Advanced Notice of Proposed Rulemaking for Decommissioning of Power Reactors
State of Vermont Comments

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NDCAP
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Overview of NRC's Decommissioning Rulemaking Process

Tony Leshinskie
VT State Nuclear Engineer
May 26, 2016 NDCAP Meeting

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Rulemaking Process Steps

1. NRC Rulemaking Directive
2. Advanced Notice of Proposed Rulemaking (ANPR)
3. Draft Regulatory Bases
4. Final Regulatory Bases
5. Proposed Rules & Draft Regulatory Guidance
6. Final Rules & Regulatory Guidance

All rulemaking steps are noticed in the Federal Register

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Rulemaking Directive

- Ordered by NRC Commissioners in response to an observed need for new or revised regulation
  - Can result from NRC Staff requests, appeal to Commissioners or a stakeholder's petition for rulemaking
  - Directive for Decommissioning Rulemaking came from NRC Staff & Stakeholders' concerns
    - Several plant closures & closure announcements in 2013
    - Staff evaluating multiple, similar License Amendments & Exemptions in short-order
    - Concerns expressed at July 2014 Commission Briefing
    - Decommissioning Rulemaking was an "intermediate" priority for over 10 years

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Decommissioning Rulemaking Directive

NRC Staff ordered to "proceed with a rulemaking to revise the regulation of power reactors during their decommissioning."

- Staff Requirements Memo (SRM) issued December 30, 2014 by Commissioners
- Delivery of Final Rules & Regulatory Guidance to Commissioners targeted for "early 2019"
- New / Changed Rules & Regulations require Commissions' vote & approval prior to implementation

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Decommissioning Rulemaking Directive

SRM directs Staff to address issues detailed in SECY-00-0145 (a circa 2000 Staff recommendation):

- Graded approach to emergency preparedness
- Lessons Learned from completed & ongoing Decommissioning projects
- Advisability of requiring NRC Approval of Post-Shutdown Decommissioning Activity Reports (PSDARs)
- Appropriateness of keeping the 3 current Decommissioning Options (DECON, SAFSTOR, ENTOMB)
- Appropriate time frames for Decommissioning Options
- Defined roles of state government, local government & non-governmental stakeholders in Decommissioning Process
- Any other issues deemed relevant by NRC Staff

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NRC Additional Relevant Topics

- Physical & Cyber-Security Requirements
- Fitness for Duty Programs Applicability
- Certified Fuel Handlers / Staff Training Requirements
- Applicability of Backfit Rule
- Appropriate Decommissioning Trust Fund Uses
- Onsite & Offsite Insurance Requirements
- Additional ANPR Questions on:
  - Control Room Use during Decommissioning
  - Appropriate Decommissioning Staff Levels
  - Cost / Benefit Analysis for Decommissioning changes
  - Retention of ERDS during decommissioning
  - Existence of any other relevant Decommissioning topics

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Decommissioning ANPR Phase Complete

- Advanced Notice of Proposed Rulemaking (ANPR) issued November 17, 2015
  - Public opportunity to identify what NRC should consider in making new decommissioning rules
  - Open comment period ran through March 18, 2016
  - 80+ Questionnaire issued on SRM & other potential topics
  - December 2015 Public Meeting / Webcast outlined Questionnaire subjects
  - Comments expressed in terms of current regulations encouraged
  - March 15 Commission Briefing highlighted many of the concerns included in filed stakeholders' comments

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Developing Draft Regulatory Bases

- The Current Phase of Decommissioning Rulemaking
- Regulatory Bases establish the topics that will be incorporated into (i.e. a blue print for) the NRC's revised Decommissioning Rules & Regulations
- Draft Bases will publish in late 2016
  - NRC Staff Considers ANPR Comments
  - Contains Justifications for including & excluding comment items in Draft Bases
  - Required Open Comment Period & Public Meeting
  - Briefing for Commissioners likely

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Developing Final Regulatory Bases

- Incorporates comments received on published Draft Regulatory Bases
- Final Regulatory Bases will publish in (probably late) 2017
  - Contains Justifications for incorporating or excluding comment s filed on Draft Bases
  - Required Open Comment Period & Public Meeting
  - Briefing(s) for Commissioners likely

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Developing Proposed Rules & Draft Regulatory Guidance

- NRC Staff uses the Final Regulatory Bases define Rules / Acceptance Criteria
- Bases also used to create Regulatory Guidance
  - Outlines the minimum scope of conditions that licensees must consider for complying with NRC Rules
  - Reg. Guides can enumerate documentation requirements & minimum required time for NRC review
- Proposed Rules & Draft Regulatory Guidance will publish in 2018 (likely in second half)
  - Required Open Comment Period & Public Meeting
  - Briefing(s) for Commissioners likely

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Final Rules & Regulatory Guidance

- Incorporates comments received on the published Proposed Rules & Draft Regulatory Guidance
- Final Regulatory Bases will publish in early (likely first half of) 2019
  - Submitted to NRC Commissioners for their review and approval (via vote)
  - No Open Comment Period & Public Meeting Requirement in this phase (Staff & Commission interface only)
  - Briefing for Commissioners immediately prior to formal submittal likely

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Decommissioning Rulemaking Schedule Caveats

- NRC Staff has previously warned that the schedule could be delayed if "a significant number" of additional plant closures are announced.
  - The announced closures of Pilgrim & Fitzpatrick have not impacted this schedule (so far)
  - Additional closure announcements could have impact
- Extensive public comments or new decommissioning issues could also delay subsequent rulemaking steps
- With no time limit on NRC Commissioners' rulemaking deliberations, Final Approval of new Decommissioning Rules & Regulatory Guidance may not occur in 2019

State of Vermont Comment Overview

- Jen Duggan, ANR

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Overview of State of Vermont Comments

- Host community and State participation
- State authority over non-radiological activities
- Transfer of spent nuclear fuel to dry storage ASAP
- Emergency protocols should remain in place until spent fuel is in dry storage; health and environmental monitoring until license termination
- All decommissioning activities complete within 10 years of closure
- Complete radiological and non-radiological site investigation and characterization at the time of closure

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Overview of State of Vermont Comments

- Merchant generators should be responsible for all decommissioning, site restoration, and spent fuel management costs
- Generally limit exemptions to exceptional, unforeseen situations based on objective criteria with public participation
- New rules should apply to plants already in the decommissioning process
- Responses to specific ANPR questions

Emergency Preparedness

- Erica Bornemann, DEMHS
  Dr. William Irwin, VDH

Emergency Planning Summary

Critical emergency protocols, including the Emergency Response Data System and the 10-mile Emergency Planning Zone, should remain in place for as long as spent nuclear fuel remains in a spent fuel pool, and ongoing health and environmental monitoring should continue until the license is terminated.

Basis

- The NRC's zirconium fire analysis does not adequately consider accelerants, hostile actions or sabotage.
  - Current NRC guidance was compiled before the attacks of September 11, 2001.
- Sandia National Laboratory studies relied upon by the NRC to have not been independently assessed as to their voracity.
- Spent fuels pools lacking concrete reinforced, steel containment structures are especially vulnerable to hostile actions.

Basis

- Even small amounts of radioactive contamination, especially of food, agricultural land and water, will require significant offsite radiological surveillance and environmental remediation.
- The radiation doses of the EPA Protective Action Guidelines are used inappropriately as a basis for licensee support of offsite response organizations.
  - These doses would be created by large amounts of radioactive contamination.
  - Specialized skills and knowledge such as those currently employed by the States are needed to assess the offsite contamination for public confidence.
  - Licensee financial support of these skills and knowledge is required.

Basis

- Using guidance for ISFSIs is inadequate for facilities with spent fuel in spent fuel pools.
- Relying on a 10-hour period for mitigation of a spent fuel incident by onsite resources alone ignores the possibility that offsite relief may not be available until long after 10 hours.
  - This is especially the case when spent fuel accidents occur in conjunction with a natural disaster or hostile attack.
- The large amount of heavy industrial activity that occurs during decontamination and dismantlement requires more than simple local law enforcement, the fire service and emergency medical services can provide.

Emergency Preparedness Requirements

- Vast majority of requirements as established in § 50.47 and Appendix E to 10 C.F.R. part 50 should remain
  - Includes elements such as notification timelines (15 minutes), exercise and training requirements, planning requirements, and alert and notification requirements
- Oppose practice of exemptions when regulations for decommissioning reactors are not in place
  - NRC guidance on decommissioning SECY-00-145
  - Created before September 11 attacks

Emergency Preparedness Requirements

- Licensees adhere to emergency preparedness rules established for Independent Spent Fuel Storage Installations–10 C.F.R. § 72.32
  - Hazards are inherently different for spent fuel storage
- Use of EPA Protective Action Guidelines as benchmark to assess danger to the public flawed
  - Does not take into account the necessity for state officials to validate off-site measurements if there is a release

Emergency Preparedness Requirements

- Federal Emergency Management Agency role in off-site emergency preparedness should remain
  - Validates the offsite response organizations can provide “reasonable assurance” of their ability to respond to an emergency
- Exercise, training, and planning requirements are the cornerstone to ensuring robust response capabilities

Other Emergency Planning Issues

- The states rely on radiological and meteorological data from the facility. Elimination of the Emergency Response Data System (ERDS) weakens State emergency response capabilities.
- Notifications of incidents, especially for hostile action based incidents, must be more timely than the one hour allowed for decommissioning.
- Notifications of major losses in offsite communications capabilities should not be allowed to extend to up to eight hours. These notifications should be prompt.

Other NRC Questions

- Dr. Bill Irwin, VDH

Security Comments

- The NRC should not exempt existing nuclear power plants and unprotected spent fuel pools from analyzing for airplane impact threats.
- Physical security requirement changes for decommissioning should reflect findings of the current Force-on-Force Security Working Group.
- Preparedness for the radiological sabotage design basis threat and combined threats, for example a fire and severe natural disaster should remain in effect as long as spent fuel remains in the spent fuel pool.

For Security, Fitness for Duty Programs, and Reliance on Certified Fuel Handlers

- Requirements must be rigorous and driven by safety and health concerns , not by potential economic savings for licensees.
- Changes in requirements should be created by a panel of experts that go beyond licensees and their employees.
- Decommissioned reactors should be treated as high-interest targets for terrorists who might believe security is compromised due lesser regulatory control.

Specific to Fitness for Duty Requirements:

- For safety and security reasons, they should not be relaxed for decommissioning sites any more than they would be for the construction of new reactors.
- Even during SAFSTOR, the majority of staff are for security purposes, and these are people who must have high levels of fitness for duty

Regulatory Approach Comments

- SAFSTOR should be eliminated for single reactor sites, and the completion of decommissioning and license termination should occur within ten years following cessation of operations.
  - Numerous facilities engage in prompt DECON.
  - Other major countries require prompt DECON.
- SAFSTOR is only a financial mechanism of benefit to licensees, and there are risks to States for merchant plants that might file for bankruptcy.
  - Radioactive waste expenses do not decrease with time.
  - Preparing for SAFSTOR and SAFSTOR wastes money that could be used for prompt DECON.

Prompt DECON Benefits

- Host community risks are reduced as employees are needed immediately, not decades later.
- Institutional knowledge from plant, as well as federal, state and local regulators, is maintained during DECON.
- The responsible party, the licensee, covers the costs of decommissioning and site restoration.

The PSDAR

- Matching the Decommissioning Cost Estimate to the Activities of the Post-Shutdown Decommissioning Activities Report is difficult without better documentation.
- Activities that are not allowable from the Decommissioning Trust Fund need to be assigned to a funding source.
- Indefinite fuel storage costs, to be dealt with given there exists no licensed means to remove spent fuel from sites. These include:
  - Replacement casks or storage systems
  - On-site spent fuel transfer into new casks or systems
  - Safety and security.

The PSDAR Becomes Precedent Without Technical Justification

- The NRC should approve the PSDAR to demonstrate the seriousness it has for its oversight duties, and to meet National Environmental Policy Act obligations.
- The NRC should answer public questions fully, rather than dismissing them on procedural grounds.
- Government-to-government consultation and hearings should be added to public meetings so host communities are on an equal platform with licensees.
- Citizens Advisory Panels are strongly encouraged, but they must be independent bodies supported by the licensee, but not run by the licensee.

Backfitting Analysis

- Only benefits the licensee, and cannot be an impediment to promptly returning the site to the host community for unrestricted use.
- Prompt decommissioning prevents contamination of the site from worsening and further moving offsite, which otherwise would remain a threat for generations.

Decommissioning Trust Funds

- Allowing the use of DTF for spent fuel management undercuts the capacity to complete decommissioning, where the costs are impossible to accurately predict.
  - Spent fuel management does not reduce radiological contamination, a requirement for use of the funds.
  - Use of the DTF for property taxes, insurance and lobbying and legal fees should be prohibited.
- NRC should increase its oversight of how DTF funds are used, instead of making rules that relax this regulatory responsibility for financial assurance.
- The financial oversight should be transparent for the public, as in most cases their rates were the source of the funds.

Liability Protection and Onsite Damage Protection Insurance

- Exemptions currently being considered or granted endanger the public.
- Reductions should only occur after spent fuel is removed from the spent fuel for dry cask storage. The risks of a zirconium fire remain a risk until that transfer.
- Inflation, increased costs due to high burnup fuel, and the real world offsite costs possible with a release of radioactive materials into the environment point to increases being more prudent.

General Comments

- Codifying staffing levels is better than looking at past decommissionings for precedent.
- A panel of experts from a diversity of backgrounds, not just licensees, should determine the appropriate staffing levels, which must be based on public health and safety, not simply economic benefit to licensees.
- The States lack any confidence that staffing levels and other resources for environmental surveillance and emergency response needs will be adequate.
- Licensees should continue to support offsite environmental surveillance and emergency preparedness to supplement the licensee's resources.

General Comments

- Ninety percent of the ANPR questions address relaxation of regulations for licensees. Stakeholders do not take this as a sense that they are on an equal footing relative to rulemaking.
- The exemption process forecloses public participation, impede the development of cooperative agreements between state and local jurisdictions and licensees on important issues like independent verification on environmental protection and full radiological emergency capabilities should a release occur and contaminate land, food and water offsite.

Environmental Impact

- Jen Duggan, ANR

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State Authority Over Non-Radiological Activities

- NRC has authority over radiological aspects of decommissioning process
- Host states have authority over non-radiological activities and waste
  - Air and water quality
  - Non-radiological solid and hazardous wastes are managed and disposed of safely
  - Clean up of releases of non-radiological waste

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State Authority Over Non-Radiological Activities

- Atomic Energy Act
  - NRC has regulatory authority over nuclear safety
  - Expressly reserves State and local government authority to regulate nuclear activities for purposes other than protection against radiation hazards
- No preemption where (1) purpose of a state law is not motivated by radiological safety concerns and (2) there is no actual and irreconcilable conflict between the state law and NRC authority under the AEA
- Where states exercise authority authorized by a federal statute, courts have a duty to give effect to both federal laws unless there is an actual and irreconcilable conflict

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Site Investigation and Characterization

- Early radiological and non-radiological site investigation and characterization is critical
- NRC allows site characterization to be delayed until two years before license termination, which can be 60 years after operations cease
- Delay creates cost uncertainty and compromises the ability of states to protect public health and the environment

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Site Investigation and Characterization

Delayed site investigation and characterization:

- Cost Uncertainty
  - Previously unknown contamination discovered late in decommissioning process when most or all of funds have been spent
- Public Health and the Environment
  - Difficult for states to identify, monitor, and remediate risks associated with non-radiological contamination without adequate information
  - Vermont law requires full investigation and characterization of non-radiological contamination at the time a plant is closed
  - Difficult to ensure adequate costs are set aside for site restoration
  - Particularly problematic where decommissioning delayed

Questions?