UPDATE ON THE STATUS OF THE WEST VALLEY DEMONSTRATION PROJECT

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Abstract. From 1966 to1972, under an Atomic Energy Commission (AEC) license, Nuclear Fuel Services (NFS) reprocessed 640 metric tons of spent fuel at its West Valley, New York, facility–, the only commercial spent fuel reprocessing plant in the U.S. The facility shut down in 1972, for modifications to increase its seismic stability and to expand its capacity. In 1976, without restarting the operation, NFS withdrew from the reprocessing business and returned control of the facilities to the site owner, the New York State Energy Research and Development Authority (NYSERDA). The reprocessing activities resulted in about 2.3 million liters (600,000 gallons) of liquid high-level waste (HLW) stored below ground in tanks, other radioactive wastes, and residual radioactive contamination. The West Valley site was licensed by AEC, and then the U.S. Nuclear Regulatory Commission (NRC), until 1981, when the license was suspended to execute the 1980 West Valley Demonstration Project (WVDP) Act. The WVDP Act outlines the responsibilities of the U.S. Department of Energy (DOE), NRC, and NYSERDA at the site, including the NRC's responsibility to develop decommissioning criteria for the site. The Commission published the final policy statement on decommissioning criteria for the WVDP at the West Valley site after considering comments from interested stakeholders. In that regard, the Commission prescribed the License Termination Rule (LTR) criteria for the WVDP at the West Valley site, reflecting the fact that the applicable decommissioning goal for the entire NRC-licensed site is compliance with the requirements of the LTR. This paper will describe the history of the site, provide an update of the status of the decommissioning of the site and an overview of the technical and policy issues facing Federal and State regulators and other stakeholders as they strive to complete the remediation of the site.

HISTORY OF THE SITE

From 1966 to 1972, under an AEC license, NFS reprocessed 640 metric tons of spent fuel at its West Valley, New York, facility, the only commercial spent fuel reprocessing plant in the U.S. The facility shut down, in 1972, for modifications to increase its seismic stability and to expand its capacity. In 1976, without restarting the operation, NFS withdrew from the reprocessing business and returned control of the facilities to the site owner, NYSERDA. The reprocessing activities resulted in about 2.3 million liters (600,000 gallons) of liquid HLW stored below ground in tanks, other radioactive wastes, and residual radioactive contamination. The West Valley site was licensed by AEC, and then NRC, until 1981, when the license was suspended to execute, a Federal Act of Congress, the 1980 WVDP Act, Pub. L. 96–368.[1] The WVDP Act authorized DOE to: (1) carry out a liquid-HLW management demonstration project; (2) solidify, transport, and dispose of the HLW that exists at the site; (3) dispose of low-level waste (LLW) and transuranic waste produced by the WVDP, in accordance with applicable licensing requirements; and (4) decontaminate and decommission facilities used for the WVDP, in accordance with requirements prescribed by NRC. NYSERDA is responsible for all site

[1] **The State of New York licenses a low-level waste disposal area at the West Valley site. Unless otherwise indicated, the terms "West Valley site" or "site" used in this paper refers to the NRC-licensed portions of the site.**

facilities and areas outside the scope of the WVDP Act. Although NRC suspended the license covering the site until completion of the WVDP, NRC has certain authorities, under the WVDP Act, that include prescribing decommissioning criteria for the tanks and other facilities in which the HLW solidified under the project was stored, the facilities used in the solidification of the waste, and any material and hardware used in connection with the WVDP. It should also be noted that DOE is not an NRC licensee and DOE's decommissioning activities for the WVDP at the West Valley site are conducted under the WVDP Act and not the Atomic Energy Act (AEA).

STATUS OF DECOMMISSIONING

The WVDP is currently removing HLW from underground tanks at the site, vitrifying that HLW, and storing it onsite for eventual offsite disposal in a Federal repository. The vitrification operations are nearing completion. In addition to the vitrified HLW, the WVDP operations have also produced LLW and transuranic waste which, under the Act, must be disposed of in accordance with applicable licensing requirements. Besides the HLW at the site, the spent fuel reprocessing and waste disposal operations resulted in a full range of buried radioactive wastes and structural and environmental contamination at the site.

OVERVIEW OF TECHNICAL AND POLICY ISSUES

In 1989, DOE and NYSERDA began to develop a joint Environmental Impact Statement (EIS) for project completion and site closure, and to evaluate waste disposal and decommissioning alternatives. Because the WVDP Act authorizes NRC to prescribe decommissioning criteria for the project, NRC agreed to participate as a cooperating agency on the development of the EIS to aid NRC in its determination on whether or not the preferred alternative satisfies the decommissioning criteria. The draft EIS was published in 1996. Subsequently, DOE decided to de-scope this EIS into two separate EISs to address: (1) Near-term decontamination and waste management at the WVDP; and (2) decommissioning, long-term monitoring, and stewardship of the site.[2] NRC will not be a Cooperating Agency on the decontamination and waste management EIS because the Commission is not prescribing criteria for decontamination activities considered in this EIS. As noted above, NRC will be a Cooperating Agency on the EIS for decommissioning under the WVDP Act. The WVDP Act does not address termination of the NRC license for the site, or portions thereof. Any such license termination will be conducted (if license termination is possible and pursued) under the AEA of 1954, as amended. If NYSERDA pursues either full or partial license termination of the NRC license, NRC will need to conduct an environmental review to determine if an EIS is necessary to support license termination.

After public review of the draft EIS, the WVDP convened the West Valley Citizen Task Force (CTF), in early 1997, to obtain stakeholder input on the EIS. The CTF recommendations for the preferred alternative in the EIS were completed in July 1998. In the latter half of 1997 (during the period that the CTF was working on its recommendations), NRC's LTR was published (62 FR 39058; July 21, 1997).

On December 3, 1999, the Commission published (64 FR 67952) a draft policy statement on decommissioning criteria for the WVDP at the West Valley site, for public comment. The final policy statement was developed, after considering the public comments on the draft, and published (67 FR 5003) on February 1, 2002. The final policy statement recognizes that a flexible approach to decommissioning is needed both to ensure that public health and safety and the environment are protected, and to define a practical resolution to the challenges that are presented by the site. In that regard, the Commission decided to prescribe the LTR criteria for the WVDP at the West Valley site, reflecting the fact that the applicable decommissioning goal for the entire NRC-licensed site is compliance with the requirements of the LTR. However, the Commission recognizes that health and

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[2] **66 FR 16447 (March 26, 2001).**

safety and cost-benefit considerations may justify the evaluation of alternatives that do not fully comply with the LTR criteria. For example, the Commission would consider an exemption allowing higher limits for doses on a failure of institutional control if it can be rigorously demonstrated that protection of the public health and safety for future generations could be reasonably assured through more robust engineered barriers and/or increased long-term monitoring and maintenance. The Commission is prepared to provide flexibility to assure cleanup to the maximum extent technically and economically feasible. It should be noted that the LTR does contain provisions for alternate criteria, and subpart N of 10 CFR part 20 contains provisions for potential exemptions,[3] with both alternatives based on a site specific analysis which demonstrates that public health and safety will be adequately protected with reasonable assurance. If the NRC license cannot be terminated in a manner which provides reasonable assurance of adequate protection of the public health and safety, then the appropriate Commission action may be to require a long term or even a perpetual license for an appropriate portion of the site until, if and when possible, an acceptable alternative is developed to permit actual license termination.[4]

Based on the public comments received, the Commission revisited the issue of "incidental waste" at West Valley in the Final Policy Statement. The Commission decided to issue incidental waste criteria to clarify the status of and classify any residual wastes present after cleaning of the HLW tanks at West Valley. Previously, the NRC provided advice to DOE concerning DOE's classification of certain waste as incidental waste for clean-up of HLW storage tanks at both Hanford and Savannah River. The Commission decided that the most recent advice provided to DOE for the classification of incidental waste at Savannah River, with some additional modifications, provides the appropriate criteria which should be applied to West Valley. Specifically, the Commission is providing the following criteria for classification of the incidental waste (which will not be deemed to be HLW) at West Valley: (1) the waste should be processed (or should be further processed) to remove key radionuclides to the maximum extent that is technically and economically practical; and (2) the waste should be managed, so that safety requirements comparable[5] to the performance objectives in 10 CFR part 61 subpart C, are satisfied. Consistent with the overall approach in applying the LTR to the WVDP and to the entire NRC-licensed site following conclusion of the WVDP, the resulting calculated dose from the incidental waste is to be integrated with all the other calculated doses from the residual radioactive material at the NRC-licensed site to ensure that the LTR criteria are met. This is appropriate because the Commission does not intend to establish separate dose standards for various

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[3]**Exemptions to NRC regulations can be issued to NRC licensees if the Commission determines that the exemption is authorized by law and would not result in undue hazard to life or property. NYSERDA is the licensee for the West Valley site and DOE is acting as a surrogate for NYSERDA until the NYSERDA license is reinstated at the end of the WVDP.**

[4]**If a long term or perpetual license is necessary for any portion of the site, it is the Commission's intent that this portion of the site will be decontaminated in the interim to the extent technically and/or economically feasible. In addition, if a long-term or perpetual license is determined to be appropriate, the NRC takes no position on which entity should be the long-term licensee as that decision, as well as decisions regarding long term financial contributions, should be made pursuant to negotiations involving DOE, New York, and possibly the U.S. Congress. Also, under the WVDP Act, the NRC is only addressing the public health and safety aspects of decommissioning selected portions of the site. Other potential issues between DOE and NYSERDA concerning the West Valley Site are not within NRC's authority to resolve.**

[5]**The dose methodology used in 10 CFR part 61 subpart C is different from that used in the newer 10 CFR part 20 subpart E. However, the resulting allowable doses are comparable and NRC expects DOE to use the newer methodology in 10 CFR part 20 subpart E. Part 61 is based on International Commission on Radiological Protection Publication 2 (ICRP 2) and part 20 is based on ICRP 26.**

sections of the NRC-licensed site.[6]

The decommissioning of the West Valley site is made more challenging by the involvement of multiple Federal and State regulators. These regulators include the: NRC, U.S. Environmental Protection Agency (EPA), New York State Department of Environmental Conservation, New York State Department of Health, and New York State Department of Labor. A recent U.S. General Accounting Office (GAO-01-314) report recommended that NRC and EPA, in coordination with New York State, agree on how their different regulatory cleanup criteria should apply to the site. On November 27, 2001, the involved regulatory agencies met to discuss applicable cleanup criteria and regulatory roles and responsibilities for the West Valley site. In this meeting, the regulators agreed to develop a communication plan that: 1) identifies applicable cleanup requirements and expectations of the regulating agencies that need to be addressed in decommissioning the West Valley site, and 2) describes the roles and responsibilities of these involved regulatory agencies. On March 27, 2002, these agencies issued a Regulators Communication Plan[7] that addresses these points. The Regulators Communication Plan is designed to assist DOE and NYSERDA in developing a better understanding of the applicable regulatory cleanup requirements and expectations that need to be considered in the decommissioning of the West Valley site. The Regulators Communication Plan should also assist in the scoping of issues that may need to be considered in the DOE-NYSERDA EIS for the decommissioning of the WVDP.

REFERENCES

[1] Federal Register Notice 67 FR 5003, "Decommissioning Criteria for the West Valley Demonstration Project (M-32) at the West Valley Site; Final Policy Statement," February 1, 2002.

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[6] **Applying the LTR, the total annual dose to an average member of the critical group for the site, including the resulting does from the incidental waste, should be less than or equal to 25 mrem/yr TEDE. The Commission is not establishing a separate dose standard for the incidental waste such that the average member of the critical group potentially receive a dose of 25 mrem/yr TEDE from the rest of the NRC-licensed site and 25 mrem/yr TEDE from the incidental waste.**

[7] **Regulators Communication Plan on Application of Cleanup Requirements for Decommissioning the West Valley Site.**