

April 6, 2005

**MEMORANDUM TO:** Scott Flanders, Deputy Director  
Environmental and Performance  
Assessment Directorate  
Division of Waste Management  
and Environmental Protection  
Office of Nuclear Material Safety  
and Safeguards

**THRU:** B. Jennifer Davis, Section Chief /RA/  
Environmental and Low-Level Waste Section  
Division of Waste Management  
and Environmental Protection  
Office of Nuclear Material Safety  
and Safeguards

**FROM:** Matthew Blevins, Senior Project Manager /RA/  
Environmental and Low-Level Waste Section  
Division of Waste Management  
and Environmental Protection  
Office of Nuclear Material Safety  
and Safeguards

**SUBJECT:** TELEPHONE SUMMARY REGARDING DEPLETED URANIUM  
DISPOSAL

On February 24, 2005, a conference call between the U.S. Nuclear Regulatory Commission staff and Utah's Division of Radiological Control staff was held to exchange information regarding the potential disposal of depleted uranium at a commercial low-level radioactive waste disposal facility. Attached is the telephone summary.

Docket: 70-7004  
70-3103

Attachment: Telephone Summary

cc: See attached list

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## TELEPHONE SUMMARY

**Date and Time:** February 24, 2005; 3:30 PM - 4:15 PM

### **Participants:**

**U.S. Nuclear Regulatory Commission:**

B. Abu-Eid/DWMEP	S. Flanders/DWMEP
M. Blevins/DWMEP	T. Johnson/FCSS
R. Linton/DWMEP	M. Wong/DHLWRS
Y. Faraz/FCSS	

**Division of Radiological Control, State of Utah:**

D. Finerfrock  
J. Hultquist  
L. Morten

### **Background:**

On February 24, 2005, a conference call between the U.S. Nuclear Regulatory Commission (NRC) staff and Utah's Division of Radiological Control (DRC) staff was held to exchange information regarding the potential disposal of depleted uranium (DU) at a commercial low-level radioactive waste (LLW) disposal facility.

### **Question 1:**

**NRC staff:** The waste acceptance criteria [WAC] at Envirocare under License Number UT 2300249, Amendment #19, allows waste disposal of uranium isotopes at the following average concentrations limits: U-234:  $3.7\text{E}+05$  pCi/g; U-235:  $1.90\text{E}+03$  pCi/g; and U-238:  $3.3\text{E}+05$  pCi/g. These concentrations are within the range of DU oxides isotopic concentrations. Does the DRC have any conditions in its regulations or license that may exclude disposal of DU in the form of oxides at Envirocare? If so, please explain the rationale and the physical or chemical parameters used for such exclusion? Does the WAC address any volume restrictions for disposal of DU?

**DRC staff:** DRC staff pointed out that Amendment #19 has been superseded by Amendment #20. In the most recent amendment, isotopic concentrations for the listed nuclides have been eliminated. The new amendment refers to Class A limits.

**NRC staff:** Requested clarification of Amendment #20. Because 10 CFR 61.55 limits have no specific value for uranium, were the corresponding concentration values set to the theoretical specific activity for each isotope of uranium?

**DRC staff:** Confirmed this statement and indicated that this was consistent with the uranium values under the old Amendment #19.



DRC staff indicated that at this time they have no reservations about accepting DU in an oxide form (specifically  $\text{DU}_3\text{O}_8$ ). DRC staff further noted that there are no volume restrictions in the Envirocare license.

**Question 2:**

**NRC staff:** Are there any special considerations that need to be taken into account for disposal of DU material at the Envirocare facility from Utah's perspective?

**DRC staff:** Responded that no special considerations came to mind. These disposal decisions are something that the DU generator and Envirocare would have to explore.

**Question 3:**

**NRC staff:** NRC staff asked DRC to provide further information on its position that the on-site residential and agricultural intruder pathways for the Envirocare site are unrealistic.

**DRC staff:** Stated that onsite residential and/or farming scenarios at the Envirocare facility are unrealistic for several reasons. First, the site conditions of low precipitation (i.e., approximately 5-6 inches/year) and high evapotranspiration rates (i.e., approximately 40 - 50 inches/year). Also, there is a lack of suitable irrigation water (see Question 6) and the soil is extremely saline. Secondly, Tooele County has designated this part of the county as Heavy Industry and Hazardous Waste Zones which bars any such residential and/or farming uses.

**Question 4:**

**NRC staff:** Does the DRC staff have any updated PA studies for Envirocare? Was the Rogers & Associates study used to support the MCLs or WAC? [e.g., "Evaluation of the Potential Public Health Impacts Associated with Radioactive Waste Disposal at a Site Near Clive, Utah," June 1990; "Additional Radionuclide Concentration Limits for the NORM Disposal Site at Clive, Utah," August 1990].

**DRC staff:** Responded that the 1990 reports were used in initial licensing work for Envirocare. There are more updated reports from approximately 1997 - 2000. DRC staff will provide a list of these reports in a future electronic mail. DRC staff also noted that all of these reports are publicly available.

**Question 5:**

**NRC staff:** Does the DRC staff have detailed information regarding subsurface geology and hydrology beneath the Envirocare facility and whether this information is available to the public? Does the DRC staff have any performance assessment studies on radionuclide transport or radionuclide migration at your licensed facilities? If so, please direct NRC staff to the source of this information.

**DRC staff:** Indicated that DRC staff has an abundance of information about the geology and hydrology and that this information is also publicly available. Any information that NRC needs should be forwarded to the DRC. DRC staff also noted that all of these reports are publicly available.

**Question 6:**

**NRC staff:** What are the parameters DRC staff used to conclude that the groundwater beneath the Envirocare facility is non-potable?

**DRC staff:** Responded that the driving factor was the high saline content which is approximately 30,000 - 80,000 mg/L total dissolved solids. This high value precludes any use for either human or animal consumption and also would not be suitable for irrigation.

**Question 7:**

**NRC staff:** NRC understands that DEQ requires compliance with radionuclide concentrations limits in the aquifer and that these limits are used for monitoring purposes. Does the DRC staff have any corresponding dose/risk values for these limits? If none, please explain the health and safety basis for these limits and the timeframe of its intended use.

**DRC staff:** Responded in the affirmative and stated that these were spelled out in the groundwater discharge permit using three factors:

- Four mrem/yr exposure assuming use as drinking water source;
- EPA MCL's (i.e., gross alpha); and
- EPA Federal Report Number 13.

DRC staff did not apply the sum of fractions rule because it would be difficult to predict which contaminant would arrive at a well and because of the high total dissolved solids, the water would never be used as a drinking water source.

**NRC staff:** Clarified their question and asked how DRC obtained limits if there were no receptor to use or consume the water?

**DRC staff:** Clarified response and indicated that these limits relate to the State's "anti-degradation" policy decision made in 1990. The decision meant that even though there were no uses for the groundwater, eventual groundwater discharges to the Great Salt Lake would not be allowed to further degrade the water quality.

**Question 8:**

**NRC staff:** What is the average distance from the disposal cell to the boundary at Envirocare? What are the current activities of the off-site public at the boundary?

**DRC staff:** First, DRC requires a buffer zone from the edge of the waste to the edge of the disposal cell of approximately 90 feet. This buffer zone would contain monitoring equipment, ditches, and roads. Second, Tooele County requires a buffer zone of 300 feet between the edge of the disposal cell and the site boundary. In total, there is approximately 390 feet between the edge of the waste and the boundary. Currently, there are no public activities at the boundary. This is Bureau of Land Management land and on very rare occasions there may be sheep or cattle grazing.

**NRC Staff:** Extended its thanks to DRC staff for participating in this exchange and noted that it would keep DRC staff informed of its environmental review findings relative to DU disposal.