

“POWER REACTOR DECOMMISSIONING REGULATORY REQUIREMENTS, UPDATES AND FUTURE PLANNING”

Low Level Radioactive Waste Forum
April 17, 2019

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Office of Nuclear Material and Safeguards Safety

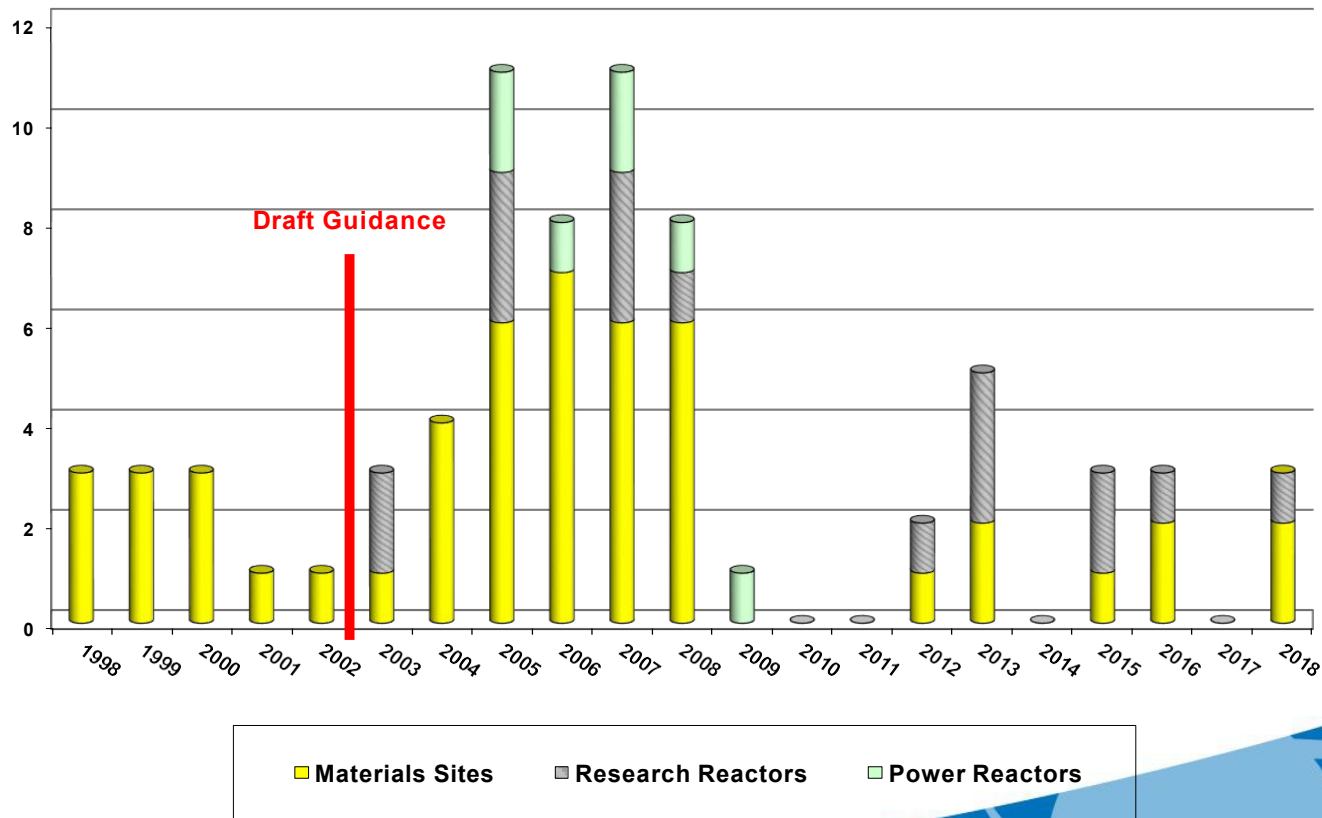
Decommissioning Topics

- Decommissioning Program
- Decommissioning Rulemaking Activities
- Reactor Decommissioning Business Models
- Stakeholder Input and Feedback
- Current Issues

NRC's Decommissioning Mission

NRC's decommissioning mission is to ensure safety, is protective of public health and the environment through out the entire decommissioning process until the site has been radiologically decommissioned and the license is terminated.

Safe Decommissioning Leads to License Terminations



Decommissioning Regulations Revised in 1990's

- Performance-Based and Risk-Informed
- Materials and Uranium Recovery Sites
- For Reactors, based on Lessons Learned from first 3 Power Reactor Decommissionings
- Reactor Decommissioning actions start **5 years** before end of operating license, but premature shutdowns happen
- Records important to Decommissioning, 50.75(g) File

DECOMMISSIONING PLANNING RULE (DPR)

In 2000, Commission directed the staff take actions to prevent future Legacy Sites:

- 2004 Decommissioning Meeting with Industry
- The Decommissioning Planning Rule published June 2011 (76 *FR* 35512) and effective December 2012
- Applicable to **OPERATING** Facilities
 - ALL LICENSE TYPES
 - Nuclear Power Plants, NEI-07-07 Voluntary Initiative meets the DPR

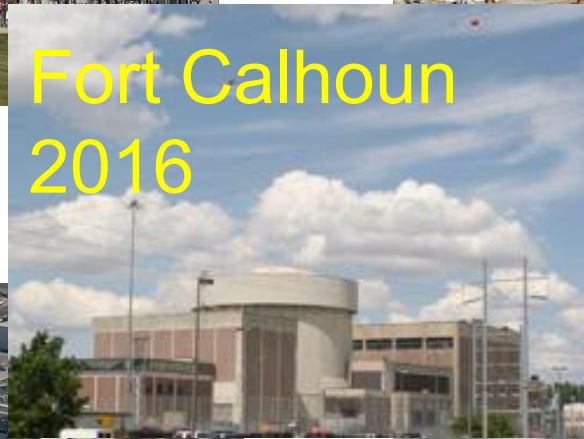
Decommissioning Planning Rule (DPR)

- 10CFR20 Radiation Protection Standards Revised:
 - §20.1406(c) “MINIMIZATION OF CONTAMINATION” - Conduct **Operations** to minimize introduction of Radiological Contamination into the environment
 - §20.1501(a) “GENERAL” - Conduct reasonable surveys **INCLUDING the SUBSURFACE (measure ground water near sources of potential leaks)**
 - §20.1501(b) “GENERAL” - Record Subsurface Contamination
- Issued Regulatory Guide 4.22, “Decommissioning Planning During Operations”

Premature Power Reactor Shutdowns



Fort Calhoun
2016



Commission Direction in SECY 14-0118

- The Commission directed the staff in December 2014 to proceed with reactor decommissioning rulemaking with a completion goal of 2019 (now 2021) to improve efficiency of the transition from operations to decommissioning, including:
 - license amendments
 - emergency plan exemptions
 - security plans
- Evaluate the roles of the States and the 60 year requirement to complete Reactor Decommissioning

U.S. Reactor Decommissioning Business Models

- License Self Performs
- Licensee manages a Decommissioning Contractor
- Temporary License Transfer to a Decommissioning Company and return of the land and spent fuel to the utility
- Asset Sale and license transfer – plant and spent fuel are sold and permanent license transfer to a non-utility

Humboldt Bay – Decommissioning Contractor and Self Perform



October 2018



Humboldt Bay – Major Project



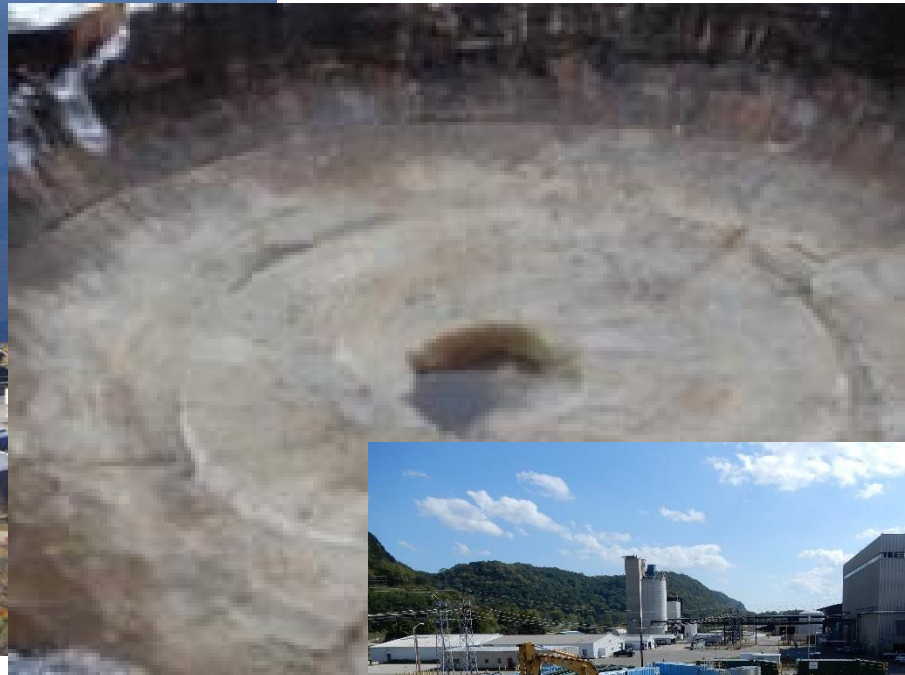
La Crosse – Self Perform



2016 La Crosse License Transfer



March 2019



Zion 1 and 2 License Transfer



United States Nuclear Regulatory Commission

Protecting People and the Environment

2010



March 2019



Asset Sale and License Transfer



United States Nuclear Regulatory Commission

Protecting People and the Environment



Active Decommissioning



San Onofre

N.S. Savannah



Going to Active Decommissioning



Fort Calhoun

Crystal River



Future Shutdowns?

- Pilgrim – by June 1, 2019
- Three Mile Island – September 2019
- Duane Arnold, Davis Besse, and Indian Point 2 – 2020
- Perry, Beaver Valley 1, 2, Indian Point 3 – 2021
- Palisades – 2022
- Diablo Canyon 1, 2 – 2024 and 2025

REACTOR DECOMMISSIONING U.S.NRC

United States Nuclear Regulatory Commission
Protecting People and the Environment

Stakeholder Involvement

- Over 30 briefings to Senate/House staff
- Capitol Hill meetings with Senate and House staff
- Congresswoman Lowey Briefing
- Congressman Carbajal Town Hall Meeting
- Native American Tribes
- **Citizen Advisory Boards**



REACTOR DECOMMISSIONING U.S.NRC

United States Nuclear Regulatory Commission
Protecting People and the Environment

- California Senate Energy Committee Testimony
- New York Senate Energy Committee Testimony
- California Energy Commission
- Massachusetts Governor and Secretary of Environment



Opportunities for Public Participation in Rulemaking

- The NRC is interested in feedback from State partners, the nuclear industry, and all members of the public:
 - Comment opportunities (Advanced Notice for Proposed Rulemaking, Draft Regulatory Basis, Proposed Rule)
 - Planned public meetings throughout the Rulemaking Process



Reactor Decommissioning Public Interfaces

- NRC Public Meetings
 - ✓ Annual Assessments Meetings prior to ceasing operations
 - ✓ Post Shutdown Decommissioning Activities Report Meetings
 - ✓ License Termination Meetings
 - ✓ Partial Site Release Meetings



Decommissioning Issues of Stakeholders



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Mandy K. Haller
Director, Nuclear Licensing

November 16, 2018

10 CFR 50.82

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Post Shutdown Decommissioning Activities Report
Pilgrim Nuclear Power Station

Docket No. 50-293
License No. DPR-35

REFERENCES: 1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Notification of Permanent Cessation of Power Operations," 2.15.080, dated November 10, 2015 (ML15328A053)

LETTER NUMBER: 2.18.070

Dear Sir or Madam:

Pursuant to 10 CFR 50.82(a)(4), Entergy Nuclear Operations, Inc. (ENO), on behalf of itself and Entergy Nuclear Generation Company (ENGC), is submitting a Post Shutdown Decommissioning Activities Report (PSDAR) for the Pilgrim Nuclear Power Station (PNPS). By letter dated November 10, 2015, ENO notified the NRC of its intent to permanently cease power operations at PNPS no later than June 1, 2019 (Reference 1).

The enclosed PSDAR has been developed consistent with Regulatory Guide 1.185, Revision 1, "Standard Format and Content for Post-Shutdown Decommissioning Activities Report." The PSDAR includes a description of the planned decommissioning activities, a schedule for their accomplishment, a site-specific decommissioning cost estimate, and a discussion that provides the basis for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate, previously issued, environmental impact statements. The PSDAR also includes a discussion of the schedule and projected costs associated with spent fuel management and site restoration activities. Funding for spent fuel management activities is being addressed in a separate submittal as an update to the PNPS Spent Fuel Management Plan, pursuant to 10 CFR 50.54(bb).

In accordance with 10 CFR 50.82(a)(4)(i), a copy of the PNPS PSDAR is being provided to the Commonwealth of Massachusetts by transmitting a copy of this letter and its Enclosure to the designated State Officials.

- Decommissioning funding & adequacy
- Decommissioning strategies: Prompt vs. Deferred – Decommissioning – 60 Years
- Economic losses to the local community
- Future uses of the site
- NRC approval of the Post Shutdown Decommissioning Activities Plan

Decommissioning Issues of Stakeholders

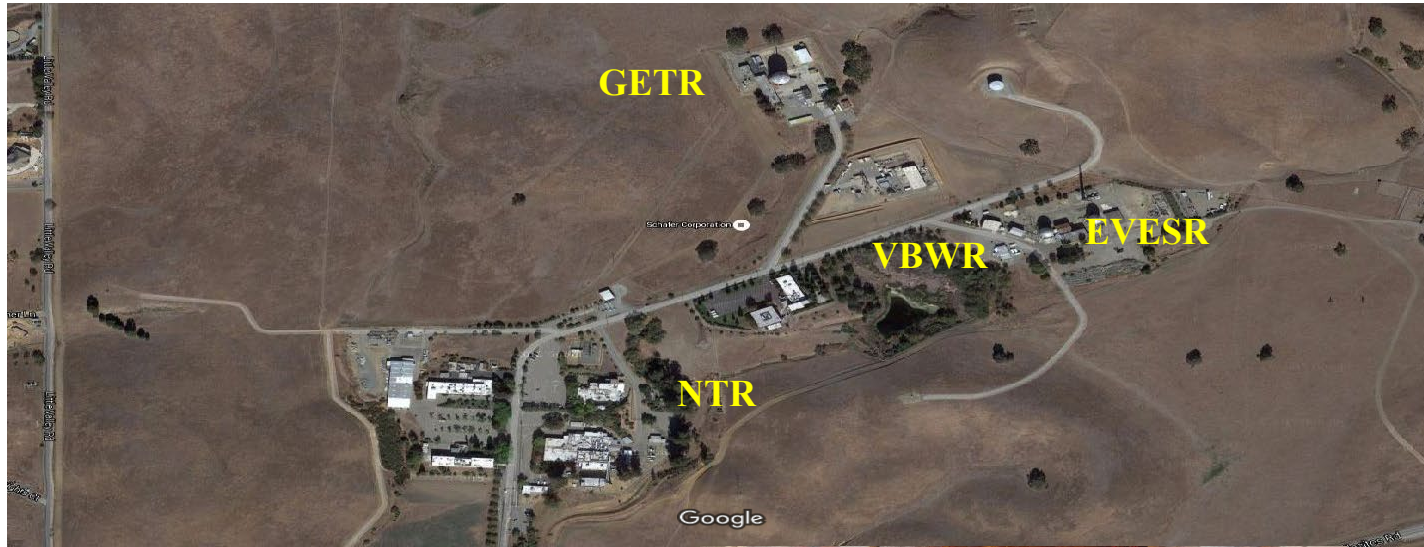


- Safety of Spent Fuel Pools versus Dry Spent Fuel Storage in storage casks
- Long Term Spent Fuel Waste Storage and Transportation
- Security of the Facility
- Emergency Response Reductions

Current Issues

- Managing a growing decommissioning reactor program
- Rightsizing the NRC and Aging workforce
- Nuclear Energy Innovation and Modernization Act of January 2019
 - Conduct a Minimum of 10 Public Meetings
 - Citizen Advisory Boards Best Practices Report to Congress in 18 months
- GE Vallecitos' Exemption request to exceed 60 years to complete decommissioning
- New Business?

GE Vallecitos – Request to Exceed 60 Year Completion Requirement



Potential NRC Oversight Role for Naval Reactors Surface Ships



GAO

United States Government Accountability Office
Report to Congressional Committees

August 2018

AIRCRAFT CARRIER DISMANTLEMENT AND DISPOSAL

Options Warrant
Additional Oversight
and Raise Regulatory
Questions

GAO-18-523

NRC's Decommissioning Program

- 21 Power Reactors, 12 more Power Reactors have announced ceasing operations by 2025
- 8 Power Reactors in Active Decommissioning, 13 in Safe Store, 2 more expected to become active
- Humboldt Bay, La Crosse and Zion 1, 2 license terminations by 2020
- 3 Research Reactors, 2 General Atomics license termination by 2020, 2 more expected to shutdown
- 4 Complex Materials Legacy Sites
- 11 Uranium Sites in Decommissioning/Remediation
- 28 Mill Tailing Sites in Long Term Monitoring
- 1 Operating InSitu Uranium Recovery Site (Wyoming Agreement State in 2018)

Questions?