State of Utah
GARY R. HERBERT
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GREG BELL
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Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF RADIATION CONTROL
Rusty Lundberg
Director

July 27, 2011

RE: Classifying Blended Uranium Waste as Natural Uranium (U-Nat)

To Whom It May Concern:

It has come to the attention of the Utah Division of Radiation Control (DRC) of the Department of Environmental Quality that many Generator Site Access Permitees (GSAPs) have been misclassifying blended Uranium waste as "Natural Uranium (U-Nat.)." The DRC has investigated the rationale of this practice and has determined that this classification practice is not appropriate.

The following is a summary of this investigation:

- The GSAPs involved with this investigation informed the DRC that Uranium waste was blended to meet EnergySolutions Waste Acceptance Criteria and that blending is also done to remove the material from Safeguards and Security requirements.
- EnergySolutions added:
  - The U.S. Department of Energy (DOE) considers the blended uranium material to be "Normal Uranium".
  - The U.S. Department of Transportation (DOT) and EnergySolutions do not have a "Normal Uranium" classification so in the absence of a DOT classification the DOE classifies blended uranium material as "U-Nat" solely for transportation and disposal purposes.
- NRC NUREG/BR-0096 defines both "Normal Uranium" and "Natural Uranium" as:
  NATURAL URANIUM --- Any uranium-bearing material whose uranium isotopic distribution has not been altered from its natural occurring state. Natural uranium is nominally 99.283% U-238, 0.711% U-235, and 0.006% U-234 (by weight relative to total uranium element).

  NORMAL URANIUM --- Any uranium-bearing material having a uranium isotopic weight distribution that can be described as being (1) 0.700 to 0.724% in combined U-233 plus U-235; and (2) at least 99.200% in U-238. [NOTE: All *"natural uranium"* having a U-235 isotopic concentration in the range of 0.700 to 0.724 percent is *"normal uranium"*, but not all *"normal uranium"* is *"natural uranium."]*
- The DOT in 49 CFR 173.401 (b)(4) adds this definition for the use of the word "Natural" in classification: "Natural material and ores containing naturally occurring radionuclides which are not intended to be processed for use of these radionuclides, provided the activity concentration of the material does not exceed 10 times the values specified in Sec. 173.436."

- DOT interpretation 06-0003 states in A1 second paragraph: "The term "natural materials" in 173.401(b)(4) means material and radionuclides existing in nature, not produced by humans. Radionuclides addressed by 173.401(b)(4) do not include those contained in filters used to remove radionuclides from drinking water, produced in nuclear reactors or by other technological means."
- Blended Uranium waste has been altered by technological means and cannot be classified as U-Nat as per 49 CFR 173.401(b)(4) and its interpretation 06-0003.

GSAPs may still dispose of the Uranium blended waste at the EnergySolutions' Clive facility. GSAPs will need to manifest the Uranium by isotope and comply with all waste classification and Special Nuclear Material limits. If you have any questions or comments regarding this issue please contact John Hultquist or Ryan Johnson at (801)536-4250.

UTAH RADIATION CONTROL BOARD

Rusty Lundberg

Rusty Lundberg, Executive Secretary

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