Prepare a PDSA
- Use nuclear safety design criteria in DOE 0 420.1 or obtain DOE approval of alternate criteria
- Obtain DOE approval of the PDSA prior to procurement or construction (DOE may authorize limited procurement of construction prior to PDSA approval)

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Safety Analysis Process

- Hazard Analysis
- Accident Analysis
- Derivation of TSR controls

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The purpose of the Hazards Analysis is to:

- Identify the hazards
- Categorize the facility
- Analyze the hazards per recognized methodology
- Identify unique and representative accidents to be carried forward to accident analysis
- Designate Safety Significant controls

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The purpose of Accident Analysis is to:

- Identify the subset of Safety Significant controls which warrant elevation to Safety Class based on comparison of accident consequences to the Evaluation Guideline of 25 Rem to the offsite public
- Unmitigated releases should be compared against the EG to determine whether they “challenge” the EG
- Releases exceeding the EG should be addressed by Safety Class controls

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Safety Structures, Systems, or Component (SSC):

Safety Significant SS

- SSC which is a major contributor to defense in depth or worker safety
- Addresses Onsite impacts

Safety Class SC

- SSC which is necessary to limit radiological exposure of the offsite public
- Addresses Offsite impacts

Important to Safety –

- Other systems that perform an important Defense-in-Depth function

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830. 203 Unreviewed Safety Questions

Contractor must:

- Establish and implement a USQ process
- Submit for DOE approval a procedure for its USQ process
- Obtain DOE approval prior to taking any action determined to involve a USQ
- Take specified actions in response to the discovery of a Potential Inadequacy of the Safety Analysis

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Purpose of the USQ Process is to allow contractors to make physical and procedural changes and conduct tests and experiments w/o prior DOE approval if the proposed change can be accommodated within the existing safety basis

i.e., “operational flexibility”