U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Improvements for Power Reactors Transitioning to Decommissioning

Public Meeting

May 8-10, 2017

Meeting Purpose

- Discuss draft regulatory basis and associated preliminary draft regulatory analysis for the "Regulatory Improvements for Power Reactors Transitioning to Decommissioning" rulemaking
- Enhance stakeholder understanding of these documents to inform development of formal comment submissions
  - 90-day comment period ends on June 13, 2017

Meeting Purpose (cont'd)

- NRC will not be providing formal comment responses to any oral remarks made at this meeting
  - Staff will consider, to the extent possible, feedback heard during today's meeting in developing the final regulatory basis

Agenda May 8

Monday, May 8 (Commission Hearing Room):

9:30 – 10:00 AM – Opening remarks and introductory presentation
10:00 – 11:00 AM – Current Approaches to Decommissioning (Appendix H)
11:00 – 11:15 AM – Break
11:15 AM – 12:30 PM – Current Approaches to Decommissioning (Appendix H) *continued*
12:30 – 1:30 PM – Lunch
1:30 – 1:40 PM – Recap of ground rules
1:40 – 2:40 PM – Backfit (Appendix I)
2:40 – 3:40 PM – Drug and Alcohol Testing (Appendix D)
3:40 – 3:55 PM – Break
3:55 – 4:55 PM – Fatigue Management (Appendix K)
4:55 – 5:15 PM – Recap/closing remarks for the day
5:15 – 5:30 PM – Recap/closing remarks

Updated Agenda May 9-10

Tuesday, May 9 (Commission Hearing Room):

9:30 – 9:45 AM – Opening remarks/recap of ground rules **and Q&A Session**

9:45 – **10:45** – Emergency Preparedness (Appendix A)

10:45 – 11:15 – Onsite and Offsite Insurance and Indemnity Agreements (Appendix G)

11:15 – 12:00 PM – **Certified Fuel Handler Training and Min. Staffing (App. E)**

12:00 – 12:45 PM – Lunch

12:45 – 1:15 PM – Aging Management (Appendix J)

1:15 – 2:30 PM – Cyber Security (Appendix C) and Physical Security (Appendix B)

2:30 – 2:45 PM – Break

2:45 – 3:30 PM – Decommissioning Trust Funds (Appendix F)

3:30 – 4:30 – Preliminary Draft Regulatory Analysis

4:30 – 5:15 – Recap, Final **Q & A session, Recap**

Wednesday, May 10 (ACRS room):

9:30 – 11:00am – Optional Q&A Session if needed; need for session will be assessed and determined at the end of the meeting on Tuesday, May 9

Rulemaking Goals

- Provide an efficient decommissioning process
- Reduce the need for requests for exemptions from existing regulations
- Address other decommissioning issues deemed relevant by the NRC staff
- Support the principles of good regulation, including openness, clarity and reliability

Next Steps

- Final Regulatory Basis
  - Late 2017
- Proposed Rule/Draft Regulatory Guidance
  - Provide to Commission in Spring 2018
- Draft Final Rule/Final Regulatory Guidance
  - Provide to the Commission in Fall 2019

Submitting Comments

- **Federal Rulemaking Web Site:** Go to http://www.regulations.gov and search for Docket ID NRC-2015-0070.
- For questions about NRC dockets please contact:
  - Carol Gallagher; 301-415-3463; Carol.Gallagher@nrc.gov.
- For technical questions please contact:
  - Alysia Bone; 301-415-1034; Alysia.Bone@nrc.gov
  - Jennifer Tobin; 301-415-2328; Jennifer.Tobin@nrc.gov

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Improvements for Power Reactors Transitioning to Decommissioning

Public Meeting

May 8-10, 2017

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Appendix A

Edward Roach

Public Meeting
May 9, 2017

Background

Licensee Actions upon Decommissioning

- Certification of Permanent Cessation of Power Operations and Permanent Removal of Fuel from Reactor Vessel (10 CFR 50.82 or 52.110*)*
- 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"

Recent

Kewaunee (Wisconsin)
October 2014

Crystal River 3 (Florida)
March 2015

San Onofre (California)
June 2015

Vermont Yankee (Vermont)
December 2015

Current Regulations and Implementation

- Operating Power Reactors
  - 10 CFR 50.47 “Emergency plans”
  - 10 CFR 50.54(q), “Emergency plans,” (s), and (t)
  - Appendix E to 10 CFR Part 50,—”Emergency Planning and Preparedness for Production and Utilization Facilities”
- Independent Spent Fuel Storage Installation (ISFSI) and Monitored Retrievable (pool) Storage (MRS)
  - 10 CFR 72.32,-”Emergency Plan”

BACKGROUND

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

BACKGROUND

Commission Directed Rulemaking

- SRM SECY-14-0118
  - Approved the staff's recommendation to grant the Crystal River EP exemption request
  - Directed that rulemaking on decommissioning include a graded approach to EP

BACKGROUND

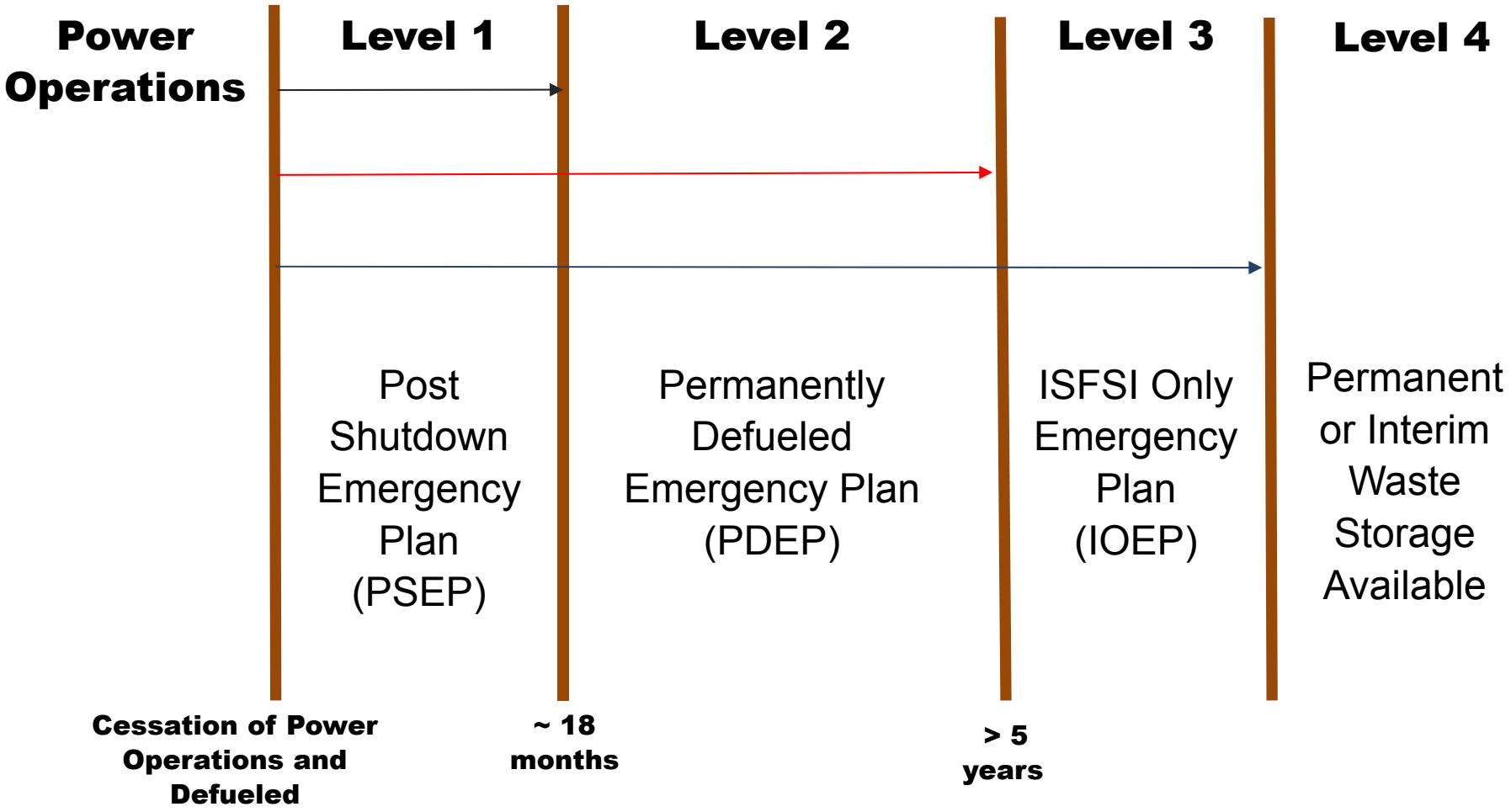
Rulemaking Goals for Emergency Preparedness

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

EP Transitions in Proposed Decommissioning Process

- Level 1: Certification of Permanent Cessation of Power Operations and Permanent Removal of Fuel from Reactor Vessel (10 CFR 50.82 or 52.110)
- Level 2: Spent fuel in the spent fuel pool and sufficiently decayed
- Level 3: Spent fuel in Independent Spent Fuel Storage Installation (ISFSI) and/or Monitored Retrievable Storage (MRS)
- Level 4: All spent fuel removed from site

EP Transitions in Decommissioning



Option 1

- NO ACTION
  - The NRC Staff would continue with existing decommissioning process
  - As described under current regulations in 10 CFR Part 50 (using exemption process)
  - No change in public health, safety, or security

Option 2

- Rulemaking for a Graded Approach to Emergency Preparedness
  - Changes to underlying regulations and guidance
  - Establish clear requirements for reactors in decommissioning process
  - Reduce need for EP exemptions
  - No reduction in public health, safety, or security

Staff Recommendation

- Pursue Option 2
  - Rulemaking for a Graded Approach to Emergency Preparedness

Basis for Staff Recommendation

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

Potential for Backfitting

- Appendix A
  - Neither option constitutes backfitting
    - Option 1 – Status quo- use exemptions
    - Option 2 – Voluntary alternative to submitting LARs and exemption requests

Cost/Benefit Considerations

- Costs
  - NRC costs for Rulemaking (one-time)
  - NRC costs for Emergency Plan Reviews
  - Licensee costs to provide Emergency Plan updates
- Benefits
  - Maintain reasonable assurance
  - Licensee & NRC savings (administrative reviews)
  - Predictability in decommissioning process

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Improvements for Power Reactors Transitioning to Decommissioning

Public Meeting

May 8-10, 2017

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Appendix G: Offsite and Onsite Financial Protection Requirements and Indemnity Agreements

Eric Olvera

Public Meeting
May 10, 2017

Background

- Offsite Insurance
  - The Price-Anderson Act
    - Implemented through 10 CFR Part 140
- Onsite Insurance
  - 10 CFR 50.54(w)

Option 1 - Status Quo
Current Exemption Process

Operations

- Offsite Financial Protection
  - Primary Financial Protection
    - $450M
  - Secondary Financial Protection
    - Industry Retrospective Rating Plan (~$13B)
- Onsite Financial Protection
  - Onsite Financial Protection
    - $1.06B

Decommissioning

- Offsite Financial Protection
  - Primary Financial Protection
    - Reduced to $100M
  - Secondary Financial Protection
    - Withdraw from Industry Retrospective Rating Plan
- Onsite Financial Protection
  - Onsite Financial Protection
    - $50M

Option 2 - Rulemaking

Level	Description	Offsite Requirement	Onsite Requirement
1	Permanently ceased operations and permanently defueled	$450M; participation in the industry retrospective rating plan	$1.06B
2	Sufficiently decayed fuel; ≥ 1,000 gal of radwaste	$100M; withdrawal from plan	$50M
3	All spent fuel transferred to an ISFSI or DOE repository	$50M	$50M
4	All spent fuel and significant radioactive material removed	$25M	$25M / eliminated

Staff Recommendation

- Staff Recommended Option
  - Option 2: Rulemaking
    - Numbers were qualitatively determined
    - Licensees have opted to maintain full primary coverage
    - Regulatory consistency

Potential for Backfitting

- Neither of the two options would constitute backfitting under 10 CFR 50.109 or violate any issue finality provision in 10 CFR Part 52.
  - Option 1 would not impose a change and simply maintains the status quo
  - Option 2 is voluntary and would not require licensees to comply

Cost/Benefit Considerations

Activity	Costs	Benefits
Rulemaking to amend regulations and provide a graded reduction in financial protection	Rulemaking	-Reduced exemption requests -Align insurance exemption standard with EP graded approach

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Improvements for Power Reactors Transitioning to Decommissioning

Public Meeting

May 8-10, 2017

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Appendix E
Minimum Staffing and Training Requirements for Non-Licensed Operators, Including Certified Fuel Handlers

Victoria Huckabay

Public Meeting

May 10, 2017

Background

- During decommissioning, the principal safety concern is the safe storage of spent fuel in the spent fuel pool.
  - Radiological risk and consequences of an accident for a reactor undergoing decommissioning are significantly reduced.
  - The frequency of events that could lead to a spent fuel uncover and potential zirconium fire is impacted by human error probabilities.
- The establishment of a staffing and training baseline, commensurate with the reduced risks at decommissioning reactors is appropriate.

Background (cont.)

- The current regulations that require specified licensed operator staffing for operating reactors are not applicable to a decommissioning plant.
- Licensees have been requesting amendments to their Technical Specifications to eliminate the need to maintain licensed operators.
- Current regulations do not address minimum staffing levels or training requirements for a facility undergoing decommissioning.

Current Regulations and Implementation

- 10 CFR 50.2 – *Certified Fuel Handler* means, for a nuclear power reactor facility, a non-licensed operator who has qualified in accordance with a fuel handler training program approved by the Commission.

Current Regulations and Implementation (cont.)

- 10 CFR 50.54(x) – allows a licensee to take reasonable actions that may depart from a license condition or technical specification in an emergency.
- 10 CFR 50.54(y) – permits a licensee action under 10 CFR 50.54(x) by a certified fuel handler (CFH), at nuclear power reactors that have permanently ceased operations and defueled, subject to 10 CFR 50.82(a).

Current Regulations and Implementation (cont.)

- 10 CFR 50.120, "Training and qualification of nuclear power plant personnel":
  - Addresses training and qualification requirements for non-licensed reactor operators (NLOs)
  - Requirements apply to all Part 50 and Part 52 licensees
- 10 CFR 50.120 does not address the specifics of how a NLO becomes qualified as a CFH

Current Regulations and Implementation (cont.)

- 10 CFR 50.120(b)(2) requires that each licensee establish, implement, and maintain a training program that is derived from a systems approach to training (SAT).
  - SAT process ensures that as plant conditions change, training programs will be revised to reflect these changes (10 CFR 50.120 final rule, 58 FR 21904, 58 FR 21907).

Current Regulations and Implementation (cont.)

- 10 CFR 55.4 – *Systems approach to training* means a training program that includes the following five elements:

  (1) Systematic analysis of the jobs to be performed.

  (2) Learning objectives derived from the analysis which describe desired performance after training.

  (3) Training design and implementation based on the learning objectives.

  (4) Evaluation of trainee mastery of the objectives during training.

  (5) Evaluation and revision of the training based on the performance of trained personnel in the job setting.

Current Regulations and Implementation (cont.)

- 10 CFR 50.120(b)(3) requires that the training program:
  - Incorporate instructional requirements necessary to provide qualified personnel
  - Be developed to be in compliance with facility license, including all TS and applicable regulations
  - Be periodically evaluated and revised as appropriate to reflect industry experience, changes to the facility, procedures, regulations, and QA requirements

Current Regulations and Implementation (cont.)

- 10 CFR 50.120(b)(3) also requires:
  - The training program must be periodically reviewed by licensee management for effectiveness
  - Sufficient records must be maintained by the licensee to maintain program integrity and kept available for NRC inspection to verify the adequacy of the program

Current Regulations and Implementation (cont.)

- In SECY-00-0145, the NRC staff defined three broad-scope objectives for an acceptable fuel handler training program suitable to qualify CFH:
  - Requisite knowledge and experience in the safe conduct of decommissioning activities;
  - Safe handling and storage of spent fuel; and
  - Capability to evaluate plant conditions and exercise prudent judgment for emergency action decisions.

Current Regulations and Implementation (cont.)

- In previous approvals of CFH training programs, the NRC staff:
  - Used the three broad-scope objectives defined in SECY-00-0145;
  - Evaluated the training programs in accordance with 10 CFR 50.120, which includes a requirement that the training program be derived from a systems approach to training as defined in 10 CFR 55.4.

Current Regulations and Implementation (cont.)

- 10 CFR 50.54(m) specifies the minimum licensed operator staffing levels for operating reactors
  - Does not apply to licensees that have certified that they permanently shutdown and defueled under 10 CFR 50.82(a)(1) or 10 CFR 52.110(a).
- Licensees that have permanently shut down must continue to meet minimum staffing requirements in TS and required programs.

Current Regulations and Implementation (cont.)

- Most of the recent experience with staffing of CFHs and NLOs at permanently shut down reactors is limited to single-unit sites.
- The NRC staff is considering the imposition of minimum staffing levels of NLOs and CFHs for decommissioning reactors.
- Shift Technical Advisor (STA) staffing requirement is not relevant to a decommissioning plant
  - Typically removed via a license amendment from the decommissioning plant TS

Option 1

- Option 1 – no action:
  - Retain the current wording of the regulations;
  - Existing regulatory verbiage is sufficiently broad to allow use of CFHs instead of licensed operators at permanently shutdown reactors;
- Continue to review and approve fuel handler training programs suitable to qualify CFH, consistent with current practice;
- Continue to review the staffing requirements proposed in the license amendment requests, on a case-by-case basis.

Option 2

- Option 2 – voluntary industry initiatives for staffing and training for permanently shutdown and defueled Reactors and clarification of related definitions:
  - NRC staff would review voluntary industry initiatives, such as guidance on the responsibilities of CFH, minimum staffing for decommissioning reactors, and guidance on the structure and contents of fuel handler training programs suitable to qualify CFH.

Option 3

- Option 3 – change regulations for staffing for permanently shutdown and defueled reactors and related definitions:
  - Revise the definition of CFH in 10 CFR 50.2;
  - Specify the minimum staffing requirements in 10 CFR 50.54(m) for a decommissioning reactor licensee that has submitted certifications in accordance with 10 CFR 50.82(a)(1) or 52.110(a);
  - Clarify that the STA position and the associated training program are not needed for a decommissioning reactor, in 10 CFR 50.120.

Option 3 (cont.)

- Revise the definition of CFH in 10 CFR 50.2 to:
  - Clarify the management role of CFH consistent with 10 CFR 50.54(y);
  - Eliminate the need for Commission's approval for fuel handler training programs suitable to qualify CFH;
  - Add provision that the training program address the safe conduct of decommissioning activities, safe handling and storage of spent fuel, and appropriate response to plant emergencies; and
  - Require consistency with the existing requirements of training of NLOs in 10 CFR 50.120.

Option 3 (cont.)

- Example of proposed changes to the definition of CFH in 10 CFR 50.2:
  - *Certified fuel handler* means, for a nuclear power reactor facility, a non-licensed operator who is responsible for decisions on (1) safe conduct of decommissioning activities, (2) safe handling and storage of spent fuel, and (3) appropriate response to plant emergencies, and has qualified in accordance with a ~~fuel handler~~ non-licensed operator training program ~~approved by the Commission~~ required by 10 CFR 50.120.

Option 3 (cont.)

- Example of proposed changes to 10 CFR 50.54(m):
  - Add a table to specify the minimum requirements for the number of CFHs and NLOs on-shift at a permanently shutdown and defueled reactor;
  - Revision of a footnote to clarify the existing table in Section 50.54(m):

    [2] (i) For the purpose of this table, a nuclear power unit is considered to be operating when it is in a mode other than cold shutdown or refueling as defined by the unit's technical specifications, and (ii) the requirements of this table apply only with fuel in the reactor vessel.

Staff Recommendation

- The NRC staff is requesting public comments regarding the three options.
- The staff's recommendation will be documented in the final regulatory basis document
  - The staff's recommended option will be informed by public comments received on the draft regulatory basis document.

Staff Perspective

- Significantly lower risk to public health and safety associated with spent fuel pool, as compared to an operating plant.
- No adverse safety impacts related to CFH staffing or training identified, to date.
- However, the NRC staff concluded that there is:
  - A lack of clarity in the regulations with regard to the staffing alternative for licensed operators after a reactor has permanently shut down and defueled under 10 CFR 50.82(a)(1) or 52.110(a);

Staff Perspective (cont.)

- A regulatory gap with respect to minimum staffing requirements for staff at permanently shut down and defueled reactors;
- Lack of clarity in the regulations with regard to what requirements an acceptable fuel handler training program for qualifying CFHs would have to meet.

Staff Perspective (cont.)

- The NRC staff has reviewed recent precedents:
  - Approvals of licensee fuel handler training programs suitable to qualify a CFH;
  - Amendments to licenses of decommissioning facilities that address the minimum staffing and qualifications of staff.
- The NRC staff believes that Option 3 will closely align with these recent approvals.
- However, Option 2 may address the lack of clarity with regard to the staffing alternative for licensed operators and responsibilities of CFHs and NLOs at decommissioning reactors.

Potential for Backfitting

- Option 3 would constitute backfitting.
  - The rulemaking would have to result in a cost-justified, substantial increase in the protection of the public health and safety or common defense and security to be implemented.
  - The NRC staff is evaluating if promulgation of requirements proposed in Option 3 would result in substantial increase in the overall protection of the public health and safety.

Cost / Benefit Considerations

- Option 1 – no action:
  - No incremental benefits to licensees or NRC.
  - No incremental costs to licensees or NRC.
  - Continued burden for the licensees and the NRC staff associated with regulatory review and approvals of fuel handler training programs suitable to qualify CFH and necessary license amendments, on a case-by-case basis.

Cost / Benefit Considerations (cont.)

- Option 2 – voluntary industry initiatives:
  - Benefits:
    - Promote uniformity and standardization for fuel handler training programs suitable to qualify CFH;
    - Small-to-modest operational savings to licensees.
  - Costs:
    - Costs associated with development of voluntary industry initiatives (e.g., guidance documents);
    - Initial costs for the NRC to review proposed guidance documents and conduct public meetings;
    - NRC costs to develop and publish regulatory guidance, perform supporting analyses, and public outreach efforts.

Cost / Benefit Considerations (cont.)

- Option 3 – change the regulations:
  - Benefits:
    - Improved regulatory efficiency and stability;
    - Reduced burden and cost savings to licensees and the NRC staff due to elimination of the requirement to seek Commission's approval for fuel handler training programs suitable to qualify CFHs.
    - Reduced burden and cost savings to licensees associated with a reduction in the number of RAIs;

Cost / Benefit Considerations (cont.)

- Option 3 – change the regulations:
  - Costs:
    - One-time cost to the NRC to undertake the rulemaking process and prepare accompanying guidance;
    - Licensee costs to implement specific provisions of the rule; and
    - Small costs to the NRC and licensees associated with future inspections intended to verify appropriate implementation of the rule.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Improvements for Power Reactors Transitioning to Decommissioning

Public Meeting

May 8-10, 2017

Updated Agenda May 9-10

Tuesday, May 9 (Commission Hearing Room):

9:30 – 9:45 AM – Opening remarks/recap of ground rules **and Q&A Session**

9:45 – **10:45** – Emergency Preparedness (Appendix A)

10:45 – 11:15 – Onsite and Offsite Insurance and Indemnity Agreements (Appendix G)

11:15 – 12:00 PM – **Certified Fuel Handler Training and Min. Staffing (App. E)**

12:00 – 12:45 PM – Lunch

12:45 – 1:15 PM – Aging Management (Appendix J)

1:15 – 2:30 PM – Cyber Security (Appendix C) and Physical Security (Appendix B)

2:30 – 2:45 PM – Break

2:45 – 3:30 PM – Decommissioning Trust Funds (Appendix F)

3:30 – 4:30 – Preliminary Draft Regulatory Analysis

4:30 – 5:15 – Recap, Final **Q & A session, Recap**

Wednesday, May 10 (ACRS room):

9:30 – 11:00am – Optional Q&A Session if needed; need for session will be assessed and determined at the end of the meeting on Tuesday, May 9

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Appendix J
Aging Management

Heather Jones
Scott Krepel

Public Meeting
May 9, 2017

Background

- NRC reviewing need for aging management activities during the decommissioning period
- Reasonable assurance that intended functions of long-lived, passive structures and components (SCs) are maintained, monitored for decommissioning, while fuel in spent fuel pool (SFP)
  - Neutron absorbing materials
  - SFP liner
  - SFP cooling system

Current Regulations and Implementation

- 10 CFR 50.51(b), "Continuation of License" indicates a licensee has an obligation to protect fuel, and by extension the structures, systems, and components it relies upon to meet that obligation throughout decommissioning process until fuel removed from SFP

- NRC staff does not believe any new regulations are required

Option 2

- Option 2: Develop regulatory guidance and ensure the adequacy of inspection programs
- No change to requirements for decommissioning reactors to implement aging management activities.
- Staff would issue regulatory guidance recommending adequate methods for implementing regulations
- Staff would update inspection procedures for decommissioning reactors to ensure adequate and consistent oversight of aging management

Staff Recommendation (if applicable)

- Staff publishing Federal Register notice for aging management regulatory basis to obtain stakeholder feedback on the option considered
- Decision on which option the staff recommends will be informed by public comments received on this draft regulatory basis document
- Staff's recommendation will be documented in final regulatory basis

Potential for Backfitting

- Guidance would establish NRC-approved means for complying with regulatory requirements for long-lived, passive SCs that are necessary to protect fuel for decommissioning
- Licensees could voluntarily implement this guidance
- Guidance could be applied to future decommissioning applications (approved after guidance issued)

Cost/benefit Considerations

- Cost
  - NRC Implementation: NRC incurs one-time cost relative to status quo to develop and issue regulatory guidance, update inspection procedures
  - Industry Implementation: Licensees incur one-time cost relative to status quo to review regulatory guidance document, to update plant procedures for inspecting passive and long-lived SCs supporting SFP operation
  - Industry Implementation: Licensees would incur ongoing costs to inspect passive and long-lived SCs supporting SFP operation
- Benefit
  - Regulatory clarity
  - Consistency

Updated Agenda May 9-10

Tuesday, May 9 (Commission Hearing Room):

9:30 – 9:45 AM – Opening remarks/recap of ground rules **and Q&A Session**

9:45 – **10:45** – Emergency Preparedness (Appendix A)

10:45 – 11:15 – Onsite and Offsite Insurance and Indemnity Agreements (Appendix G)

11:15 – 12:00 PM – **Certified Fuel Handler Training and Min. Staffing (App. E)**

12:00 – 12:45 PM – Lunch

12:45 – 1:15 PM – Aging Management (Appendix J)

1:15 – 2:30 PM – Cyber Security (Appendix C) and Physical Security (Appendix B)

2:30 – 2:45 PM – Break

2:45 – 3:30 PM – Decommissioning Trust Funds (Appendix F)

3:30 – 4:30 – Preliminary Draft Regulatory Analysis

4:30 – 5:15 – Recap, Final **Q & A session, Recap**

Wednesday, May 10 (ACRS room):

9:30 – 11:00am – Optional Q&A Session if needed; need for session will be assessed and determined at the end of the meeting on Tuesday, May 9

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Improvements for Power Reactors Transitioning to Decommissioning

Public Meeting

May 8-10, 2017

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Part 37 - Regulatory Improvements for Reactors in Decommissioning

Public Meeting
May 8-11, 2017

Steve Garry, NRR / DRA / ARCB
Sr. Health Physicist

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Questions in FRN associated with Part 37 for Decommissioning Reactors

Steven Garry

Public Meeting

May 9, 2017

Part 37 Basic Requirements

- Provide post 9/11 physical security
- Provide reasonable assurance against theft or diversion of category 1 and category 2 material
- 10 CFR 37.11(b) provides an “exemption” for facilities with part 73 security plans
- However, these facilities (with Part 73 plans) must provide an equivalent level of protection

Part A - General Provisions

- Purpose
- Scope
- Definitions
- Communications
- Interpretations
- Specific Exemptions

Part 37 Subpart B

Background Investigations & Access Authorizations for Category 1 and Category 2 Material

- Ensure individuals that are granted unescorted access are trustworthy and reliable (i.e., dependable in judgment, character, and performance)
- Requires background investigation, FBI criminal history check, and finger printing
- Licensee's reviewing officials make the determination of trustworthy and reliable

Subpart C – Physical Protection

- Establish a Security Program for Category 1 and Category 2 Material
  - Security plan & overall strategy
  - Establish Security zones
  - Establish implementing procedures to monitor, detect, assess, and respond to actual or attempted unauthorized access
  - Conduct training
  - Protect security information

Subpart C: Physical Protection (cont)

- Security programs must:
  - Describe protection strategies
  - Identify security resources, equipment, and technology
  - Be reviewed and approved by the Security individual with overall responsibility

Subpart C:

- Monitoring, detection and assessment (Category 1 and Category 2 material)
  - Must have capability of continuously monitoring and detecting unauthorized access
  - Must immediately assess actual or unauthorized access

Subpart D: Transfer of Category 1 and Category 2 Materials

- Verify license using NRC Licensee Verification System
- Cat 1 material shipments:
  - Advance notice to NRC and Governor
  - Provide expected arrival time
  - Provide no-later-than arrival time
  - Establish movement control centers to monitor shipment
  - Track via telemetric GPS
  - Redundant communications capability
- Does not apply to radwaste shipments, except for:
  - Discrete sources
  - Resins
  - Activated material < 2,000 kg

Subpart B, 37.11 (c)
Exemptions for most radwaste

- Most decommissioning radwaste is exempt from Part 37, Subparts B, C, D
  - Exceptions: discrete sources, resins, small amounts (<2,000 kg) of activated material
- Subpart B: Individuals are subject to "licensee" access authorizations, but are exempt from full background investigations and P37 access authorizations
- Subpart C: Exempt from Security Program, Security plan & overall strategy, Security zones & implementing procedures
- Subpart D: Most radwaste is exempt from transportation requirements

Equivalent Protection to Part 37

- RIS 2015-15
  - Protected Area - Facilities with a Part 73 security plan generally provide adequate security measures, if the Security plan:
    - Describes the physical protection measures for P37 materials
    - Describes process for maintaining accountability of Cat 1 and Cat 2 materials
    - Provides training to individuals protecting Cat 1 and 2 materials
  - Outside Protected area – need a security plan that meets Part 37 requirements

Specific Requirements for Exempt Radwaste

- Most decommissioning radwaste is exempt from Subparts B,C, and D, but subject to specific requirements:
  - Continuous physical barriers, and licensee-based authorized access (w/o background investigations)
  - Locked doors with monitored alarms
  - Assess and respond to unauthorized access
  - Notify local law enforcement for actual attempts of theft, sabotage, or diversion

Questions: Part 37 for Decomm Reactors

- Should NRC revise Part 37 requirements for reactors in the decommissioning status?
- Why?
- How?

Transitioning away from Part 73 security plan

- Should licensees in decommissioning be provided with specific Part 37 requirements (as licensees downgrade their Part 73 security plans)?

DECON, SAFSTOR and ENTOMB

- Should the Part 37 requirements be different for DECON, SAFSTOR and ENTOMB?
  - Decon – prompt decommissioning
  - SAFSTOR – delayed decommissioning
  - Entomb – Permanent time frames

Large components & robust structures

- Should Part 37 have specific requirements for large components and robust structures due to self-protecting features (e.g., size and weight)?
- Should the list of large components and robust structures in the EGM-14-001 be expanded?
- What other characteristics should be considered?

Basis for Staff Recommendation

- Is a clarification needed on the exemption in 37.11(b) as applicable to reactors in decommissioning status?

Conclusions

- In general, how should Part 37 be revised for reactors in decommissioning?

- Submit written stakeholder comments for NRC consideration.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Appendix C
Cyber Security

Jonah Pezeshki

Public Meeting
May 9, 2017

Background

- 10 CFR 73.54 sets forth cyber security requirements for licensees currently licensed to operate a nuclear power plant under 10 CFR Part 50 and COL holders licensed to operate under 10 CFR Part 52
- Rule does not explicitly address cyber security requirements for decommissioning nuclear power reactors.
- Rulemaking in being considered to address potential inconsistencies in the application of cyber security requirements

Current Regulations and Implementation

- 10 CFR 73.54, “Protection of digital computer and communication systems and networks”
- By November 23, 2009, both licensees and COL applicants were required to submit a cyber security plan (CSP)
- Approved CSPs are referenced as license conditions in reactor operating licenses and continue to apply after permanent shut down

Option 1 – No Action

- Upon the NRC's docketing of 10 CFR 50.82 certification, 10 CFR 73.54 no longer applies to that licensee
- Once a licensee is no longer authorized to operate, licensee may submit license amendment request to remove CSP from its license

Option 2a – Dry Cask Storage

- Rulemaking to specify that the CSP may only be removed from a license after spent fuel has been fully transferred to dry cask storage
- After spent fuel is transferred to dry cask storage, licensees may submit a license amendment request to remove the CSP from their license

Option 2b – Spent Fuel Pool

- Rulemaking to specify that the CSP may only be removed from a license after spent fuel in SFP has sufficiently decayed (i.e., 10 months for BWRs and 16 months for PWRs)
- After spent fuel has sufficiently decayed, licensees may submit license amendment request to remove the CSP from their license

Staff Recommendation

- Decision on which option the staff recommends will be informed by public comments received on this draft regulatory basis document
- Staff's recommendation will be documented in final regulatory basis

Potential for Backfitting

- Rulemaking to amend cyber security requirements (Option 2a or 2b) would not constitute backfitting for currently operating or recently shutdown Part 50 licensees
- Could constitute backfitting for Part 50 licensees that have had their license condition removed or a violation of issue finality for Part 52 combined license holders who do not have a CSP license condition

Cost/Benefit Considerations

- One-time cost to the NRC to develop rule and revise guidance
- Establishes clear timing of cyber security reductions for decommissioning power reactors
- Ensures consistent regulatory approach to cyber security for decommission power reactors

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Appendix B
Physical Security

Susan Stuchell & Vince Williams
Nuclear Security & Incident Response

Draft Regulatory Basis Public Meeting
May 9, 2017

Background

- Influx of plants transitioning to decommissioning
- Decrease in plant systems
  - Increase in licensing actions
  - Increase in changes to the physical protection programs
  - Increase in exemption requests

Current Requirements impacted by this rule

- 10 CFR 73.55
- NRC evaluated force-on-force (FOF) inspections
- Security orders
  - Training to protect against core damage
- 10 CFR 50.54
- 10 CFR 72.212

Option 1 - Status Quo

- At an operating reactor
  - Regulations in 10 CFR 73.55(b)(3) require the physical protection program…to prevent significant core damage and spent fuel sabotage.
  - Possible security events cover a wide range of target sets,
- Shutdown & defueled reactors
  - have spent nuclear fuel (SNF) in the spent fuel pool (SFP) or an independent spent fuel storage installation (ISFSI) or both.
  - Possible security events cover a significantly smaller range of target sets.

Option 2 - Rulemaking

- Eliminate NRC evaluated FOF inspections
- Rescind the order for training to protect against core damage
- Amend regulatory requirements
  - Protecting Against Core Damage
  - Suspension of security measures
  - Protection of vital areas
  - Communications
  - Maintaining physical security plans
  - Protecting spent fuel according to 10CFR 73.55

FOF Policy Formalized

- Relief from NRC triennial evaluated Force-on-Force Inspection.
  - *Upon docketing of the certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel pursuant to § 50.82 or § 52.110, the NRC will notify licensees by letter of their relief from this inspection program.*

Exemption: significant core damage

- §73.55(b) requires
  - (3) - The physical protection program to prevent significant core damage and spent fuel sabotage.
- Security Order EA-02-026 , section B.1.a. requires training to protect against core damage.
- reactors no longer have a core therefore these requirements are not applicable.

Exemption: security measure suspension

- §73.55 (p) Suspension of security measures. (1) The licensee may suspend implementation of affected requirements of this section under the following conditions:
- (i) In an emergency to protect public health & safety.
  - This suspension of security measures must be approved as a minimum by a licensed senior operator before taking this action.
- (ii) or severe weather to protect security staff personal health & safety.
  - This suspension of security measures must be approved, as a minimum, by a licensed senior operator, with input from the security supervisor or manager, before taking this action.
- Proposed change would allow suspension *by either a licensed senior operator or a certified fuel handler,*

Exemption: vital areas

The protection of the control room as a vital area

- §73.55(e)(9) – (9) Vital areas. (i) Vital equipment must be located only within vital areas, which must be located within a protected area so that access to vital equipment requires passage through at least two physical barriers, …and identified in security plans.
  - (v) At a minimum, the following shall be considered vital areas:
    - (A) The reactor control room;
- Proposed change adds the following text, The reactor control room, *unless the licensee has submitted and the NRC has docketed the certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel pursuant to § 50.82(a) or § 52.110(a) of this chapter;*

Exemption: communications

- § 73.55(j) Communication requirements. (1) The licensee shall establish and maintain continuous communication capability …during both normal and emergency situations.
  - (4) The following continuous communication capabilities must terminate in both alarm stations required by this section:
    - (ii) A system for communication with the control room.
- Proposed change adds the following text:
  A system for communication with the control room or, if the certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel have been docketed pursuant to § 50.82 or § 52.110 of this chapter, a system for communication with the Certified Fuel Handler and/or senior on-shift licensee representative responsible for overall safety and security of the permanently shutdown and defueled facility.

50.54(p) Security plan changes

- Security plans are normally modified during the transition from operating to decommissioning.
- Changes are allowed without prior NRC approval, however,
  - Security plans must maintain safeguards effectiveness.
- To clarify requirement proposed changes
  - Add a definition to 10 CFR 50.2 or 10 CFR 50.54(p)(2)
  - Require a more detailed submission of the changes

Safeguards Effectiveness

A decrease in the safeguards effectiveness of a security plan is a change or series of changes to the security plan that reduces or eliminates the licensee's ability to perform or maintain the security function that was previously performed or provided by the changed element or component without compensating changes to other security plan elements or components.

Security plan changes

- Alternative 1, only add security effectiveness definition. Decommissioning licensees implement security plan changes then report changes to the NRC within 2 months.
- Alternative 2, develop regulatory guidance and add security effectiveness definition. Provide licensees guidance for making security plan changes that do and do not decrease the safeguards effectiveness of the plan.
- Alternative 3, revise regulatory language and add security effectiveness definition
  - revise the specific requirements to more closely reflect the wording found in 10 CFR 50.54(q)
    - licensee performs and retains an analysis demonstrating that the changes do not reduce the effectiveness
    - licensee submits a report which includes a summary of the analysis to the NRC for each change

Transition to Physical Security Requirements Applicable to an ISFSI

- Licensees that operate an ISFSI may hold either a general or specific license for the ISFSI.
- Specific license ISFSI requirements are located in 10 CFR 73.51.
- Unlike 10 CFR 73.55, 10CFR 73.51 includes only requirements applicable to an ISFSI
- During the decommissioning process, power reactor licensees with a general licensed ISFSI will progress to a phase when all the spent fuel has been placed in dry cask storage.
- General ISFSI licensees must submit license amendments and requests for exemptions to obtain relief from the more stringent 10 CFR 73.55 operating reactor requirements.

Exemption: Part 72.212

- General License ISFSI Security
  - § 72.212 (b)(9) Protect the spent fuel against the design basis threat of radiological sabotage in accordance with the same provisions and requirements as are set forth in the licensee's physical security plan pursuant to § 73.55 of this chapter with the following additional conditions and exceptions:
- Proposed change may require *(vii) Upon docketing … permanent removal of fuel from the reactor vessel …(including a prohibition against storage of fuel in the spent fuel pool), the licensee shall provide for physical protection of the spent fuel under Subpart H of this part and § 73.51 of this chapter*

10 CFR Part 73.51

- §73.51 Requirements for …stored spent nuclear fuel … (a) Applicability. …each licensee that stores spent nuclear fuel and high-level radioactive waste …This includes—
  - (1) Spent nuclear fuel …stored under a **specific** license issued pursuant to part 72 of this chapter:
    - (i) At an independent spent fuel storage installation (ISFSI) or
  - (2) … at a geologic repository operations area (GROA);
- Proposed change may read (3) fuel stored at a decommissioned Part 50 general license ISFSI where all spent fuel has been placed in dry storage at the facility

Staff Recommendation

Option 2 - Rulemaking

- changes commonly requested and typically approved
- added benefit of reducing both licensee and NRC resource expenditures

Basis for Staff Recommendation

- Under Option 2, the NRC continues,
  - to review security plan change reports and
  - to provide oversight of licensee security programs through a security inspection program that verifies compliance with applicable regulatory requirements.
- Reduces costs.

Potential for Backfitting

- Option 1 -- status quo – no backfitting.
- Option 2 -- rulemaking
  - Provides a voluntary alternative to exemption requests by establishing a graded approach.
  - The proposed requirement for general license ISFSI to comply with 10 CFR 73.51 may constitute backfitting.
  - The proposed requirement that licensees prepare and retain an analysis of security plan changes made under 10 CFR 50.54(p)(2) and submit a summary of that analysis to the NRC would be a new information collection and reporting requirement.

Cost/benefit Considerations

- Costs
  - One-time cost to the NRC to prepare rule, revise guidance and implement rule.
  - Ongoing costs to licensees to provide updates to physical security plans during the process.
  - Ongoing costs to the NRC to review updates to physical security plans during the process.

Cost/benefit Considerations

- Benefits
  - Enhanced clarity and predictability of decommissioning process.
  - Savings to all licensees resulting from minimizing the need to use the exemption process.
  - Savings to licensees resulting from the potential to expedite the decommissioning process.
  - Savings to the NRC from fewer amendments and exemptions to review.

Physical Security Contacts

- Susan Stuchell
  - Susan.Stuchell@nrc.gov
  - 301 287 3609
- Vince Williams
  - Vince.Williams@nrc.gov
  - 301 287 3694

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Improvements for Power Reactors Transitioning to Decommissioning

Public Meeting

May 8-10, 2017

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Appendix F Decommissioning Funding Assurance

Michael Dusaniwskyj
Economist, Office of Nuclear Reactor Regulation

Public Meeting
May 10, 2017

Background
Current Status

- Table of Minimum Amounts
- Commingling of Funds
- Radiological Decommissioning
- Spent Fuel Management
- ISFSI

Current Regulations and Implementation

- 10 CFR 50.2 - Definition
- 10 CFR 50.75 - Certify reasonable assurance
- 10 CFR 50.82 - Allowable expensing
- 10 CFR 50.54(bb) - Spent fuel management
- 10 CFR Part 72 - ISFSI

Options

- No Action
- Allow for ancillary decommissioning expenses
- Codify commingling of funds
- Immediate funding of shortfalls
- Replace biennial reports with triennial reports
- 1% flexibility for expenses
- Fund to a site-specific cost estimate (SSCE)

Basis for Staff Recommendations

- Minimize regulatory exemptions
- Ensure Decommissioning Trust Funds are fully funded at all times
- Maintain regulatory flexibility for future economic environment (principles of good regulation)
- Reduce regulatory burden - periodic review
- Open and transparent (SSCE and comingling)

Cost Benefit Analysis

- Cost
  - NRC cost to develop the proposed rule
  - Industry incremental reviews of site-specific cost estimates
  - Additional NRC staff time needed to review site-specific cost estimates (every 5 years)
- Benefit
  - Averted cost, exemptions not needed
  - Greater transparency of licensee's decommissioning costs
  - Minimize uncertainty associated with estimating decommissioning costs
  - Lower frequency of reporting assurances
  - More licensee flexibility for funding spent fuel management

Backfitting & Issue Finality

- The NRC does not anticipate that the options in Appendix F would constitute backfitting under 10 CFR 50.109, “Backfitting.”

Targeted Discussion

- **Should NRC dedicated decommissioning trust funds be used for spent fuel management and ISFSI decommissioning without a regulatory exemption?**

- What do stakeholders think are the pros & cons of codifying comingling (should this remain in guidance vs regulations)?
- Do stakeholders agree that the change from biennial to triennial reviews will reduce regulatory burden (as the timing will now match the ISFSI review period)?
- Is the proposed 1% flexibility measure appropriate and is 1% the correct percentage?
- Given the current crop of premature shutdowns, will assuring to a SSCE earlier in the license operating phase provide a greater level of assurance that funds will be available for decommissioning.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Improvements for Power Reactors Transitioning to Decommissioning

Public Meeting

May 8-10, 2017

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Preliminary Draft Regulatory Analysis

Chris Howells

Public Meeting
May 10, 2017

Background

- The NRC staff prepared the preliminary draft regulatory analysis to support decisionmaking for the draft regulatory basis document.
- The regulatory analysis evaluates the costs and benefits of each alternative for each area of the draft regulatory basis.
- The regulatory analysis covers all nuclear power facilities in the US that would be affected by the rulemaking.
- The preliminary draft regulatory analysis was published in the FRN on 9 May 2017 for public comment.

Background

- Sixteen areas are under consideration for no action/status quo, guidance development, or rulemaking in the draft regulatory basis, including:
  - **Emergency Preparedness**
  - **Physical Security**
  - **Cyber Security**
  - **Fitness for Duty – Drug and Alcohol Testing**
  - **Fitness for Duty – Fatigue**
  - **Minimum Staffing and Training Requirements for Certified Fuel Handlers**
  - **Decommissioning Trust Fund**
  - **Offsite and Onsite Financial Protection and Indemnity Agreements**
  - **Application of Backfitting Protection**
  - **Aging Management**

Background

- The Current Regulatory Approach for Decommissioning includes six areas of decommissioning that are considered in the draft regulatory basis for no action/status quo, guidance development, or rulemaking. These areas include:
  - **The Level of PSDAR Review and Approval by the NRC**
  - **The Appropriateness of Maintaining the Three Existing Options for Decommissioning**
  - **The 60-year Timeframe Associated with Decommissioning**
  - **The Role of State and Local Governments and Non-Governmental Stakeholders**
  - **Clarifying the Spent Fuel Management Requirements**
  - **Clarifying the Environmental Requirements**

Background

- The areas in which the NRC staff has determined that there is sufficient regulatory basis to continue with rulemaking are:
  - **Emergency Preparedness**
  - **Physical Security**
  - **Decommissioning Trust Fund**
  - **Offsite and Onsite Financial Protection and Indemnity Agreements**
  - **Application of Backfitting Protection**
  - **Clarifying the Spent Fuel Management Requirements**
  - **Clarifying the Environmental Requirements**

Background

- The NRC staff's draft regulatory basis suggests that development and update of regulatory guidance can be pursued to address the following areas:
  - **The Level of PSDAR Review and Approval by the NRC**
  - **The Appropriateness of Maintaining the Three Existing Options for Decommissioning**
  - **The 60-year Timeframe Associated with Decommissioning**
  - **The Role of State and Local Governments and Non-Governmental Stakeholders**

Preliminary Draft Regulatory Analysis Results

- A cost benefit analysis (CBA) was completed for each area of decommissioning.
- The CBA was quantified for the following areas of decommissioning:
  - **Emergency Preparedness**
  - **Physical Security**
  - **Cyber Security**
  - **Part 26 Drug and Alcohol Testing**
  - **Part 26 Fatigue Management**
  - **Minimum Staffing and Training Requirements for Certified Fuel Handlers**
  - **Decommissioning Trust Fund**
  - **Offsite and Onsite Financial Protection and Indemnity**
  - **Application of Backfitting Protection**
  - **Aging Management**

Preliminary Draft Regulatory Analysis Results

- The CBA was qualitatively described for the following areas of decommissioning:
  - **The Level of PSDAR Review and Approval by the NRC**
  - **The Appropriateness of Maintaining the Three Existing Options for Decommissioning**
  - **The 60-year Timeframe Associated with Decommissioning**
  - **The Role of State and Local Governments and Non-Governmental Stakeholders**
  - **Clarifying the Spent Fuel Management Requirements**
  - **Clarifying the Environmental Requirements**

Decommissioning Areas Costs and Benefits

- Emergency Preparedness
- Physical Security
- Cyber Security
- Fitness for Duty - Drug and Alcohol Testing
- Fitness for Duty - Fatigue
- Minimum Staffing and Training Requirements for Certified Fuel Handlers
- Decommissioning Trust Fund
- Offsite and Onsite Financial Protection and Indemnity Agreements
- Application of Backfitting Protection
- Aging Management

Emergency Preparedness

Alternative	Activity	Costs	Benefits
EP-2	Rulemaking to amend regulations to provide a graded approach to emergency preparedness / emergency plan changes between levels with NRC approval	• Rulemaking	• Reduced exemption requests • Averted FEMA fees • Averted site specific analysis
EP-3	Same as EP-2 except emergency plan changes **without** NRC approval	• Rulemaking	• Same as EP-2, except amendment submittals are reduced

Physical Security

Alternative	Activity	Costs	Benefits
PS-2	Rulemaking to reduce Physical Security Requirements	• Rulemaking	• Reduced exemption requests • Reduced amendment submittals

Cyber Security

Alternative	Activity	Costs	Benefits
CS-2	Rulemaking to remove all cyber security requirements when spent fuel has been transferred to ISFSI	• Rulemaking • Labor for keeping IT staff to maintain cyber security until spent fuel has been transferred to ISFSI	• None that would lead to cost savings
CS-3	Rulemaking to remove all cyber security requirements when spent fuel has sufficiently decayed	• Rulemaking • Labor for keeping IT staff to maintain cyber security until spent fuel has sufficiently cooled	• None that would lead to cost savings

Fitness for Duty - Drug & Alcohol Testing

Alternative	Activity	Costs	Benefits
DA-2	Rulemaking to amend 10 CFR Part 26 to clarify the applicability of FFD requirements for decommissioning nuclear power plants. Reduce testing of individuals with unescorted access.	• Rulemaking	• Reduced operational costs due to reduced requirements for Drug & Alcohol Testing

Fitness for Duty - Fatigue

Alternative	Activity	Costs	Benefits
F-2	Voluntary industry initiatives to account for fatigue at decommissioning power reactors	• Increased operational costs to Industry due to maintenance of fatigue programs	• None that would lead to cost savings
F-3	Rulemaking to codify fitness for duty fatigue requirements for decommissioning power reactors	• Rulemaking • Increased operational costs to both NRC and Industry due to maintenance of fatigue programs	• None that would lead to cost savings

Minimum Staffing & Training Requirements for CFHs

Alternative	Activity	Costs	Benefits
CFH-2	Voluntary industry initiatives for staffing and training for permanently shutdown and defueled reactors and clarify related definitions	• Develop initiatives	• None that would lead to cost savings
CFH-3	Rulemaking to change the regulations for staffing and training for permanently shutdown and defueled reactors and clarify related definitions	• Rulemaking	• Eliminate the need for licensees to seek approval of CFH training programs

Decommissioning Trust Fund

Alternative	Activity	Costs	Benefits
DTF-2	Rulemaking to amend regulations to minimize exemptions and reduce the ambiguity in the decommissioning trust fund regulations	• Rulemaking • Address shortfalls in the DTF within 3 years	• Reduced exemption requests
DTF-3	Same as DTF-2 except amend regulations to revise when specific site cost estimate needs to be submitted	• Rulemaking • Update of the Site Specific Cost Estimate (SSCE) • Require decommissioning facilities to maintain the DTF assurance to the SSCE • Address shortfalls in the DTF within 3 years	• Reduced exemption requests

Offsite and Onsite Financial Protection and Indemnity Agreements

Alternative	Activity	Costs	Benefits
FP-2	Rulemaking to amend regulations to provide a graded reduction in risk with corresponding reductions in financial protection	• Rulemaking	• Reduced exemption requests

Application of Backfitting Protection

Alternative	Activity	Costs	Benefits
B-2	Update guidance documents to account for backfitting protection of a decommissioning facility	• Update of NUREG-1409 and other guidance documents.	• None that would lead to cost savings
B-3	Conduct rulemaking to clarify how the NRC applies the Backfit Rule to licensees in decommissioning	• Rulemaking	• Clarify when backfitting applies to decommissioing

Aging Management

Alternative	Activity	Costs	Benefits
AMP-2	Develop regulatory guidance and ensure the adequacy of inspection programs	• Develop new regulatory guidance • Update facility procedures for inspecting passive and long-lived structures and components that supports the Spent Fuel Pool operation	• None that would lead to cost savings

Current Regulatory Approach to Decommissioning – Decommissioning Areas Costs and Benefits

- The Level of PSDAR Review and Approval by the NRC
- The Appropriateness of Maintaining the Three Existing Options for Decommissioning
- The 60-year Timeframe Associated with Decommissioning
- The Role of State and Local Governments and Non-Governmental Stakeholders
- Clarifying the Spent Fuel Management Requirements
- Clarifying the Environmental Requirements

The Level of PSDAR Review and Approval by the NRC

Alternative	Activity	Costs	Benefits
DAR-2	Update guidance related to the decommissioning process	• Revise regulatory guidance	• May lead to less time spent on decommissioning documents submitted to NRC
DAR-3	Rulemaking to address areas related to the review of the PSDAR	• Rulemaking • Prepare and submit PSDAR updates and support NEPA review process	• None that would lead to cost savings
DAR-4	Rulemaking to codify requirements for review and approval of the PSDAR	• Rulemaking • Prepare and submit PSDAR as an amendment	• None that would lead to cost savings

The Appropriateness of Maintaining the Three Existing Options for Decommissioning

Alternative	Activity	Costs	Benefits
O-2	Guidance Development / Enhancement to address various methods to decommission power reactors	• Develop and/or revise regulatory guidance	• May lead to less time spent on decommissioning documents submitted to NRC
O-3	Rulemaking to codify the methods available for decommissioning and establish requirements for each option	• Rulemaking • Industry to address new regulatory requirements and submit additional information / documentation	• May lead to less time spent on decommissioning documents submitted to NRC

The 60-Year Timeframe Associated with Decommissioning

Alternative	Activity	Costs	Benefits
T-2	Guidance Development / Enhancement to address the timeframe available to decommission power reactors	• Develop and/or revise regulatory guidance	• May lead to less time spent on decommissioning documents submitted to NRC
T-3	Rulemaking to decrease the time allowed to complete decommissioning at facilities that are not co-located with operating reactor units and establish requirements for expediting decommissioning	• Rulemaking • NRC to conduct additional technical analyses to support a new decommissioning timeframe • Industry to address new regulatory requirements and submit additional information and documentation	• May lead to less time spent on decommissioning documents submitted to NRC

The Role of State and Local Governments and Non-Governmental Stakeholders

Alternative	Activity	Costs	Benefits
GOV-2	Guidance Enhancement to address the creation of community advisory boards at decommissioning power reactors	• Update regulatory guidance	• May lead to less time spent on decommissioning documents submitted to NRC
GOV-3	Rulemaking to codify a requirement that all licensees entering into the decommissioning process create a community advisory board	• Rulemaking • Industry and Government to address new regulatory requirements and submit additional information and documentation	• None that would lead to cost savings

Clarifying the Spent Fuel Management Requirements

Alternative	Activity	Costs	Benefits
SFM-2	Guidance Development/Enhancement to address the need for decommissioning licensees to consider or plan how to manage and remove spent fuel before they decommission	• Update regulatory guidance	• May lead to less time spent on decommissioning documents submitted to NRC
SFM-3	Rulemaking to clarify and update the regulations as they relate to requirements for a licensee to consider how it is going to manage and remove spent fuel from the site before it decommissions	• Rulemaking	• May lead to less time spent on decommissioning documents submitted to NRC

Clarifying the Environmental Requirements

Alternative	Activity	Costs	Benefits
ENV-2	Rulemaking to amend the Environmental Requirements	• Rulemaking	• May lead to less time spent on decommissioning documents submitted to NRC

Preliminary Draft Regulatory Analysis Results

- Decommissioning Areas with Sufficient Justification to Proceed to Rulemaking

Area of Decommissioning	Preferred Alternative	Total Net Benefit (2016 million dollars, 7% NPV)
Emergency Preparedness	EP-3	$5.42
Physical Security	PS-2	$0.38
Decommissioning Trust Fund	DTF-2	$0.12
Offsite and Onsite Financial Protection Requirements and Indemnity Agreements	FP-2	($0.19)
Application of Backfitting Protection	BF-3	($0.65)
Clarifying the Spent Fuel Management Requirements	SFM-3	---
Clarifying the Environmental Requirements	ENV-2	---

Preliminary Draft Regulatory Analysis Results

- Decommissioning Areas Requiring Additional Stakeholder Input

Area of Decommissioning	Alternatives	Total Net Benefit (2016 million dollars, 7% NPV)
Cyber Security	CS-2	($74.8)
	CS-3	($11.8)
FFD - Drug and Alcohol Testing	DA-2	($0.21)
FFD - Fatigue Management	F-2	($0.91)
	F-3	($1.57)
Minimum Staffing and Training Requirements for Certified Fuel Handlers	CFH-2	($0.03)
	CFH-3	($0.23)
Aging Management	AMP-2	($0.23)

Summary of Costs

- Costs
  - Guidance Documents
  - Rulemaking
  - Extend Cyber Security into Decommissioning
  - Update of the SSCE
  - Address shortfalls to DTF within 3 years
  - Extend Fatigue Management into Decommissioning

Summary of Benefits

- Benefits
  - Reduced Exemption requests
  - Reduced Amendment requests
  - Reduced Drug & Alcohol testing
  - Elimination of need for licensees to seek approval of the CFH training program

Questions

Submitting Comments

- **Federal Rulemaking Web Site:** Go to http://www.regulations.gov and search for Docket ID NRC-2015-0070.
- For questions about NRC dockets please contact:
  - Carol Gallagher; 301-415-3463; Carol.Gallagher@nrc.gov.
- For technical questions please contact:
  - Alysia Bone; 301-415-1034; Alysia.Bone@nrc.gov
  - Jennifer Tobin; 301-415-2328; Jennifer.Tobin@nrc.gov