



State of Utah

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SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL
Scott T. Anderson
Director

An emergency meeting of the Waste Management and Radiation Control Board has been scheduled for August 30, 2018 at 10:00 a.m.

This will be an electronic meeting held in accordance with the Utah Open and Public Meetings Act.

One or more Board members will participate telephonically.
(Audio Conferencing Access Number: 1-877-820-7831; Passcode Number: 853610#)

The anchor location of this Board meeting will be the Utah Department of Environmental Quality, Multi-Agency State Office Building, Red Rocks Conference Room #3132, 195 North 1950 West, SLC

AGENDA

- I. Call to Order.
- II. Request from EnergySolutions for an exemption from R313-25-9(5) of the Utah Administrative Code (**Board Action Item**).
- III. Adjourn.

In compliance with the Americans with Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Kimberly Diamond-Smith, Office of Human Resources at (801) 536-4285, Telecommunications Relay Service 711, or by email at "kdiamondsmith@utah.gov".

AUG 24 2018

DRC-2018-008873

August 24, 2018

CD18-0158

Mr. Scott T. Anderson
Director
Division of Waste Management and Radiation Control
195 North 1950 West
Salt Lake City, UT 84114-4880

Subject: Radioactive Material License UT2300249: **Petition for Exemption from Utah Administrative Rules R313-25-9(5) for Disposal of Solid Metal Depleted Uranium Penetrators**

Dear Mr. Anderson:

Pursuant to Utah Administrative Code (“UAC”) R313-12-55(1), EnergySolutions hereby petitions the Utah Waste Management and Radiation Control Board (“Board”) for an exemption from the mass and concentration limitations of UAC R313-25-9(5)(a) and (c) in connection with the disposal of Class A depleted uranium solid metal penetrators (“DU Penetrators”). UAC R313-12-55(1) allows the Board to

“grant exemptions or exceptions from the requirements of the rules as it determines are authorized by law and will not result in undue hazard to public health and safety or the environment.”

Solid metal depleted uranium penetrators are less hazardous and less plentiful than the depleted uranium oxides which are the basis of the UAC R313-25-9(5) restriction and an exemption is warranted in accordance with the justification herein provided.

The U.S. Army Joint Munitions Command (“JMC”), working under the direction of the Product Director for Demilitarization, is responsible for the safe and compliant disposition of munitions waste. The JMC seeks to transport and dispose of 30 mm munitions containing solid depleted uranium metal. The DU Penetrators will be disassembled to remove the depleted uranium metal prior to packaging for transport and disposal. The JMC plans to disassemble between 3.5 to 7 million penetrators each year, currently in storage at the Tooele Army Depot (Tooele, Utah) and Crane Army Ammunition Activity (Crane, Indiana). The JMC expects to transport and dispose of approximately 667 yd³ of DU Penetrator Class A waste per year for up to 4 years (a projected DU Penetrator disposal volume of 2,668 yd³). Disposal of this volume of class A depleted uranium metal will exceed the limitations promulgated in UAC R313-25-9(a).



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BACKGROUND:

EnergySolutions operates a low-level radioactive waste disposal facility at Clive, Utah (“Site”) and is licensed by the Director of the Utah Waste Management and Radiation Control Division (“Director”) to receive class A low-level radioactive waste (“LLRW”) and naturally occurring and accelerator produced radioactive material (“NARM”). Radioactive Material License UT2300249 authorizes EnergySolutions to dispose of limited quantities of depleted uranium. Disposal of depleted uranium was first approved by the Director at a concentration of 110,000 pCi/g beginning with License amendment 2, (approved December 3, 1990). This activity was increased to the specific activity of depleted uranium; i.e., pure undiluted form; with Director approval of the site-specific Performance Assessment submitted in support of the October 22, 1998 license renewal (limiting the concentration of depleted uranium within a container to no greater than 370,000 pCi/g, upon receipt). This License amendment further authorized disposal of waste up to Class A concentration limits. Under this License authorization, approximately 49,000 tons of depleted uranium were safely disposed at Clive between 1990 and 2010 (20,000 ft³ of which is depleted uranium metal similar to the DU Penetrators).

On October 19, 2005, Louisiana Energy Services expressed interest in commercial enrichment of uranium for power and defense industries. This interest created concern with the U.S. Nuclear Regulatory Commission (“NRC”) regarding the generation and need for disposal of significant quantities (more than 770,000 tons) of depleted uranium oxide powder from uranium enrichment facilities (NRC Order CLI-05-20). As a result, NRC conducted additional technical analysis in October 2008 regarding disposal of significant quantities of depleted uranium oxide. NRC recommended that when considering disposal of significant quantities of depleted uranium oxide similar to that generated via uranium enrichment, a site-specific performance assessment is warranted (SECY-08-0147). NRC’s recommendation was also applied to significant quantities of other waste streams at or near the Class A limits in UAC R313-5-1009.

In December 2009, EnergySolutions received for disposal 3,577 metric tonnes of depleted uranium oxide waste received from the United States Department of Energy Savannah River Site. EnergySolutions also anticipated receiving ongoing shipments of approximately 700,000 metric tonnes of depleted uranium oxide from the Portsmouth, Ohio and Paducah, Kentucky deconversion plants. Over concern with these shipments and ongoing NRC rulemaking, the Utah Radiation Control Board promulgated rules restricting DU volume and concentration and requiring a site-specific analysis be completed and approved before disposal of significant quantities of depleted uranium from enrichment facilities. These limitations and requirements do not exist in federal



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rules. As a result, EnergySolutions placed those drums in storage (awaiting Director's review and approval of a depleted uranium Performance Assessment).

In 2011, the Director evaluated a unique waste stream that was near the Class A concentration limit. The Director raised a similar concern about this unique waste stream and made a determination to limit the annual volume that could be received for disposal at the Clive facility. On December 12, 2011, the Director determined that disposal of less than 40,000 ft³/yr of wastes near the Class A limits would not be considered "significant quantities," when compared to the total design capacity of the Class A West Embankment and average annual rate of receipt of Class A waste.¹

In support of License amendment 14, a site-specific Performance Assessment was approved by the Director in conjunction with authority for EnergySolutions to combine the legacy Class A and Class A North embankments into a larger Class A West embankment with enhanced rock armor cover.² The 2012 site-specific Performance Assessment confirmed that the larger Class A West embankment would satisfy the required performance objectives promulgated in UAC R313-25-20 through -23 when considering disposal of significant volumes of depleted uranium wastes in concentrations up to 370,000 pCi/g. This assessment demonstrated that independent of the volume of depleted uranium waste placed within the Class A West Embankment, no uranium isotopes would be released to the Site's groundwater aquifer within 10,000 years of Site closure. The Director's Safety Evaluation Report further affirmed that the embankment cover's radon barriers would adequately minimize release of radon gas (generated as a result of radioactive decay of depleted uranium) into the environment.³

BASIS FOR EXEMPTION:

The NRC current rulemaking requiring Performance Assessment is based on the Louisiana Energy Services depleted uranium oxide (and similar depleted uranium oxides in storage at DOE enrichment facilities in Portsmouth; Ohio and Paducah; Kentucky). This is also the basis of the Performance Assessment which is currently under review by the Director for the Savannah River drums in storage at the Site. Solid depleted uranium metal has much different properties than processed depleted uranium oxide.

¹ Lundberg, Rusty. "Disposal of SemptraSafe Processed Waste at the Clive Containerized Waste Facility's Radioactive Material License UT2300249." Letter to Dan Shrum, EnergySolutions, December 12, 2011.

² Lundberg, Rusty. "Class A West Amendment Request: Radioactive Material License UT2300249 Amendment 14, GWQDP UGW450005 Modification; Final Agency Action." Letter to Sean McCandless of EnergySolutions, November 26, 2012.

³ URS. "Utah Division of Radiation Control – EnergySolutions LLRW Disposal Facility – Class A West Amendment Request: Safety Evaluation Report." Report for the Utah Division of Radiation Control, June 2012. pg 73.



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Depleted uranium oxide is a solid powder that has a low solubility in water and is relatively stable over a wide range of environmental conditions. U_3O_8 is the form found in nature. The most common form of U_3O_8 is “yellow cake,” a solid named for its characteristic color that is produced during the uranium mining and milling process. Risks posed by the depleted uranium oxide result from atmospheric dust and radon gas transport of the dust and the ease of radon emanation and diffusion.

Solid depleted uranium metal is heavy, silvery white, malleable and ductile. It is one of the densest materials known (19 g/cm^3), being 1.6 times more dense than lead. It tarnishes in air, with the oxide film preventing further oxidation of bulk metal at room temperature. Depleted uranium metal does not generate dust and emits radon gas at rates significantly lower than depleted uranium oxide. Therefore, the risk to human health and the environment is much less for depleted uranium metal than for depleted uranium oxide. Due to these differences, depleted uranium metal need not be managed under the same restrictions as depleted uranium oxide.

The Class A West amendment to Radioactive Material License permits construction of the Class A West embankment with a total waste capacity of 8,724,097 yd^3 . To-date, approximately 26,500 yd^3 of depleted uranium has been placed within the Class A West embankment. After disposal of the DU Penetrators, depleted uranium would constitute less than 0.4% of the embankment’s total capacity and within the conditions evaluated in the 2012 site-specific Performance Assessment. Similarly, the DU Penetrators constitute less than 0.5% of the DU oxide expected to be generated via Portsmouth and Paducah deconversion.

Therefore, since a) the 2012 site-specific performance assessment considered disposal of significant volumes of DU; b) the proposed DU penetrator disposal volume will not exceed the Director’s threshold for significant quantities; c) DU metal and oxide has already been safely disposed in the Class A West Embankment; d) EnergySolutions is already authorized to receive and dispose of DU in small quantities; e) instead of to a site in Texas, transportation of the DU penetrators from the Tooele Army Depot location to the Clive facility (less than 50 miles) is a significant reduction in risks associated with transportation incidents; and f) the DU penetrator metal is far less dispersible in the environment than the depleted uranium oxide considered in the moratorium, EnergySolutions requests an exemption from UAC R313-25-9(5) for disposal of the JMC DU penetrators.



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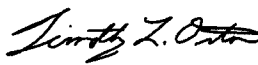
The name, phone number, and address of the person who should be contacted to notify EnergySolutions of decisions by the Director is:

Mr. Vern Rogers
Manager, Compliance and Permitting
EnergySolutions LLC
299 South Main Street, Suite 1700
Salt Lake City, UT 84111
(801) 649-2000

Furthermore, EnergySolutions requests time during the regularly-scheduled Board meeting on September 13, 2018 to present and further explain this exemption request. Additionally, EnergySolutions requests comments be gathered from the public for a period of 30 days, to begin on or before September 6, 2018.

Should there be any questions to this request, please contact me at (801) 649-2000.

Sincerely,

 **Tim Orton**
Aug 23 2018 3:22 PM
cosign

Timothy L. Orton, P.E.
Environmental Engineer

cc: Don Verbica, DWMRC
Bret Randall, OAG

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.