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JAN 13 1993

MEMORANDUM FOR: James H. Sniezek, Deputy Executive Director
for Nuclear Reactor Regulation
Regional Operations and Research

FROM: Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

SUBJECT: UPDATE OF MEDIA BRIEFING BACKGROUND PAPERS

Enclosed is an update of the briefing paper on High-Level Radioactive Waste for the region meetings with the news media.

If you require additional information, you may contact Mr. B. J. Youngblood of my staff at 504-3404.

Original signed by
Guy A. Arlotto

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

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HIGH-LEVEL RADIOACTIVE WASTE BRIEFING UPDATE

Background:

High-level radioactive waste (HLW) means: (1) irradiated (spent) reactor fuel, (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, and the concentrated wastes from subsequent extraction cycles, in a facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid wastes have been converted. HLW is primarily in the form of spent fuel discharged from commercial nuclear power plants; it also includes some reprocessed HLW from defense activities, and a small quantity of reprocessed commercial HLW. Current plans for management of HLW call for the development of a monitored retrieval storage (MRS) facility by 1998, and a permanent HLW repository deep beneath the surface of the earth by the year 2010. The U.S. Department of Energy (DOE) has the responsibility for disposing of HLW. The U.S. Environmental Protection Agency (EPA) is responsible for developing appropriate environmental standards for HLW. The Nuclear Regulatory Commission has the licensing authority for the disposal and long term storage of HLW.

High-Level Radioactive Waste:

This country's policies governing the permanent disposal of HLW are defined by the Nuclear Waste Policy Act of 1982 (NWPA) and the Nuclear Waste Policy Amendments Act (NWPAA) of 1987. To provide the long-term permanent isolation required, the NWPA specifies that HLW will be placed in deep-underground geologic repositories to be built and operated by the DOE. To this end, DOE is developing a waste management system consisting, in part, of a geologic repository in which HLW can be permanently isolated deep beneath the surface of the earth, and a MRS in which waste can be stored prior to permanent disposal. NRC has the licensing and related regulatory authority for both the MRS and high-level waste geologic repository.

An MRS facility is an integral part of the waste management system being proposed by DOE for achieving timely acceptance of spent fuel. NWPAA allows a dual approach to MRS siting: (1) siting by DOE, through a process of survey and evaluation; and (2) siting through the efforts of the Nuclear Waste Negotiator.

Through the NWPAA, Congress designated the Yucca Mountain site in Nevada as the single candidate site for characterization as a potential geologic repository. The Yucca Mountain site has not been selected for a repository; rather, it has been chosen as the only site to be characterized at this time.

Site characterization is a program of exploration and research, both in the laboratory and in the field, undertaken to establish the geologic conditions and the ranges of those parameters at a particular site. Site characterization includes borings, surface excavations, excavation of

exploratory shafts or ramps, limited subsurface lateral excavations and borings, and in situ testing at depth to determine the suitability of the site for a geologic repository.

Regulations:

The NRC's requirements governing the disposal of HLW in a geologic repository are contained in Title 10 Code of Federal Regulations, Part 60 (10 CFR Part 60). These regulations govern prelicensing activities, authorization for DOE to begin construction of the facility, authorization for DOE to receive and place the wastes in the facility, and authorization for DOE to close the facility (license termination).

The NRC's requirements governing the storage of HLW in an MRS facility are contained in Title 10 Code of Federal Regulations, Part 72 (10 CFR Part 72). These regulations establish requirements, procedures, and criteria for the issuance of licenses to receive, transfer, and possess power reactor spent fuel and other radioactive material associated with spent fuel storage.

The EPA's requirements for the disposal of HLW in a geologic repository are contained in Title 40 Code of Federal Regulations Part 191 (40 CFR Part 191). These regulations establish generally applicable environmental standards for the management and disposal of spent nuclear fuel and other HLW. The NRC is responsible for implementing these standards in 10 CFR Part 60.

Current Status:

Currently, the repository program is focused on prelicensing site characterization activities. In the prelicensing phase, one of NRC's primary responsibilities is to review DOE's site characterization plan and associated activities, and to provide comments to DOE identifying any specific concerns. In addition, NRC staff observes various site characterization activities in the field and also observes DOE quality assurance audits. All prelicensing consultation activities are open to participation by the State of Nevada, affected Indian Tribes, and affected units of local governments.

DOE completed its site characterization plan for the Yucca Mountain site in December 1988. The NRC staff completed its review of that document in July 1989, and concluded that overall, it was a usable plan for site characterization. Originally, the staff identified two objections to DOE starting site characterization. One objection concerned the DOE quality assurance (QA) program, and the other was related to the design process for the Exploratory Studies Facility (ESF). Additionally, 196 other concerns in the form of comments and questions were raised.

Regarding the QA objection, NRC notified DOE by letter, dated March 2, 1992, that the objection was removed. NRC determined that all organizations participating in site characterization activities had developed, and are implementing, a QA program that meets NRC requirements. NRC will continue to monitor QA program implementation through future audits and surveillances.

DOE provided information in response to the ESF objection on March 3, 1992. Based on that information, and information contained in the DOE reports, "Exploratory Studies Facility Alternatives Study: Final Report" and "Risk/Benefit Analysis of Alternative Strategies for Characterizing the Calico Hills Unit at Yucca Mountain," and observations of DOE design reviews, the NRC staff determined that the ESF objection should be lifted. In a letter dated November 2, 1992, NRC notified DOE that this objection was lifted. The staff plans to continue to track DOE's activities related to the ESF objection and implementation of the ESF design control process through participation in ESF design reviews, reviews of site characterization Progress Reports, and participation in DOE audits of the ESF design review process.

In 1991, the State of Nevada granted DOE the permits necessary for DOE to proceed with surface based site characterization activities. These activities include the excavation of test pits and trenches, bore hole drilling, and addressing areas related to volcanism, tectonics, and faulting. DOE continues to actively conduct site characterization field work in these areas at the Yucca Mountain Project Site.

On November 30, 1992, DOE began work on the site access road to the main portal for the ESF at Yucca Mountain. Following road construction, DOE plans to begin work on the portal pad, and ultimately, the portal. Beginning in April 1993, initial work on the underground opening will be by drill and blast method to excavate a staging chamber (approximately 200 feet) for the tunnel boring machine that will be used to excavate the north ramp of the ESF. DOE proposes to complete the excavation of the north ramp of the ESF by July 1994.

The NWPA calls for a 1998 date for DOE to accept spent fuel from utilities. Until recently, the DOE approach has been to use the Nuclear Waste Negotiator for the voluntary siting of an MRS that would begin acceptance of spent nuclear fuel by 1998. The Office of the Nuclear Waste Negotiator was established by the NWPAA to find a state or Indian Tribe willing to host a repository or MRS at a technically qualified site. Interest has been expressed by numerous groups in evaluating the feasibility of hosting an MRS. To date, there are: three applicants under review for Phase I grants, used to study the feasibility of hosting an MRS; five active Phase I applicants that are currently participating in MRS feasibility studies; 11 inactive Phase I applicants who are no longer participating in MRS studies; and two Phase II applicant, conducting additional site feasibility studies. In addition, DOE has recently begun studying the feasibility of locating an MRS on federal land. DOE's efforts are proceeding in parallel with those of the Nuclear Waste Negotiator in order to meet the 1998 objective date established in the NWPA.

In October 1992, DOE initiated a study to evaluate the feasibility of using multi-purpose canisters (MPC) in the waste management system. The purpose of the MPC is to create first, a compatible approach for the transportation and storage of spent nuclear fuel, and then consider compatibility with final disposal. DOE expects to issue results from its MPC study in early 1993.

EPA developed generally applicable environmental standards in 1985. These standards were remanded in 1987 due to inconsistencies with other standards with respect to individual and ground-water protection. The recently enacted Energy Policy Act (EnPA) of 1992 requires the National Academy of Sciences (NAS) to conduct a study on specific aspects of these standards and issue findings and recommendations no later than December 31, 1993. The EnPA further states that the EPA will promulgate by rule, public health and safety standards for protection of the public from releases from radioactive materials stored or disposed of in the repository at the Yucca Mountain site, based upon and consistent with the findings and recommendations of the NAS. These standards shall be promulgated not later than one year after EPA receives the findings and recommendations of NAS. Furthermore, the EnPA also requires that NRC, within one year of the promulgation of the EPA standards, amend its technical requirements and criteria to conform with these standards.

CONTACT:
Joseph Holonich, Director
Repository Licensing & Quality
Assurance Project Directorate
Division of High-Level Waste Management
(301) 504-3387

HIGHLIGHTS OF HIGH-LEVEL RADIOACTIVE WASTE (HLW)

- NWPA (1982) and NWPAA (1987) lay out a national program for disposal of HLW in a deep geologic repository and possible interim storage in an MRS
- NWPAA designated Yucca Mountain, Nevada for characterization as a potential repository site
- NRC requirements for the interim storage of HLW are contained in 10 CFR Part 72
- NRC requirements for the disposal of HLW are contained in 10 CFR Part 60
- EPA standards for the disposal of HLW are contained in 40 CFR Part 191
- The EnPA requires that: NAS conduct a study on specific aspects of the HLW environmental standards and make recommendations on reasonable standards by December 31, 1993; EPA revise its standards based upon, and consistent with, the NAS findings and recommendations within one year after it receives the NAS findings; and NRC amend its technical requirements and criteria to conform to the EPA standard within one year of the promulgation of EPA's standards
- NRC is currently involved in prelicensing interactions and review of DOE HLW repository site characterization activities
- NRC is currently involved in prelicensing interactions and review of DOE MRS activities
- DOE to submit to NRC an MRS application to construct and operate a facility in 1995
- DOE to begin waste acceptance at an MRS facility in 1998
- DOE to submit to NRC a HLW repository license application for construction authorization in 2001
- DOE to begin waste emplacement in a HLW repository in 2010
- All prelicensing consultation activities are open to participation by the State of Nevada, affected Indian Tribes, and units of affected local governments