




Regulatory Improvements for Power Reactor Decommissioning


Emergency Preparedness

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• Current Emergency Preparedness (EP) Regulatory Framework

- Operating Power Reactor
 - 10 CFR 50.47
 - 10 CFR 50.54(q), (s), and (t)
 - 10 CFR Part 50, Appendix E
- Independent Spent Fuel Storage Installation (ISFSI) and Monitored retrievable (pool) storage (MRS)
 - 10 CFR 72.32



• Current EP Regulatory Framework

- EP regulations for operating reactors
 - Do not address reduced risk for permanently shutdown and defueled reactors
- Exemptions from regulations grant regulatory relief on a case-by-case basis

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Recent

Kewaunee (Wisconsin)
October 2014

Crystal River 3 (Florida)
March 2015

San Onofre (California)
June 2015

Vermont Yankee (Vermont)
December 2015

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Current and Future

Ft. Calhoun
Oct 24, 2016

Oyster Creek Dec 2019

Palisades October 2018

Indian Point
Unit 2 April 2020
Unit 3 April 2021

Pilgrim May 2019

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- **Two Concurrent EP Activities**
 - Interim Licensee Actions
 - Exemption Requests
 - 10 CFR 50.12
 - License Amendment Requests (LAR)
 - 10 CFR 50.90
 - Interim Staff Guidance NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants"
 - Rulemaking

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- **Interim Licensee Actions**
 - Cessation of Power Operations and Defueled
 - Post Shutdown Emergency Plan (PSEP)
 - License Amendment Request
 - Reduction in on-shift and augmented ERO staffing
 - Continue to meet regulations
 - General Emergency Classification
 - Offsite Radiological EP

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- **Interim Licensee Actions**
 - Spent Fuel Pool Analysis Submittal
 - Permanently Defueled Emergency Plan (PDEP)
 - Exemption Request
 - License Amendment Requests
 - Emergency Classification Scheme

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Past Exemptions

Operating Reactor	Decommissioning Site
<ul style="list-style-type: none">• Based on operating reactor radiological events• Offsite radiological planning<ul style="list-style-type: none">– EPZ, Alert and Notification Systems• Event Classifications<ul style="list-style-type: none">– General Emergency• Offsite Notifications (15 min)• Dedicated Facilities• Onsite/Offsite Exercises	<ul style="list-style-type: none">• Based on spent fuel pool radiological events• Comprehensive "all hazards" planning<ul style="list-style-type: none">– Firefighting, medical, law enforcement onsite response• Event Classifications<ul style="list-style-type: none">– Alert• Offsite Notifications (1 hour)• Onsite Command Center• Onsite Exercises, Offsite invited

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- **EP Exemption Criteria**
 - Site Specific Analysis
 - Radiological consequences do not exceed Environmental Protection Agency limits at Exclusion Area Boundary
 - Spent Fuel Pool partial drain down
 - 10 hours to 900°C
 - Physical Security
 - Spent fuel pool mitigation of zirconium cladding ignition

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- **Spent Fuel Pool Mitigation**
 - Maintain mitigation strategies required by license condition
 - Trained on-shift personnel
 - Equipment available
 - Procedures

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Commission-Directed Rulemaking

- SRM SECY-14-0118
 - Crystal River Exemption Request Approval
- Graded Approach to EP
 - Commensurate with reductions in radiological risk

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Rulemaking Goals for Emergency Preparedness

- Maintain reasonable assurance
- Provide regulatory certainty and clarity
- Codify EP decommissioning actions

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Illustrative Milestones in Emergency Preparedness

Figure illustrates the Phases of Plant Operation and the Need for Offsite REP.

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EP Transitions in Decommissioning

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EP Transitions in Decommissioning

- Level 1
 - Cessation of power operations and defueled
- Level 2
 - Spent fuel sufficiently decayed
 - (10 hour adiabatic heatup)
- Level 3
 - Interim Spent Fuel Storage Installation (ISFSI) and Monitored Retrievable Storage (MRS)
- Level 4
 - All fuel removed from site

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Future EP Decommissioning Regulations

- Implementation of a graded approach to EP
 - Minimize licensing actions
 - Commensurate with radiological risk
 - Research studies
 - Offsite Radiological Emergency Preparedness
- Change processes
 - Transitioning to Levels
 - Changes within Levels
 - Changes in Classifications and Scheme(s)

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