



Implementation of the Decommissioning Planning Rule: Subsurface Residual Radioactivity, Prompt Remediation, and Future Activities

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Prompt Remediation Webinar Agenda

- Purpose of the Meeting
- Introductions
- NRC Presentation on Decommissioning Planning Rule
- NEI Presentation on Decommissioning Planning Rule
- Solicit Feedback and Comments from Participants
 - Additional NEI / industry comments
 - Comments from States or government officials
 - Comments from vendors or remediation specialists
 - Comments from members of the public
- Additional Comments or Feedback from Stakeholders
- Discuss Next Steps and Adjourn Meeting



Questions / Feedback For Today

- Given the time since it's implementation, how is the Decommissioning Planning Rule (DPR) working out at operating facilities?
- Are there any recent examples of leaks or spills that were evaluated using the DPR? Did that evaluation lead to the decision to remediate the contamination?
- Is additional NRC regulation in the area of prompt remediation necessary? If not, what other avenues are available to assist licensees in implementing the DPR?



Fundamentals of Decommissioning Planning

- The key word in the DPR is PLANNING
 - Have a plan!
 - Pay attention to your facility / site
 - Make sure you have the money
 - Evaluate often
- NRC guidance is available to help with implementation and other questions



History of the License Termination Rule, Groundwater, and the DPR

- Licensed material identified in subsurface soils and groundwater at decommissioning facilities – Late 1990s - Mid 2000s
- NEI establishes industry task force on groundwater contamination – November 2005
- NRC Liquid Radioactive Release Lessons Learned Task Force – March 2006
- NEI 07-07, “Industry Groundwater Protection Initiative” – August 2007
- EPRI Groundwater Protection Guidelines for Nuclear Power Plants – January 2008
- NRC TI 2515/173, “Review of the Implementation of the Industry Ground Water Protection Voluntary Initiative” – October 2008
- NEI 08-08, “Generic FSAR Template Guidance for Life Cycle Minimization of Contamination” – October 2009
- NRC Groundwater Contamination Task Force – March 2010
- NRC Inspection Procedure 71124.06, “Radioactive Gaseous and Liquid Effluent Treatment” – June 2013



The Decommissioning Planning Rule

- Effective on December 17, 2012
- Minimization of contamination
 - Adds language to §20.1406(c)
- Site surveys and monitoring
 - Modifies §20.1501(a) regarding subsurface surveys
- Retain records of residual radioactivity and other surveys
 - Adds section §20.1501(b)
- Update financial assurances accordingly



DPR Guidance Documents

- Regulatory Guide (RG) 4.21, “Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning” (June 2008)
- RG 4.22, “Decommissioning Planning During Operations” (December 2012)
- NUREG-1757, “Consolidated Decommissioning Guidance,” Volume 3, “Financial Assurance, Recordkeeping, and Timeliness,” Rev. 1 (February 2012)



Ongoing Activities from the DPR

- Commission Direction: Create a technical basis for a potential rule on prompt remediation that would
 - Address remediation during operations
 - Incorporate feedback gained from stakeholder involvement
 - Define criteria that would require prompt remediation
- Technical basis with alternatives to prompt remediation
 - NRC staff prefers the “analyze before action” approach
- **New Commission Direction:** Decide whether to proceed with rulemaking or collect additional data before deciding (AKA why we are here today!)



Prompt Remediation: Next Steps

- Collect data on unplanned releases
 - Routine licensee communications and event reports
 - NRC inspection findings and observations
- Evaluate the information to assess licensee response
 - Justification for delayed or partial remediation
 - Provisions for additional remediation funding
- Make a rulemaking recommendation to the Commission
 - Yes, no, or another alternative? By October!



Now that We are Finally Here...

What do We Really Want to Know?

- For facilities that have actually PERFORMED a remediation activity in response to a leak, spill, or other unexpected contamination event, we would be interested in knowing what process / procedures led to that decision, how it was carried out, and what the results of the remediation were.
- This information can be provided separately after the webinar if necessary and will be rolled into the general comments that are summarized in the SECY paper on prompt remediation recommendations.



What do We Really Want to Know? (1)

- What was the basis for making the decision to perform prompt remediation after a leak or spill?
 - List the factors evaluated in making the decision to perform (or not perform) prompt remediation.
 - Exceedance of offsite public dose limits?
 - Impending contamination of underlying drinking water aquifer?
 - Prevention of spread of contamination to other on-site areas?
 - Minimize long-term decommissioning costs?
 - Request by local or State authorities?
 - Evaluation of financial assurance mechanisms?
 - Other?



What do We Really Want to Know? (2)

- Was a dose calculation made (e.g., using the NRC ResRad computer code or similar) to determine if the contamination would exceed the decommissioning criterion (25 mrem per year and ALARA) in 10 CFR 20.1402 at the time of ultimate decommissioning?
- Was some other type of technical evaluation performed? If so, please describe the parameters.



What do We Really Want to Know? (3)

- Provide a description of the remediation performed.
 - What was the timeline?
 - What was the remediation method?
 - What was done with the extracted contamination?
 - Was it promptly discharged into the offsite environment?
 - Was it processed to remove non-tritium contaminants? If so, how?
 - Was it retained in the plant radiological waste systems or reused in plant operations?
 - Other?



What do We Really Want to Know? (4)

- How effective was the prompt remediation?
 - How was the effectiveness determined?
 - Has additional monitoring been put in place?
 - Other?
- What was the cost of prompt remediation?
 - Does this cost take into consideration waste disposal costs as well as actual remediation costs?
 - Was there any impact on the decommissioning financial assurance mechanisms as a result?



What do We Really Want to Know? (5)

- Lessons learned:
 - Does the licensee judge the prompt remediation a success or failure? Please describe.
 - Other insights?
- Public, State, and local authorities perception:
 - Describe the public reaction to the remediation.
 - Was the public reaction favorable?
 - Did the public approve of the discharge as a monitored and authorized discharge?
 - What was the State and local authorities perception?



BACKUP SLIDES AND ADDITIONAL INFORMATION ON THE DECOMMISSIONING PLANNING RULE AND PROMPT REMEDIATION ACTIVITIES

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FUNDAMENTALS OF DECOMMISSIONING PLANNING

- APPLIES DURING THE ENTIRE LIFE CYCLE OF THE FACILITY
- MONITOR, SURVEY, AND SAMPLE TO DETERMINE THE EXTENT OF RESIDUAL RADIOACTIVITY PRESENT AT THE SITE
- ESTIMATE THE COST TO REMEDIATE THE AFFECTED AREA(S)
- THEN EITHER:
 - REMEDIATE SOON TO MINIMIZE THE NEED FOR ADDITIONAL FINANCIAL ASSURANCE
 - INCREASE FINANCIAL ASSURANCE PER THE REGULATIONS TO REMEDIATE LATER



BACKGROUND

- LICENSE TERMINATION RULE ISSUED IN 1997
- THE COMMISSION DIRECTED AN IMPLEMENTATION REVIEW IN 2000
- SECY-03-0069 RECOMMENDED RULEMAKING IN TWO AREAS:
 - FINANCIAL ASSURANCE
 - IDENTIFICATION OF CONTAMINATION
- THE COMMISSION APPROVED THE STAFF RECOMMENDATION FOR RULEMAKING
- PRELIMINARY RULE INCLUDED REMEDIATING “SERIOUS CONDITIONS” PROMPTLY



DECOMMISSIONING PLANNING RULE

- EFFECTIVE DECEMBER 17, 2012
- MINIMIZE INTRODUCTION OF RESIDUAL RADIOACTIVITY
- RULE ADDS TO §20.1406(c)
 - OPERATE IN A WAY TO MINIMIZE INTRODUCTION OF RESIDUAL RADIOACTIVITY TO THE ENVIRONMENT
 - PROCEDURES TO REDUCE LEAKS AND SPILLS
 - SURVEILLANCE TO FIND THEM PROMPTLY
 - FACILITATE DECOMMISSIONING
 - REDUCE WASTE GENERATION AS PRACTICAL
 - DISPOSE OF WASTE EARLY WHEN PRACTICAL



DECOMMISSIONING PLANNING RULE

- SURVEY THE SITE, INCLUDING SUBSURFACE AREAS
- RULE MODIFIES §20.1501(a) REGARDING SURVEYS
 - INCLUDES SUBSURFACE
- RETAIN RECORDS OF RESIDUAL RADIOACTIVITY AND ASSOCIATED SURVEYS
- RULE ADDS NEW §20.1501(b)
 - RECORD RESIDUAL RADIOACTIVITY IN RECORDS IMPORTANT TO DECOMMISSIONING
 - CONSIDER KEEPING MORE RECORDS FOR HISTORIC SITE ASSESSMENT
- UPDATE FINANCIAL ASSURANCES ACCORDINGLY



GUIDANCE

- REGULATORY GUIDE (RG) 4.22, “DECOMMISSIONING PLANNING DURING OPERATIONS” (December 2012)
 - MINIMIZE NEW CONTAMINATION AND RADIOACTIVE WASTE GENERATION
 - CONDUCT APPROPRIATE RADIOLOGICAL SURVEYS OF THE SITE
 - RETAIN RECORDS OF RESIDUAL RADIOACTIVITY
 - PROVIDE ADEQUATE FUNDING TO COMPLETE DECOMMISSIONING
- NUREG-1757, VOLUME 3, REVISION 1 (February 2012)
 - CREATE A PLAN TO PAY FOR ACTUAL REMEDIATION ACTIVITIES
 - CHANGES TO FINANCIAL REPORTING AND INSTRUMENTS



RG 4.22: CONDUCT SURVEYS

- RADIOLOGICAL SURVEYS PER § 20.1501(a)
 - SURFACE SURVEYS
 - ACCESSIBLE AREAS
 - NOT READILY ACCESSIBLE AREAS
 - SUBSURFACE EXAMINATION IS AN EXPLICIT REQUIREMENT
 - SURVEY NEAR POTENTIAL SOURCES
 - SURVEY IN GROUNDWATER FLOW PATHS (DOWNSTREAM)
- NEI 07-07, “INDUSTRY GROUNDWATER PROTECTION INITIATIVE,” OBJECTIVES MEET THE INTENT OF THE RULE



RG 4.22: RETAIN RECORDS

- RECORDKEEPING PER § 20.1501(b)
 - RETAIN RADIOLOGICAL SURVEY RESULTS WITH “RECORDS IMPORTANT TO DECOMMISSIONING”
 - **SIGNIFICANT** RESIDUAL RADIOACTIVITY IS THAT WHICH REQUIRES REMEDIATION AT TIME OF LICENSE TERMINATION FOR UNRESTRICTED RELEASE
 - RECORDS BECOME THE BASES FOR SITE CHARACTERIZATION SURVEYS AT LICENSE TERMINATION



RG 4.22: MAINTAIN FINANCES

- UPDATE AND ADJUST FINANCIAL ASSURANCE, AS APPROPRIATE
 - DETAILS IN RG 1.159 & NUREG-1757, VOLUME 3, REVISION 1
 - ESTIMATE COST TO REMEDIATE THE SITE TO REQUIRED LEVEL
 - CREATE A SUITABLE REMEDIATION SCHEDULE
 - ARRANGE FOR SUFFICIENT FUNDS PER THE APPLICABLE FINANCIAL ASSURANCE REGULATIONS OR REQUIREMENTS



SUBSEQUENT DPR ACTIVITIES

- IN 2007, THE COMMISSION ISSUED A STAFF REQUIREMENTS MEMO FOR THE DPR, INSTRUCTING STAFF TO CONTINUE TO EXPLORE A TECHNICAL AND REGULATORY BASIS FOR A PROPOSED NEW / ADDITIONAL RULE TO MANDATE PROMPT REMEDIATION
- THIS TECHNICAL / REGULATORY BASIS WOULD:
 - ADDRESS REMEDIATION DURING OPERATIONS
 - SEEK PUBLIC COMMENT AND STAKEHOLDER INVOLVEMENT
 - DEFINE CRITERIA TO REQUIRE ACTION (I.E., PROMPT REMEDIATION)



ALTERNATIVES CONSIDERED

- REGULATION ON RADIOLOGICAL DOSE OR CONCENTRATION
 - START REMEDIATION IF DOSE CONTAMINATION EXCEEDS §20.1201, 1301, OR 1403
 - DO ANALYSES IF CONCENTRATIONS EXCEED TABLE 2 OF APPENDIX B TO PART 20, OR TWO TIMES SOIL SCREENING VALUES
- REQUIRE ALARA ANALYSIS AND REMEDIATION SCHEDULE
- ISSUE A POLICY STATEMENT ON AMENDING LICENSES VIA SITE-SPECIFIC LICENSE CONDITIONS, OR BY ORDER IF NECESSARY
- ISSUE ENHANCED GUIDANCE
- CONTINUE CURRENT CASE-BY-CASE APPROACH
- NO ACTION
- PREFERRED STAFF ALTERNATIVE (2012): **ANALYZE AND PLAN**



RESPONSE TO COMMISSION

- RULEMAKING WAS BUDGETED FOR FY 2013; HOWEVER:
 - GROUNDWATER TASK FORCE RECOMMENDATIONS IN 2011 LED TO THE STAFF CONTINUING TO DEVELOP A TECHNICAL BASIS
 - IN 2012, THE COMMISSION REQUESTED A NOTATION VOTE ON THE PROS AND CONS OF A PROMPT REMEDIATION RULEMAKING
 - EVALUATION INCLUDED STAKEHOLDER INPUT AND A BACKFIT DISCUSSION RELATED TO THE TECHNICAL / REGULATORY BASIS
- THIS RESULTED IN SECY-13-0108, WHICH IDENTIFIED THREE OPTIONS:
 - PROCEED WITH RULEMAKING
 - DO NOT PROCEED WITH RULEMAKING
 - COLLECT TWO YEARS OF DATA, THEN DECIDE
- SRM-SECY-13-0108 APPROVED OPTION 3



PLANNED ACTIONS

- COLLECT AND EVALUATE LICENSEE DATA ON RESIDUAL RADIOACTIVITY
 - WHERE DID LICENSEES LOOK FOR RESIDUAL RADIOACTIVITY DURING SURVEY ACTIVITIES AND WHAT DID THEY FIND?
 - WHAT DID THEY DO ABOUT IT?
 - WHAT CHANGES DID THEY MAKE TO THEIR DECOMMISSIONING FUNDING PLANS?
- HOLD ANOTHER PUBLIC MEETING (Probably Early 2016)
 - PRESENT NRC RESULTS
 - SOLICIT STAKEHOLDER INPUT
- RECOMMENDATION TO COMMISSION ON ADDITIONAL RULEMAKING
 - LATE 2016



RECOMMENDATION DATA SOURCES

- INSPECTION REPORTS
 - NORMAL PERIODIC INSPECTIONS
 - TI 2600-017 – IMPLEMENTING THE DPR
 - ENSURE THAT RELEASES TO THE ENVIRONMENT ARE PROMPTLY IDENTIFIED AND CHARACTERIZED
 - LICENSEES RECORD RADIOLOGICAL SURVEY DATA
 - TI 2515-173 – IMPLEMENTING NEI 07-07
 - RECORDS IMPORTANT TO DECOMMISSIONING
- LICENSEE REPORTS PER
 - §20.2203
 - §50.72
- ANNUAL EFFLUENT REPORTS



DATA EVALUATION

- NUMBER OF UNPLANNED RADIOLOGICAL RELEASES
 - SOURCE(S) OF RELEASE
 - LOCATION OF RESIDUAL RADIOACTIVITY
- LICENSEE RESPONSE
 - PROMPT CLEANUP
 - PLANS FOR DELAYED MITIGATION
 - ACTIVE REMEDIATION
 - DEMONSTRATE COMPLIANCE WITH RELEASE CRITERIA AT TIME OF LICENSE TERMINATION
 - APPROPRIATE ADJUSTMENTS TO DECOMMISSIONING FUNDING



POSSIBLE CONCLUSIONS

- NO ADDITIONAL RULEMAKING IS NEEDED; CURRENT IMPLEMENTATION OF THE DPR PROTECTS PUBLIC HEALTH AND SAFETY
- ADDITIONAL RULEMAKING IS NEEDED TO ENSURE PROTECTION OF PUBLIC HEALTH AND SAFETY
- ADDITIONAL ACTIONS ARE NEEDED FOR SPECIFIC LICENSEES OR LICENSE TYPES, INCLUDING:
 - CONFIRMATORY ACTION LETTER
 - AMENDMENT TO LICENSE (BY ORDER, IF NEEDED)
 - AMEND CERTAIN SPECIFIC LICENSE CONDITIONS