NRC Staff Comments on the Department of Energy's October 10, 2018, "Request for Public Comment on the U.S. Department of Energy Interpretation of High-Level Radioactive Waste," 83 FR 50909.

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1. In general, the NRC staff agrees with the concept proposed in *Federal Register* Notice (FRN) 83 FR 50909 that radioactive waste may be classified and disposed of in accordance with its radiological characteristics. For example, SECY-05-0073, "Implementation of New U.S. Nuclear Regulatory Commission Responsibilities Under the National Defense Authorization Act of 2005 in Reviewing Waste Determinations for the U.S. Department Of Energy," states, "The concept of incidental waste, also known as waste-incidental-to-reprocessing (WIR), is that wastes can be managed based on their risk to human health and the environment, rather than the origin of the wastes. With respect to wastes from reprocessing of nuclear fuel, such as the tank residuals at some DOE sites, some are highly radioactive and need to be treated and disposed of as HLW in a geologic repository and others do not. WIR does not pose the same risk to human health and the environment and does not need to be disposed of as HLW in order to manage the risks that it poses. Consequently, incidental waste is not considered to be HLW." (ADAMS Accession No. ML050490264)

2. The broad language used in the FRN could cause confusion in this complex area. In order to minimize this potential, DOE's approach should recognize NRC's equities regarding the definition of HLW. The FRN states that since the terms "highly radioactive" and "sufficient concentrations," which are used within the NWPA's definition of HLW, are not defined in the AEA or NWPA, "Congress left it to DOE to determine when these standards are met." DOE should ensure the NRC's role in determining HLW is fully acknowledged, as evident by the NWPA's definition of HLW (NWPA Sec. 2(12)(B)), which includes within the HLW definition "other highly radioactive material that *the Commission*, consistent with existing law, determines by rule requires permanent isolation" (emphasis added).

3. DOE should clarify a statement in Section A, "Background" where it states, "At this time, DOE is not making – and has not made – any decisions on the disposal of any particular waste stream." DOE has completed numerous waste determinations over the past several decades at all four DOE sites which manage HLW. For example, see "Lessons Learned in Management of U.S. Department of Energy Waste Incidental to Reprocessing" (EFCOG 2013, ADAMS Accession No. ML13186A010).

4. DOE should clarify that the new interpretation would not affect DOE's waste determinations in South Carolina and Idaho pursuant to the NDAA. Under Sec. 3116 of the NDAA (118 Stat. 1811), DOE may determine that radioactive waste is not high-level radioactive waste if the Secretary, in consultation with the NRC, determines radioactive waste meets the criteria specified in the statute.

5. This proposed interpretation does not include one of the primary criteria that has played a central role in DOE's historical waste determinations, specifically, the criterion that requires removal of key radionuclides to the "maximum extent practical." The FRN states, "DOE has determined that the removal of radionuclides from waste that already meets existing legal and technical requirements for safe transportation and disposal is unnecessary and inefficient, and does not benefit human health or the environment. To the contrary, it potentially presents a greater risk to human health and the environment

because it prolongs the temporary storage of waste." The NRC staff agrees that for waste being packaged and transported to disposal facilities designed to receive such waste, the removal of key radionuclides from waste that already meets existing legal and technical requirements may not result in increased benefits to human health or the environment. However, the criterion that requires removal of key radionuclides to the "maximum extent practical", has been an essential benchmark in NRC's analysis of DOE's waste determinations for both waste sent to disposal sites and in-situ disposal since 1993 (58 FR 12342). As such, if DOE does not intend to apply this criterion to waste intended for in-situ disposal, then DOE should consider providing additional explanation or clarification why the removal of key radionuclides from waste being managed for in-situ disposal "is unnecessary and inefficient, and does not benefit human health or the environment." For this reason, the NRC staff recommends DOE consider a more detailed discussion and analysis of this change.

6. In Section A, "Background," DOE states that it is interpreting reprocessing wastes as non-HLW if the waste:

I. Does not exceed concentration limits for Class C low-level radioactive waste as set out in section 61.55 of title 10, Code of Federal Regulations; <u>or</u>

II. Does not require disposal in a deep geologic repository and meets the performance objectives of a disposal facility as demonstrated through a performance assessment conducted in accordance with applicable regulatory requirements.

If the two criteria above remain separated by an "or," the use of only the first criterion for waste that does not exceed the NRC's Class C limits, by itself, may not address all the potential hazards from such waste. When NRC developed the Class C waste concentration limits, those limits were based on evaluation of particular waste streams expected to be generated and disposed in commercial low-level waste facilities.[1] The waste concentration limits were developed to limit exposures of ionizing radiation to inadvertent intruders, in keeping with the performance objectives in 10 CFR 61.42. In developing these waste concentration limits, NRC assumed that not all of the waste encountered by an inadvertent intruder would be present at the classification limits. That is, the NRC assumed that any waste at the concentration limits would be mixed with a significant amount of waste with radionuclide concentrations far below the class limits, as would normally be encountered at low-level waste disposal facilities.

In developing the waste classification limits set forth in 10 CFR 61.55, the NRC staff did not contemplate, for example, near-surface, *in-situ* disposal of a large quantity of waste at or near the Class C limit. However, if such a disposal situation were to occur, the regulations in 10 CFR 61 include other performance objectives (e.g., 10 CFR 61.41, "Protection of the general population from releases of radioactivity") that licensees must demonstrate are met in site-specific evaluations of near-surface disposal facilities, in addition to, not as an alternative to, the intruder protection requirement in 10 CFR 61.42.

One option would be to change the "or" to an "and" which would ensure the waste meets all the appropriate performance criteria, including intruder protection (i.e., 10 CFR 61.42) and other performance criteria contained in 10 CFR Part 61, Subpart C, or other

[1] See SECY-10-0043, "Blending of Low-Level Radioactive Waste" (ADAMS Accession No. ML090410531). This paper provides a summary of the bases for the 10 CFR Part 61 waste classification system.

applicable requirements. Alternately, DOE could consider limiting the use of the first criterion to only waste that will be disposed in a disposal facility that has waste acceptance criteria based on performance criteria similar to all of the performance objectives in 10 CFR Part 61, Subpart C, or other applicable requirements (i.e., a distinction could be made between in-situ versus disposal in waste facilities).

7. A footnote on page 50910 indicates that NRC's licensing requirements for land disposal of LLW were promulgated in 1962. The correct year is 1982.