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EP Decommissioning Aspects

OVERVIEW

Regulatory Basis

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- Regulations are directed toward operating facilities
  - Do NOT address EP requirements for plants that are permanently shutdown and being decommissioned.
- Exemptions to regulations grant regulatory relief on a case-by-case basis
- Licensee shall comply with regulations until an exemption is granted
  - Licensee shall maintain the effectiveness of an emergency plan that meets the requirements in appendix E and the planning standards of § 50.47(b).

Regulatory Basis

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- Why not a License Amendment?
  - 10 CFR 50.90 (amendment) applies to licensees seeking to change their license conditions in how they comply with regulations
  - 10 CFR 50.54(q)(4) requires a licensee to submit a license amendment for emergency plan changes that reduce the effectiveness of the plan
- 10 CFR 50.12 (exemption) applies to licensees seeking regulatory relief – no longer needs to comply with regulation

Accident Considerations

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- After reactor defueled, the traditional accidents that dominate operating plant risk are no longer applicable
  - Risk to public is primarily associated with the spent fuel stored in the Spent Fuel Pool (SFP)
- Risk of a SFP accident is lower than accident risk in an operating plant
  - SFP at atmospheric pressure
  - Fuel is subcritical
  - Heat source is low

Accident Considerations

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- Risk of SFP accident dominated by beyond design basis earthquake
  - Assuming certain storage configuration and heat decay times, spent fuel assemblies could heat up ***if*** SFP water inventory is lost
  - Beyond design basis earthquake would challenge SFP liner integrity
  - Possible oxidation of fuel cladding becomes self-sustaining ("zirconium fire")
- SFP accidents consequences:
  - Dominated by long-lived radionuclides (Cs-137 / Sr-90), vs. short-term radionuclides for operating NPP
  - Risk of immediate life threatening doses is considered very low

Accident Considerations

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- Potassium Iodide (KI)
  - KI used to block thyroid gland from uptake of radioactive iodines that may be released
  - Iodines are not produced when reactor is shutdown
  - Spent fuel pool releases do not contain iodines
  - Stockpiling KI for distribution is not necessary for a defueled/decommissioned reactor

Historical Precedence

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Licensee submit SFP analyses demonstrating that:

- Applicable Design Basis Accident(s) could NOT result in projected doses to public exceeding EPA protective action guides

AND

- Spent fuel is NOT susceptible to a zirconium fire **OR** sufficient time (10 hours) available to take mitigative actions
  - If necessary, offsite protective measures on an adhoc basis (without preplanning)

Historical Precedence

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- Previous exemptions reduced EP requirements similar to Independent Spent Fuel Installation (ISFSI)
  - Formal offsite emergency plans **NOT** required
  - Typically, highest classification is an “Alert”
  - Prompt notification of offsite authorities and NRC
  - Onsite exercises (required) with opportunity for offsite participation (not required)
  - Arrangements and training for offsite response organizations (police, fire and medical services) that may respond to onsite emergencies

Exemption Request Process

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Licensee submits exemption request(s) per 10 CFR 50.12 based upon SFP analyses:

- Exemption request(s) will be evaluated on a case-by-case basis

Period 1 0-1 year of spent fuel decay	Must meet EP regulatory requirements for operating plants
Period 2 ~≥1 year of spent fuel decay*	Apply Part 50 EP requirements similar to that for a ISFSI (Classify up to a **ALERT**)
Period 3 No fuel onsite	No EP is required

** Based on site-specific accident analyses provided by licensee*

Exemption Request Process

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- Historically, approval of EP exemption requests are 9 to 12 months in duration
  - Request submitted
  - Adequacy review
  - Technical evaluation
  - Preparation of Exemption Approval Package
  - Concurrence
  - Exemption issued
    - Package to Licensee
    - Federal Register

Inspection Activities

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Permanent Cessation of Operations Letter Received:

- No longer in Reactor Oversight Process (ROP)
  - Office of Nuclear Reactor Regulation (NRR)
- MC 2561, "Decommissioning Power Reactor Inspection Program"
  - Office of Nuclear Material Safety and Safeguards – NMSS)
  - Transitional Inspection Plan Developed
  - Not required to collect and submit performance indicator data
  - Violations no longer processed via Significance Determination Process – no color findings
  - EP Inspection Procedure evaluates emergency plan with incorporated exemption request(s)

Offsite Impacts

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- Short Term
  - No immediate changes
  - Exemption(s) requiring approval
  - Transition between existing emergency plan and "decommissioned" emergency plan
- Long Term
  - Regulatory requirements dependent on exemption
    - Sirens, 15 minute notification, exercises, public education

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Questions