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Committee on Energy and Commerce
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Disposal of Low-Level Radioactive Waste and Greater-Than-Class C Waste

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Good morning and thank you Mr. Chairman, Ranking Member Tonko, and distinguished members of the Subcommittee on Environment and the Economy. I appreciate the opportunity to be here with you today to discuss the Office of Environmental Management's (EM) activities to safely and properly dispose of Department of Energy (DOE)-generated low-level radioactive waste and our ongoing planning efforts for disposal of greater-than-class C low-level radioactive waste.

I want to thank the Committee for their interest in EM's environmental cleanup mission. I know we share a common goal of completing the safe cleanup of the environmental legacy resulting from five decades of nuclear weapons development and government-sponsored nuclear energy research.

First let me state that safe performance of our cleanup mission is our over-arching priority. This has been the Assistant Secretary's and my commitment and is shared by the Secretary. This will not be compromised. The Department's first responsibility is to protect the workers, the public, and the environment. Safety first is the clear expectation behind every decision and activity we undertake in our waste management and environmental cleanup efforts.

Low-Level Waste Disposal

DOE is the largest generator of low-level radioactive waste by volume in the nation, with most waste derived from EM cleanup projects. From 2005 to 2014, DOE has safely disposed of over 330 million cubic feet of low-level radioactive waste and mixed low-level radioactive waste. Low-level radioactive waste is defined as radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material (as defined in 10 CFR Part 61.2). Mixed low-level radioactive waste is defined as low-level radioactive waste that has a hazardous waste component that is subject to the requirements of the Resource Conservation and Recovery Act. Approximately seven percent of the low-level radioactive waste that DOE disposed of from 2005 to 2014 is mixed low-level radioactive waste.

The Nuclear Regulatory Commission classification scheme for low-level radioactive waste sets numerical concentration limits for class A, class B, and class C low-level radioactive waste. These classes are defined in the Nuclear Regulatory Commission

(NRC) regulations (Title 10, Part 61, of the *Code of Federal Regulations* (10 CFR Part 61), “Licensing Requirements for Land Disposal of Radioactive Waste”) and delineate the relative isolation measures NRC believes are warranted to be protective, based on the radioactive characteristics of the waste. The concentrations limits associated with these classes were derived using generic examples of disposal situations. Class A waste contains the least radioactivity, most of which comes from relatively short-lived radionuclides, which decay to background levels within a few decades. Class B waste is also relatively short-lived, but contains higher concentrations of short-lived radionuclides than class A. Class C waste contains higher concentrations of both short-lived and long-lived radionuclides. It is important to note that these classifications apply to low-level radioactive waste generated by NRC or NRC Agreement State licensees. Although these classifications do not apply to low-level radioactive waste generated by DOE, these the classifications are relevant when DOE sends its low-level radioactive waste to a commercial facility regulated by NRC or by an NRC Agreement State for disposal. While the states and regional disposal compacts are responsible for disposal of class A, B, and C low-level radioactive waste, the Federal Government, in this case DOE, is responsible for developing a disposal facility for greater-than-class C waste from NRC or NRC Agreement State licensees.

The Atomic Energy Act gives authority to the DOE to oversee the disposal of DOE low-level radioactive waste. Management of DOE radioactive waste is governed by DOE Order 435.1, *Radioactive Waste Management*, and the associated DOE Manual 435.1-1, *Radioactive Waste Management Manual*. These documents establish stringent requirements to ensure that all DOE radioactive waste is managed and disposed of in a manner that is protective of worker and public health and safety, and the environment, and define the technical and regulatory framework for all mixed and low-level radioactive waste activities within the Department, including disposition planning and reporting.

Departmental policy, as expressed in DOE Manual 435.1-1 has been that DOE mixed and low-level radioactive waste will be disposed of in the following order of preference: (1) on-site whenever feasible, (2) off-site at one of the Department’s regional disposal sites when on-site disposal is not feasible, and (3) as approved, off-site at a commercial disposal facility when such disposal is compliant, cost-effective, and in the best interest of the Government. The Department is in the process of updating DOE order 435.1.

Central to the EM mission is the cleanup of sites contaminated from nuclear weapons research and production activities and the disposal of the resulting radioactive and hazardous wastes. Deactivation, decontamination, and demolition of unneeded facilities and the environmental restoration of contaminated sites generate large amounts of radioactive waste, including low-level radioactive waste and mixed low-level radioactive waste. In addition, the Department generates these materials from its ongoing research and development and defense missions.

EM generates and manages the vast majority of DOE’s mixed and low-level radioactive waste, and has the lead responsibility within the Department for developing and implementing radioactive waste management policy. National Environmental Policy Act

(NEPA) documentation provides analysis and information that assists in the decision-making in the selection of disposal method(s) and site(s) for the management and disposal of DOE's radioactive waste. EM's overarching analyses for the potential environmental impacts associated with the management and disposal of radioactive wastes are contained in *The Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage and Disposal of Radioactive and Hazardous Waste (EIS-0200)*, published in 1997, and Records of Decision related to mixed and low-level radioactive waste treatment, storage and disposal paths, subsequently published in 2000.

On-site Disposal

The overwhelming majority (over 90% by volume) of DOE low-level radioactive waste is disposed on the site where generated. In fiscal year 2014, 23 million cubic feet of mixed and low-level radioactive waste were disposed at the site where generated. DOE sites having the capability to dispose of all or a portion of their on-site generated waste, include: Hanford, Idaho Site, Los Alamos National Laboratory (very limited capability), Nevada National Security Site, and Savannah River Site. In fiscal year 2015, a decision was made to construct a future new disposal facility for decommissioning and remediation waste at the Portsmouth Gaseous Diffusion Plant, and the Department is continuing to evaluate options for disposal of similar waste onsite at the Paducah Gaseous Diffusion Plant.

Federal, Off-site Disposal

For DOE sites without an on-site disposal facility, mixed and low-level radioactive waste may be disposed at a DOE regional disposal site. Two DOE sites, Hanford and the Nevada National Security Site have historically accepted significant quantities of low-level radioactive waste from DOE sites without onsite disposal facilities. These sites were specified as regional disposal sites in Records of Decision issued in 2000. Currently, Hanford is not accepting waste from other DOE sites pending the start of operations of the Waste Treatment and Immobilization Plant (WTP). This restriction is based on a Settlement Agreement with the State of Washington; however, it does have a few exceptions, such as allowing the disposal of certain naval waste generated at other locations.

Thus, at the present time, the Nevada National Security Site remains the only DOE regional disposal site available to serve the needs of the DOE complex. In 2014, the Secretary of Energy and the Nevada Governor signed a Memorandum of Understanding to establish the senior-level Nevada National Security Site Working Group, to address issues of interest related to the Nevada National Security Site. This group meets quarterly to address the broad national security mission of the site, including low-level radioactive waste disposal, public safety and environmental stewardship, and missions at the site.

In fiscal year 2014, the Nevada National Security Site disposed of 1.27 million cubic feet of mixed and low-level radioactive waste. The Nevada National Security Site typically

disposes of about 5 percent of DOE mixed and low-level radioactive waste, as well as, disposal of certain classified waste.

Commercial Facility Disposal

Commercial firms provide all DOE sites with options for mixed and low-level radioactive waste disposal. DOE policy is generally not to utilize commercial disposal facilities operated by the regional disposal compacts, for example, the Atlantic Compact, Northwest Compact, and Texas Compact. However, when compliant, cost-effective, and in the best interest of the Government, DOE sites dispose of Class A mixed and low-level radioactive waste at EnergySolutions Utah in Clive, Utah, and Class A, B, and C waste at the Waste Control Specialists LLC, facility in Andrews County, Texas. The location of the disposal cell located at the Waste Control Specialists facility is identified as the “Federal Waste Disposal Facility.” This cell is licensed by the state of Texas for disposal of DOE waste, and DOE has agreed to take title to the facility after closure of the cell for long-term stewardship. DOE offered a similar post closure agreement to EnergySolutions. These facilities have radioactive material disposal licenses issued by their respective State regulators, as NRC Agreement States. Typically about 5 percent of DOE mixed and low-level radioactive waste by volume is disposed at commercial facilities. In 2014, DOE disposed of 0.56 million cubic feet of waste at these facilities. DOE values its partnership with commercial disposal firms, because multiple disposal sites provide flexibility and options for disposal.

The Future of DOE’s Low-Level Radioactive Waste Disposal

Disposal capacity exists to meet near term needs for EM. There is currently sufficient capacity using DOE and commercial disposal facilities for the Department’s mixed and low-level radioactive waste. The Department benefits from the existence of multiple disposal sites, both federal and commercial, which provide disposal alternatives. The management of the Department’s mixed and low-level waste disposition is a complex undertaking that requires flexibility. We will continue to strive to make DOE’s waste management system as flexible as possible to respond to sudden changes and dynamic circumstances.

These federal and commercial disposal facilities, as well as the commercial treatment facilities required to ensure that waste meets disposal site requirements, are very limited in number, unique in capabilities, and very important for completion of the EM cleanup mission.

NRC’s Low-Level Radioactive Waste Disposal Rulemaking

The proposed rule indicates progress for NRC in moving towards its goal of a more risk-informed approach to low-level radioactive waste disposal regulation. The proposed changes would bring 10 CFR Part 61 into closer alignment with DOE’s approach and we support many aspects. We provided detailed comments to NRC on these and other points for consideration suggesting changes to the proposed rule to make it more risk-informed.

Greater-Than-Class C Low-Level Radioactive Waste

Greater-than-class C low-level radioactive waste is defined by the NRC as low-level radioactive waste that has radionuclide concentrations exceeding the limits for class C low-level radioactive waste established in 10 CFR Part 61. These wastes are generated by activities licensed by the NRC or Agreement States and cannot be disposed of in currently licensed commercial low-level radioactive waste disposal facilities. In accordance with Section 3(b)(1)(D) of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (P.L.99-240), the responsibility for the disposal of greater-than-class C low-level radioactive waste was assigned to the federal government. EM was later designated as the specific office to oversee greater-than-class C low-level radioactive waste disposal.

Greater-than-class C-like waste is radioactive waste that is owned or generated by DOE and has characteristics similar to those of greater-than-class C low-level radioactive waste such that a common disposal approach may be appropriate. Greater-than-class C-like waste consists of low-level radioactive waste and non-defense-generated transuranic waste that has no identified path for disposal. The use of the term “greater-than-class C-like” is not intended to and does not create a new DOE classification of radioactive waste.

The total volume of greater-than-class C low-level radioactive waste and greater-than-class C-like waste that will be analyzed in the *Final Environmental Impact Statement for the Disposal of Greater-Than-Class C Low-Level Radioactive Waste and Greater-Than-Class C-Like Waste* is about 12,000 cubic meters, and contains about 160 million curies of radioactivity. About three-fourths of this volume is greater-than-class C low-level radioactive waste, with greater-than-class C-like waste making up the remaining one-fourth of the volume. For environmental impact statement analysis purposes, DOE established two waste groups. Group 1 consists of wastes generated from currently operating facilities including wastes that are currently in storage or are expected to be generated from these operating facilities. Group 2 consists of projected wastes from proposed facilities and/or actions some of which may never be generated.

There are three types of greater-than-class C low-level radioactive waste and “greater-than-class C-like” waste: activated metals, sealed sources, and other waste. Activated metals result primarily from the decommissioning of commercial nuclear power plants and include portions of the nuclear reactor vessel, such as the core shroud and core support plate. Most of this waste will not be generated for decades, but represents over 98 percent of the total curies that will be the subject of the analysis in the *Final Environmental Impact Statement for the Disposal of Greater-Than-Class C Low-Level Radioactive Waste and Greater-Than-Class C-Like Waste*. Sealed sources are used in equipment to diagnose and treat illnesses (particularly cancer), sterilize medical devices, and irradiate blood for transplant patients. Sealed sources are used in hospitals, industries, and universities throughout the United States. The securing of sealed sources assists with national security concerns. Other waste primarily includes contaminated

equipment, debris, scrap metal, and decommissioning waste from the production of medical isotopes (e.g., Mo-99) and waste from DOE cleanup missions including at the West Valley site in New York.

NRC regulations 10 CFR 61.55 (a)(2)(iv) require that greater-than-class C low-level radioactive waste be disposed of in a geologic repository unless alternative methods of disposal are proposed to and approved by the NRC. The NRC states in 10 CFR 61.7 (b)(5) that “there may be some instances where waste with Class C concentrations greater than permitted for Class C waste would be acceptable for near-surface disposal with special processing or design.”

The Department is currently finalizing the *Final Environmental Impact Statement for the Disposal of Greater-Than-Class C Low-Level Radioactive Waste and Greater-Than-Class C-Like Waste* that will evaluate the potential environmental impacts associated with the proposed development, operation, and long-term management of a disposal facility or facilities for greater-than-class C low-level radioactive waste and greater-than-class C-like waste. DOE plans to identify a preferred alternative in the final environmental impact statement. In developing the final environmental impact statement, DOE will have considered public comments on the draft greater-than-class C environmental impact statement, human health risks, disposal methods and waste types. The final environmental impact statement will also include a Comment Response Document that will respond to nearly four thousand individual comments received by DOE on the draft environmental impact statement. DOE anticipates publication of the final environmental impact statement within the next quarter, contingent on formal review by the Department.

The final environmental impact statement will evaluate the potential environmental impacts associated with the range of reasonable alternatives for disposal of greater-than-class C low-level radioactive waste and “greater-than-class C-like waste. Specifically, DOE will evaluate the potential environmental impacts associated with five alternatives including a No Action Alternative. One of the four action alternatives is disposal of greater-than-class C low-level radioactive waste and greater-than-class C-like waste in a geologic repository at the Waste Isolation Pilot Plant. The other three action alternatives involve the use of land disposal methods at six federally owned sites (Hanford, Idaho Site, Los Alamos National Laboratory, Nevada National Security Site, Savannah River Site, and in the vicinity of Waste Isolation Pilot Plant) and at generic commercial sites. The land disposal alternatives will consider the use of intermediate-depth borehole, enhanced near-surface trench, and above-grade vault facilities. Each disposal alternative assumes that the total waste inventory would be disposed of at a single disposal site. Depending on the selected option for disposal, DOE could decide to dispose of the waste at more than one location. The final greater-than-class C environmental impact statement is structured so that decisions on disposal method(s) or site(s) can be made by waste type.

After the publication of the final environmental impact statement, DOE will submit a Report to Congress as required by Section 631(b)(1)(B) of the Energy Policy Act of 2005 (P.L. 109-58). The Report to Congress will include a description of the disposal

alternatives considered in the final impact statement and all of the information required for the comprehensive report on ensuring the safe disposal of greater-than-class C low-level radioactive waste that was submitted by the Secretary of Energy in February 1987 and must await action by Congress. Congressional action would enable DOE to proceed with issuing a Record of Decision on greater-than-class C low-level radioactive waste disposal. The Department is eager to work with members of Congress on the path forward for greater-than-class C low-level radioactive waste and greater-than-class C-like waste disposal.

Summary

In summary, EM continues to safely dispose of mixed and low-level radioactive waste and plan for the disposition greater-than-class C low-level and greater-than-class C-like waste as key parts of its environmental restoration and waste management mission. Our goal is to keep all waste disposal costs as low as possible, while maximizing the number of disposal options, and keeping the safety of workers, the public, and the environment first and foremost.

Thank you again for the opportunity to discuss the Department's low-level radioactive waste disposal activities. I would be happy to answer any questions you may have.