

Licensing of the Proposed Geologic Repository at Yucca Mountain

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Introduction

This paper describes the status of the current activities and future plans of the U.S. Nuclear Regulatory Commission (NRC), associated with the prospective licensing of the proposed geologic repository, at Yucca Mountain (YM), NV, for disposal of spent nuclear fuel and high-level radioactive waste.

NRC Responsibility

NRC has a statutory licensing role (Nuclear Waste Policy Act of 1982, as amended) to issue a final decision on approving or disapproving the issuance of a construction authorization (CA) for the proposed repository, in 3 to 4 years after the U.S. Department of Energy (DOE) submits the license application to NRC. In approving the CA, NRC has to ensure that the proposed geologic repository at YM is designed, constructed, and operated in accordance with the U.S. Code of Federal Regulations (CFR), Title 10, Chapter 1, Part 63 (10 CFR Part 63). NRC's role during the 18-month pre-licensing application activities (based on DOE plans to submit the application by June 2008) is to: (1) observe DOE activities and meetings; (2) review DOE documents, and interact with DOE, as necessary, to understand its plans for preparing the license application; and (4) provide feedback from NRC's regulatory perspective.

A key regulatory principle, during the NRC pre-licensing activities, is independence in its observation activities and follow-up activities. As observers of DOE activities, NRC's presence has been, and will continue to be, at arms' length, and consistent with its obligation to be able to make an informed, objective decision on any DOE license application. If there is a need to provide regulatory perspective regarding the direction or acceptability of any DOE pre-license application (LA) activities, NRC communicates them in a public setting. Also, to fulfill its potentially forthcoming regulatory responsibility for the LA, the NRC staff will continue to engage DOE on methods and bases for its planned LA, through Technical Exchanges, staff meetings, review of documents, and correspondence. The purpose of pre-licensing activities, as stated earlier, is to understand the DOE methods and approaches, to be prepared to conduct an efficient and timely LA review.

NRC's responsibilities include:

- Serve as independent regulator with oversight responsibilities for YM;
- Set licensing criteria consistent with U.S. Environmental Protection Agency (EPA) Standards for YM through rulemaking;
- Complete safety review of DOE LA;
- Make a CA decision on DOE LA in 3-4 years;

- Adopt environmental impact statement (EIS), prepared by DOE for YM, to the extent practicable;
- Develop and maintain Licensing Support Network (LSN);
- Conduct formal adjudicatory hearings in regard to DOE LA.

Current NRC Activities

Current pre-licensing activities being performed by the NRC staff, to prepare for an efficient and timely LA review, include:

- (1) Finalize Part 63 based on the final issued EPA Standard for radiological dose criteria;
- (2) Examine resources, policies, and procedures that may be necessary for making decisions on docketing, and safety and regulatory compliance;
- (3) Develop LA review strategies, to make the process effective and efficient;
- (4) Continue pre-licensing interactions with DOE to prepare for independent review of LA;
- (5) Develop revisions to Yucca Mountain Review Plan, as necessary, in the form of interim staff guidance;
- (6) Identify operating experience data applicable to risk-significant operations;
- (7) Visit sites to enhance understanding of typical operations and potential risks;
- (8) Perform Preclosure Safety Analysis Phase II Exercise to identify potential risk insights for surface facility operations at the Geologic Repository Operation Area of the YM - particularly handling spent nuclear fuel in a pool; and
- (9) Revise NRC's Total-System Performance Assessment code in specific technical areas.

Other activities Include:

- (1) Maintain Las Vegas Hearing Facility;
- (2) Continue to supplement and certify supplementation of NRC document collection on the LSN;
- (3) Interact with interested stakeholders through public outreach, to maintain openness;
- (4) Participate in pre-LA adjudicatory activities on LSN and discovery process;
- (5) Observe DOE quality assurance audits and inform DOE of observations; and
- (6) Monitor the quality assurance and technical Issues associated with the U.S Geological Survey employee e-mails.

Revision of Licensing Criteria

NRC staff's goal is to have draft final regulations ready for Commission approval shortly after EPA issues its final Standard. NRC would then update its regulatory guidance, as necessary, to be consistent with revised Part 63. NRC is also evaluating its analytical tools to be prepared to conduct a review using the revised regulations.

Future NRC Activities

Anticipated future NRC activities are:

- (1) Hire and train additional technical staff, judges, and support staff;
- (2) Make decision about adoption of DOE EIS for YM;
- (3) Complete acceptance review of DOE YM LA;
- (4) Develop safety evaluation report for Yucca Mountain;
- (5) Respond to, and evaluate, contentions, and conduct pre-hearing;
- (6) Continue public outreach, to interact with interested stakeholders;
- (7) Operate and maintain computer-based electronic system to support high-level waste licensing and adjudicatory processes.

YM Program Uncertainties

NRC's YM program-related activities and plans have associated uncertainties in the following areas:

- (1) Establishment of a final regulatory framework;
- (2) Date of DOE document certification for LSN (est. December 2007);
- (3) Date for submission of DOE LA (est. June 2008);
- (4) Quality of DOE LA and supporting data; and
- (5) Complexity and number of issues for hearing.

Summary

NRC has a program in place to conduct a fair and independent review of a DOE LA for a proposed repository at YM, NV. Also, NRC is actively engaging DOE, during the pre-licensing phase, to address technical and regulatory issues relevant to NRC's meeting its statutory responsibilities.

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