POLICY ISSUE
(Notation Vote)

October 7, 2013 SECY-13-0108

FOR: The Commissioners

FROM: Mark A. Satorius
Executive Director for Operations

SUBJECT: STAFF RECOMMENDATIONS FOR ADDRESSING REMEDIATION OF RESIDUAL RADIOACTIVITY DURING OPERATIONS

PURPOSE:

To provide the Commission with an evaluation of options and staff recommendations to address remediation of residual radioactivity at licensed facilities during the operational phase of facility life, known as prompt remediation. This paper also evaluates stakeholder comments received on prompt remediation. This paper does not address any resource implications.

SUMMARY:

In Staff Requirements Memorandum (SRM)-SECY-07-0177 the Commission directed the staff to make further improvements to the decommissioning planning process by addressing remediation of residual radioactivity during the operational phase of plant life with the objective of avoiding complex decommissioning challenges that can lead to legacy sites.

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In SRM-SECY-12-0046, the Commission further directed the staff to continue the current regulatory approach for groundwater protection, including the recently imposed additional requirements contained in the Decommissioning Planning Rule (DPR), and to solicit public comments on the technical basis for a proposed prompt remediation rule, and provide its evaluation of the comments to the Commission in a notation vote paper. The Commission directed the staff to include the pros and cons of moving forward with a proposed prompt remediation rulemaking, including the staff's initial analysis of whether the cost/benefit analysis satisfies the backfit requirements. The staff conducted an additional public meeting and webinar on June 4, 2013, and subsequently evaluated stakeholder comments (see Enclosure 1). From this information, the staff identified the following three options for potential rulemaking on prompt remediation during the operational phase of facility life.

1. Proceed with rulemaking.
2. Do not proceed with rulemaking.
3. Collect 2 years of information (2013-2014) from implementation of the DPR before making a staff recommendation for potential rulemaking.

The U.S. Nuclear Regulatory Commission (NRC) staff recommends option 3.

BACKGROUND:

In 62 FR 39088 (July 21, 1997), the NRC issued Subpart E "Radiological Criteria for License Termination" to Part 20 "Standards For Protection Against Radiation," also known as the license termination rule (LTR). Following the promulgation of the LTR, in SRM SECY-01-0194, the Commission directed the staff to conduct an analysis of LTR issues. The staff presented the results of its analyses and recommendations for action in SECY-03-0069. In SRM-SECY-03-0069, the Commission approved the staff recommendations to proceed with rulemaking for a DPR that would require that costs to remediate residual radioactivity be included in the decommissioning cost estimate and in the appropriate financial assurance instruments for most licensees.

During development of the DPR in 2004-2007, the staff discussed the proposed rule with the Advisory Committee on Nuclear Waste (ACNW) on several occasions. The Committee observed that "premature action in the absence of adequate understanding of the site and system behavior may be inappropriate or even counter-productive to remediation goals" and recommended against incorporating a requirement for remediation during operation.[1] Therefore, staff did not include remediation during operation in the technical basis or in the draft DPR in SECY-07-0177.

[1] Letter from Michael T. Ryan, Chairman, ACNW, to Dale E. Klein, Chairman, NRC, "Prevention of Legacy Sites," October 17, 2006 (ML062960469)

However, in SRM-SECY-07-0177, which approved publication of the draft DPR, the Commission directed the staff to "make further improvements to the decommissioning planning process by addressing remediation of residual radioactivity during the operational phase." The SRM further directed that:

> *"… the staff should engage stakeholders to develop a technical basis, possible dose limits, criteria for applying the dose limits to address this matter, or alternatives to the dose limits to address the intent of this objective."*

To that end, the staff developed a proposed draft technical basis for prompt remediation (ML111580353) and published a *Federal Register* notice (76 FR 42074) announcing the NRC's intent for "Consideration of Rulemaking To Address Prompt Remediation of Residual Radioactivity During Operations." The staff then conducted a public meeting and webinar on July 25, 2011, obtained and evaluated additional stakeholder comments, and revised the draft Regulatory Basis (ML120190685). In the revised draft Regulatory Basis (Enclosure 2), the staff identified the following alternatives for addressing remediation during the operational phase.

1. Conduct rulemaking to require licensee to conduct prompt remediation if contamination exceeds specified levels (e.g., if the calculated dose exceeds 100 mrem/y).
2. Conduct rulemaking to require licensees to perform analyses and develop an action plan consistent with risk and timeliness if contamination concentration exceeds specified levels (e.g., ~50 mrem/y, as estimated by Table 2 to Appendix B of Part 20 for ground water, and twice the screening values in Appendix H to NUREG-1757 Vol. 2, "Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria" for soil and building surfaces).
3. Develop an NRC policy to modify site-specific license conditions to limit contamination.
4. Write NRC guidance supporting the benefits of early remediation.
5. Continue the current policy of case-by-case decision making.

DISCUSSION:

Stakeholder Input:

As directed by the Commission in SRM-SECY-12-0046, the staff solicited public comments on the technical basis for proposed prompt remediation rulemaking and evaluated the stakeholder comments. The staff is now providing the Commission with an evaluation of options to address prompt remediation of radiological contamination at licensed facilities during the operation phase of facility life and recommending a course of action. This notation vote paper also includes the staff's initial analysis of backfit requirements.

On June 4, 2013, the staff conducted a second public meeting and webinar to obtain stakeholder input on potential rulemaking about prompt remediation. Stakeholder comment summaries and staff responses are in Enclosure 1.

There is broad agreement among both industry and non-industry stakeholders that minimizing contamination throughout the life of a facility is a good practice in keeping with the as low as reasonably achievable (ALARA) principle. There is less agreement on how that should be accomplished. In general, industry stakeholders believe that with the combination of existing NRC regulations and industry voluntary initiatives, there are sufficient prerequisites to achieve

the remediation goal and additional regulation is not needed. Many non-industry stakeholders expressed the opinion that additional regulatory requirements for prompt remediation are needed to ensure that facilities are able to meet the criteria for site release for unrestricted use at the time of decommissioning.

One significant comment from industry stakeholders was that there are already sufficient NRC requirements to report contamination events that lead to the use of additional radiological controls for more than 24 hours. Such events are identified by the DPR monitoring requirements, and this encourages the prompt remediation of spills to minimize reporting. Another commenter argued that rigorous enforcement of existing regulations would achieve the goals of prompt remediation better than additional regulations.

One significant comment from the non-industry stakeholders was that a new rule requiring prompt remediation would maintain residual radioactivity at low levels during operations and reduce the likelihood of a legacy site in the event of early shutdown when decommissioning funds are not fully funded.

During the December 2012 Advisory Committee on Reactor Safeguards review of draft Regulatory Guide 4.22, "Decommissioning Planning During Operations," the Nuclear Energy Institute suggested that the NRC and the industry review the operating experience following implementation of the DPR over a period of one to one and a half years to determine what, if any, changes would be necessary to the rule or the guidance to achieve the goals of the DPR.

Staff Evaluation:

In this notation vote paper, the staff has evaluated the options and is making recommendations on the issue of prompt remediation of residual radioactivity. This notation vote paper also includes the staff's initial analysis of backfit requirements. The options, discussed more fully below, are:

1. Proceed with rulemaking.
2. Do not proceed with rulemaking.
3. Collect 2 years of information (2013-2014) from implementation from the DPR before making a staff recommendation for additional rulemaking.

While the DPR does require licensees to perform surveys (including of the subsurface) that are reasonable to identify significant concentrations or quantities of residual radioactivity, it does not require licensees to conduct remediation during the operational phase of plant life, regardless of the concentration or physical extent of the contamination. During the operational phase of facility life, the contamination has the potential to spread to significantly larger volumes in surrounding media. The staff believes that it is important for licensees to consider the need for prompt remediation in order to avoid future problems resulting from delayed cleanup of contaminated facilities (e.g., increased decommissioning costs, spread of contamination, and dose impacts).

Based on ACNW input and staff evaluation, the staff believes there are several challenges to developing a new rule mandating prompt remediation. The primary considerations are the potential impacts of remediation activities on operational safety and the difficulty of establishing general applicability requirements for the broad range of types of licensees. As ACNW stated,

generic action levels are not necessarily risk-informed and may not apply at different sites. A rule that is too complex to be effectively implemented or enforced would not be consistent with the NRC principles of good regulation: clarity, efficiency, and reliability.

One potentially beneficial alternate approach to reducing the likelihood of future legacy sites would be a new rule enhancing DPR requirements by requiring licensees to develop a written plan of action for addressing radiological contamination. The plan would include actions, cost and schedule for managing contamination that would require remediation at the time of license termination to meet conditions for site release for unrestricted use, including the pros and cons of prompt versus delayed remediation. Facilities implementing the NEI 07-07 voluntary initiative are already performing this type of remediation analysis. However, there is not yet sufficient information from operating experience from implementation of the DPR to determine if it is necessary to supplement the DPR with additional requirements to effectively reduce the potential occurrence of legacy sites.

Concurrently with the effective date of the DPR, the NRC issued Temporary Instruction-2600/017, applicable to licensees other than power reactors, to assist inspectors in evaluating licensee compliance with the DPR. The NRC also issued Enforcement Guidance Memorandum (EGM)-12-02 to allow licensees reasonable time to come into compliance with some new DPR survey and sampling requirements. The staff believes that, as part of Option 3, collecting 2 years of operating experience information on licensee actions under the DPR, calendar year (CY) 2013-2014, will provide sufficient information on which to base a decision regarding staff recommendation on the need for additional regulation or guidance to reduce the likelihood of future legacy sites. The staff is collecting information from site inspection reports about contamination identified by surveys under the DPR and from occurrences of exercise of enforcement discretion. The staff will then identify how licensees responded to such events and determine whether to recommend if additional guidance or regulation is necessary.

Backfit Considerations:

SRM-SECY-12-0046 requires the staff to consider backfit implications of a rule mandating prompt remediation. In general, backfitting means the modification of or addition to systems, structures, components, design, or operation of a facility; or the procedures or organization required to design or operate a facility; any of which may result from a new or amended provision in the Commission's regulations or the imposition of a staff position interpreting the Commission's regulations that is either new or different from requirements in effect at the time of license issuance or initial NRC regulatory approval. A rule mandating prompt remediation would affect the operation of a facility and therefore would be considered backfitting.

However, the NRC's backfitting provisions apply only to facilities licensed under Parts 50, 52, 70, 72, and 76 (~ 150 facilities) comprising less than 1 percent of the more than 22,000 NRC and Agreement State licensees. Moreover, backfitting protects only current licensees and holders of NRC regulatory approvals. The NRC could justify the adoption of remediation requirements on future licensees and future holders of the NRC regulatory approvals under standard regulatory analysis criteria. For this reason, the NRC anticipates that backfitting will not be a deciding factor in determining whether to proceed with rulemaking.

The staff will consider, in any rulemaking approved by the Commission, whether a prompt remediation requirement could be backfit on existing licensees. If a prompt remediation requirement cannot be justified as a backfit on existing licensees, then the regulation could be written to exclude those licensees from having to comply with the prompt remediation requirement (most likely in an applicability provision).

CURRENT OPTIONS:

In response to SRM-SECY-12-0046, the staff identified three options concerning rulemaking mandating prompt remediation. Those options are evaluated below.

Option 1: Propose a Rule on Prompt Remediation

Option 1a: Publish a proposed rule mandating prompt remediation, if practical, and contamination exceeds a fixed calculated dose such as 100 mrem/y.

Pro:

- Provides most assurance of licensee action to reduce the likelihood of future legacy sites.
- Provides a fixed point at which licensee action is required.
- Satisfies some public concern and interests.
- Limits potential doses to the public.

Con:

- Requires licensees to develop and justify a dose model.
- Most residual radioactivity has been found under or near facility systems, structures and components, and remediation would be difficult and could affect safe facility operations.
- Licensees already have incentives to perform remediation when practical: because of requirements to increase decommissioning funding if remediation is not performed, and increased public interest and concern.
- Difficult to develop rule language that meets the NRC principles of clarity and efficiency for wide range of facility types and site conditions.
- Because of backfit constraints, the new rule may not apply to some facilities with high potential for residual radioactivity.
- It may not be useful because response to events causing such a dose may be controlled by other regulations or licensee actions.

Option 1b: Publish a proposed rule mandating that licensees develop a written plan, with cost estimates and schedules to address contamination concentrations that would require remediation to meet unrestricted release criteria at the time of license termination, including the pros and cons of prompt versus delayed remediation.

Pro:

- Provides performance and risk bases for licensee to choose a course of action.

- Contaminant concentrations are routinely measured for compliance with other existing regulations.
- Estimating cost of remediation is required by DPR.
- May be considered as information collection, not modifications, and therefore not subject to the backfit rule.
- Provides written assurance that licensees plan to remediate the site.
- Imposes minimum burden on the NRC and licensees.

Con:

- Licensees already perform cost/benefit evaluations based on their business models and incentives to minimize costs.
- The DPR already requires most licensees to estimate the cost of remediation and adjust their decommissioning funding accordingly.
- Relies on voluntary licensee actions to remediate when practical.
- Those licensees implementing the NEI 07-07 voluntary ground water protection initiative are already performing these types of evaluations.
- May provide very little information beyond what is required by implementation of the DPR, to identify extent of contamination and determine cost to remediate it.

Option 2*:* Do Not Propose Rulemaking on Prompt Remediation

Pro:

- Licensees already have incentives to perform remediation when practical.
- Current regulations require most licensees to adjust financial assurance for remediating significant residual radioactivity.
- Some industry voluntary initiatives already encourage an evaluation of prompt remediation.
- No further NRC or licensee effort.

Con:

- Does not address potential for future legacy sites.

Option 3*:* Collect Information Operating Experience Information from DPR Implementation Before Making a Final Staff Recommendation on Additional Rulemaking

Pro:

- Provides opportunity for an assessment of the effectiveness of existing regulations, including the DPR.
- Provides for an informed recommendation based on actual operating experience, thereby improves the technical and regulatory bases for decision a potential new rule.

Con:

- Postpones decision on rulemaking and response to SRMs.

COMMITMENT:

The staff will meet with stakeholders in the first half of CY 2015 to discuss operating experience information collected on implementing the DPR and determine whether to make a staff recommendation for additional rulemaking.

RECOMMENDATIONS:

The staff recommends Option 3: collect 2 years of operating experience information on DPR implementation before making a final staff recommendation on additional rulemaking. If the staff identifies a need for additional rulemaking on prompt remediation, the staff will prepare a paper discussing the potential scope for Commission consideration.

COORDINATION:

The Office of the General Counsel has no legal objection to this paper.

/RA/

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Enclosures:
1. Summary of Public Comments and Staff Evaluation
2. Staff Evaluation of Alternatives to Address Remediation During Operation

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