

“NUCLEAR REGULATORY EXPERIENCE IN THE DECOMMISSIONING OF NUCLEAR POWER PLANTS”

American Nuclear Society Decommissioning and Remote Systems Topical Meeting

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Decommissioning Topics



- Experience with 1997 Regulations “License Termination Rule” and Lessons Learned
- Actions to Prevent Legacy Sites – “Decommissioning Planning Rule”
- Lessons Learned from Reactor Decommissioning from recent shutdowns
- Present Decommissioning Rulemaking Activities

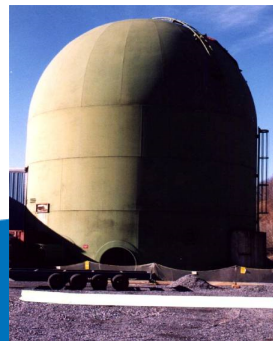
NRC Mission



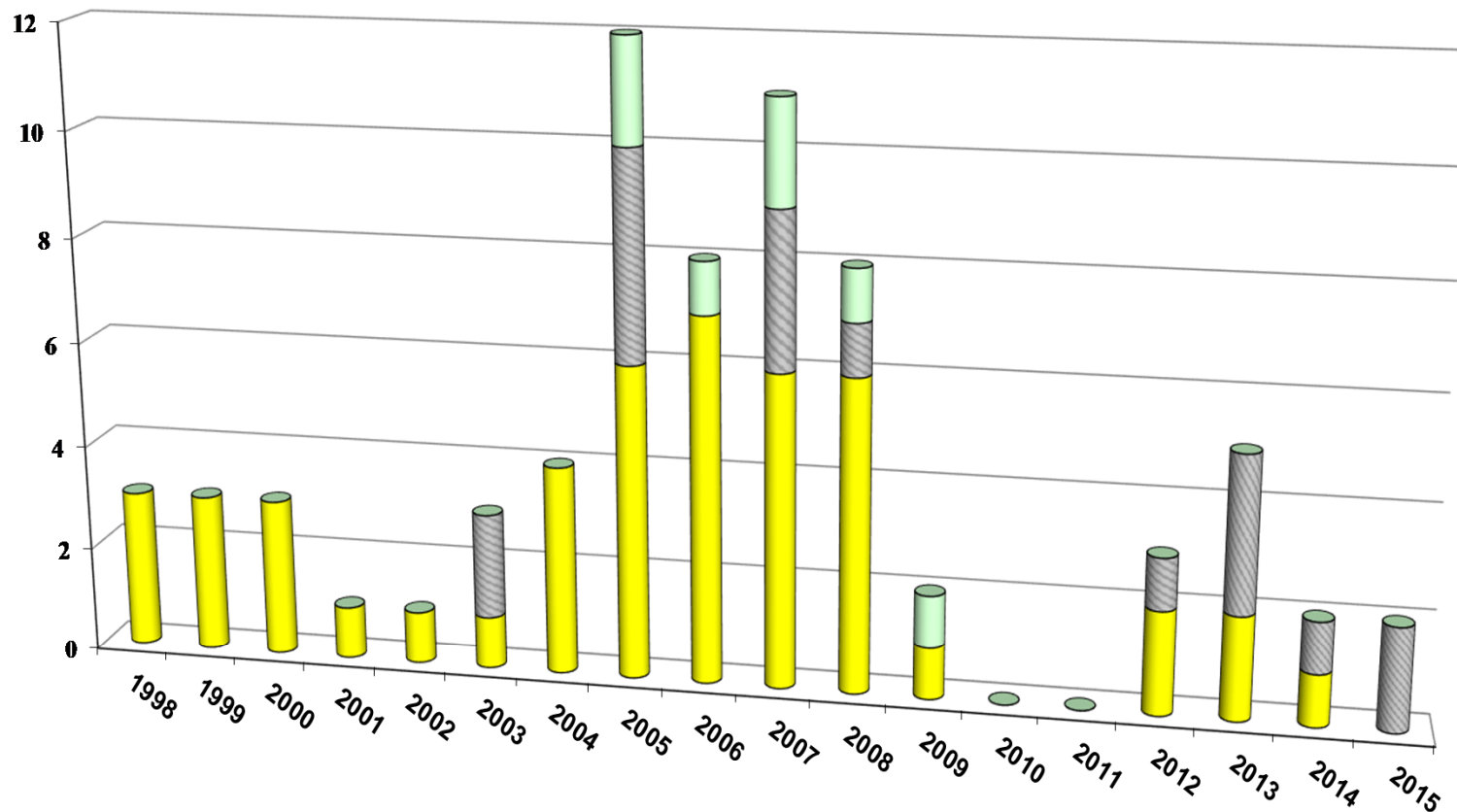
NRC's mission is to ensure safety, is protective of public health and the environment whether the site is operating, or transitioning from operating to decommissioning, and through the entire decommissioning process until the site has been radiologically decommissioned and the license is terminated.

Decommissioning Regulations Revised in 1997

- 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.



NRC License Terminations



■ Materials Sites ■ Research Reactors ■ Power Reactors

Staff Initiatives from 1990's Reactor Decommissionings



2000 - SECY-00-145 Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning

- September 11, 2001 Attacks
- License Renewal
- Commission direction to prevent future Legacy Sites

DECOMMISSIONING PLANNING RULE (DPR)



- 2004 Decommissioning Meeting with Industry
- The Decommissioning Planning Rule
 - Published June 2011 (76 *FR* 35512)
 - Effective Date 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
 - §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**
 - §20.1501(b) “GENERAL” - Record Subsurface Contamination
 - Regulatory Guide 4.22, “Decommissioning Planning During Operations”

1990's Technical Issues Lessons Learned

- Lessons Learned from the 1990's power reactor shutdowns were presented in 2012
- Being incorporated in NUREG 1757 V2
 - Survey Issues incorporated in Training
 - InSitu Gamma Measurements
 - Composite Sampling
 - ALARA Implementation



In 2013 and 2014, Premature Power Reactor Shutdowns



Managing Premature Reactor Permanent Shutdowns



- Regulatory Approach - Established Precedent
- Licensing Basis is Unchanged after Shutdown
- Lessons Learned and Experience from Plant Shutdowns in 1990s
- Significant Events since 2000
 - September 11, 2001 Attacks, Security and Emergency Response - Orders
 - March 11, 2011 Tōhoku Earthquake and Tsunami – Post Fukushima Orders

Lessons Learned



- Licensees should engage NRC staff as early as possible after announcing intent to cease operations
 - Coordinate licensing action submittals and schedules
 - Pre-submittal meetings
- Licensees should submit decommissioning licensing actions well ahead of permanent cessation of operation - to the extent possible
- Licensees should use established precedent, when appropriate
 - Communicate early and often on licensing actions that are unique or substantially deviate from precedent
- Public and intergovernmental meetings and outreach
 - Licensees should establish a local community advisory panel
 - Communicate with public, state and local community stakeholders on issues important to the community
- NRC staff long-term solution is rulemaking
 - Codify a well-defined regulatory framework that assures adequate protection of health and safety throughout the decommissioning transition process, while minimizing inefficiencies and unnecessary resource impacts

Commission Direction in SECY 14-0118



- In response to Duke Energy's emergency plan exemption request, the Commission directed the staff December 30, 2014 to:
- Proceed with reactor decommissioning rulemaking
- Completion goal of 2019
- Continue to process amendments and exemptions until complete

Reactor Decommissioning Proposed Rulemaking



- New Regulations by 2019 to improve efficiency of the transition from operations to decommissioning, including:
 - license amendments
 - emergency plan exemptions
 - security plans
- Re-evaluate the present regulations including the States Role and 60 years to complete decommissioning

Commission Briefing

March 15, 2016



Staff Reactor Decommissioning History

- NRC Role is an Independent Safety Regulator – Community Advisory Boards
- 2000 Proposed Rulemaking – **Priorities**
- SECY-08-0024 Commission **denied** Authority to Staff to approve decreases for EP Effectiveness
- Present Regulations are adequate, **All 29 NPPs** did not operate till end-of License
- States regulate commerce and deregulated the energy market **without** decommissioning requirements

Commission Briefing

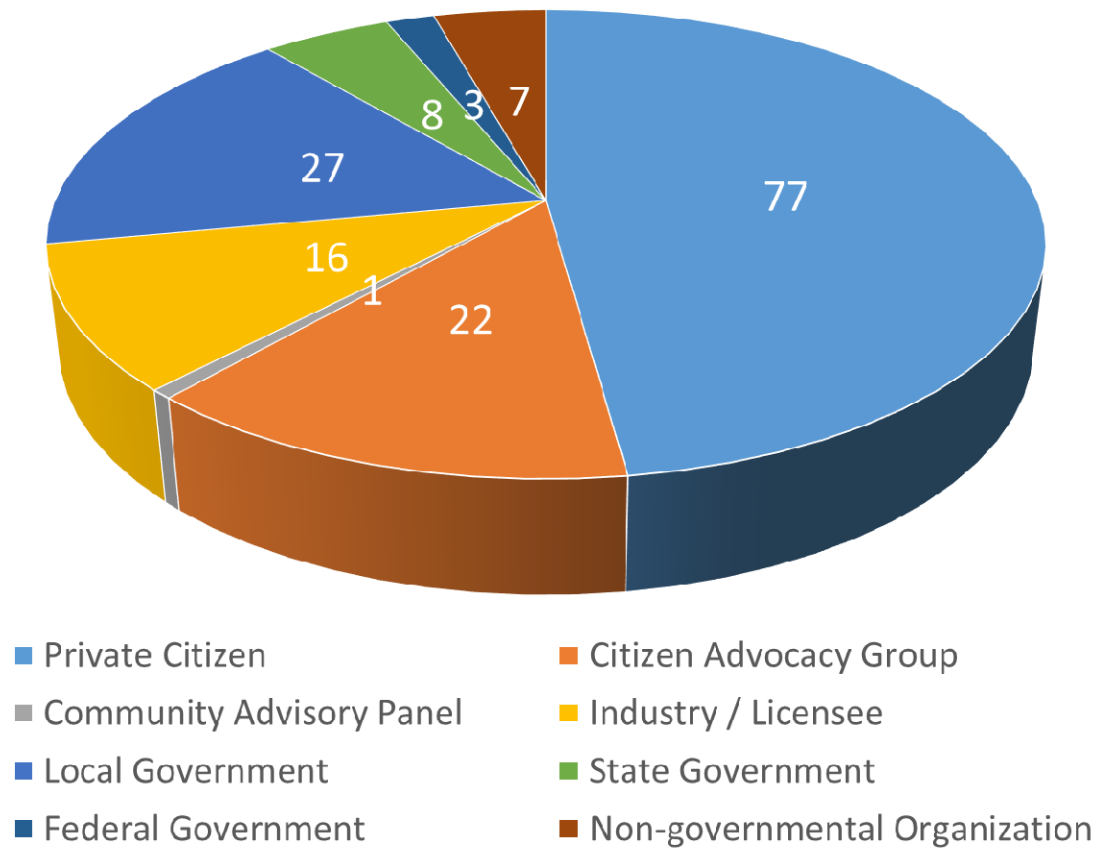
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- NRC Staff History and Rulemaking Status
- Presenters: Industry, Public and States
- Diversity of Comments
- Diversity of Opinions on Regulations
- Bifurcation or Comprehensive Rulemaking
- Roles of the States
- Community Involvement

ANPR Public Comments

Distribution of Public Comments by Source



ANPR Responses

- Against relaxation of requirements with fuel still in the pool / transfer fuel to ISFSI ASAP
- Increase involvement of State and local governments and public groups
- Require Citizen Advisory Boards
- Against SAFSTOR / 60 years is too long
- NRC should approve PSDAR
- Increase decommissioning funding oversight
- Supportive with specific suggestions

Rulemaking Schedule

- Regulatory Basis Phase – November 2016
 - Draft will go out for public comment
 - Public meeting during comment period
 - Final regulatory basis published in June 2017
- Proposed Rule Phase – April 2018
 - Proposed rule out for 75-day public comment period
 - Public meeting during comment period
 - Draft regulatory guide(s) out for comment with proposed rule
- Final Rule Phase – Targeted for 2019
 - Regulatory guide(s) issued with final rule

NRC's Decommissioning Program



- 19 Power Reactors: 3 or more as early as 2017; FitzPatrick, Ft Calhoun, Clinton, Quad Cities and Oyster Creek, Pilgrim in 2019?
- Plants approaching 60 years
- 6 Research Reactors, 2 more expected
- 5 Complex Materials Legacy Sites
- 11 Uranium Sites in Decommissioning/Remediation
- 28 Mill Tailing Sites in Long Term Monitoring
- 5 Operating ISLs, 18 Applications

Questions?

Reactor Decommissioning Branch



Carpe Cesium

AKA,
The Dead Reactor Society

Questions?

