



September 8, 2011

CD11-0243

Mr. Rusty Lundberg  
Executive Secretary  
Utah Radiation Control Board  
195 North 1950 West  
Salt Lake City, UT 84114-4850

Re: August 11, 2011 Notice of Violation, Radioactive Material License Number UT 2300249: Non-Conforming Waste Notification License Condition 13H

Dear Sir:

This letter provides written response to the NOV issued on August 11, 2011. EnergySolutions is contesting this NOV and maintains that the appropriate notifications were made in accordance with the Clive Radioactive Material License (RML).

In the Notice of Violation issued to EnergySolutions on August 11, 2011 the Utah Division of Radiation Control (DRC) states '*...that LATA/Parallax Portsmouth LLC. shipped radioactive waste to the EnergySolutions, LLC. disposal facility located at Clive, Utah that did not conform to Radioactive Material License (RML) Number UT 2300249 and the proper notification as per License Condition 13H did not take place*'.

**EnergySolutions Response:** EnergySolutions agrees that shipment number 9069-17-0001 did not conform to the Clive RML. However, EnergySolutions maintains that the shipment violated License Condition (LC) 35 which limits the disposal of significant quantities of concentrated depleted uranium (DU), not LC 13H. Off-site independent laboratory analytical data identified the material as concentrated DU and EnergySolutions rejected the shipment. Nuclear Regulatory Commission (NRC) notification per LC 13H was not required since the material was not enriched.

When radioactive waste arrives at Clive, a comprehensive review of the shipment is performed that includes, but is not limited to:

- DOT contamination and radiation surveys
- Review of the shipment manifest with respect to its approved waste profile
- Classification check
- Receipt of associated Special Nuclear Material (SNM) Exemption certification, if applicable
- Review of DOE/NRC Form 741, if applicable

- Manifest reviewed for consistency with waste profiles, isotopes, concentrations, comparison to the SNM Exemption certification and other RML requirements
- If applicable, sampling of waste to check manifested isotopes, waste classification, and compliance with SNM Exemption

By definition, SNM must first be enriched before the limits are considered. If the U-235 weight percentage within a container of radioactive waste is  $\leq 0.711$  then the material is not SNM and the U-235 SNM concentrations within the RML do not apply. The methods used to determine the U-235 enrichment are, but not limited to:

- Designated as SNM on radioactive manifest and/or DOE/NRC Form 741
- Comparison of activity ratios of U-235/234 to U-238 by gamma spectroscopy or alpha spectroscopy
- Weight percentage of U-235 by ICP/MS

Title 10 CFR 70.4 and Utah Administrative Code Title R313 (R313-12-3) provide the following definition for Special Nuclear Material:

*Special nuclear material means:* (1) Plutonium, uranium 233, **uranium enriched in the isotope 233 or in the isotope 235**, and any other material which the commission, pursuant to the provisions of section 51 of the Act, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing but does not include source material:

Title 10 CFR 71.4 is incorporated into Utah Administrative Code Title R313 (R313-19-100) and provides the following definitions for Natural, Depleted and Enriched uranium:

**Natural uranium** means uranium with the naturally occurring distribution of uranium isotopes (approximately 0.711 weight percent uranium-235, and the remainder by weight essentially uranium-238).

**Depleted uranium** means uranium containing less uranium-235 than the naturally occurring distribution of uranium isotopes. (< 0.711 % uranium-235)

**Enriched uranium** means uranium containing more uranium-235 than the naturally occurring distribution of uranium isotopes. (>0.711 % uranium-235)

The following table summarizes the 9069-17-0001 analytical results from on-site gamma spec, off-site independent laboratory verification (Alpha spec and Mass spec)

Based on Net Mass of 5.10E+05 grams

<b>Manifested Activities</b>					
	mCi	pCi/g	pCi/g	Ppm	Wt % U-235
U-238	23.64	4.63E+04	3.40E+05	1.36E+05	
U-234	22.09	4.33E+04	6.20E+09	6.98E+00	
U-235	1.08	2.12E+03	2.20E+06	9.62E+02	0.70106
<b>On-Site Gamma Spectrum</b>					
	mCi	pCi/g	pCi/g	Ppm	Wt % U-235
U-238	86.24	1.69E+05	3.40E+05	4.97E+05	
U-234	4.09	8.01E+03	6.20E+09	1.29E+00	
U-235	0.44	8.72E+02	2.20E+06	3.96E+02	0.079678
<b>GEL Alpha Spectrum</b>					
	mCi	pCi/g	pCi/g	Ppm	Wt % U-235
U-238	86.24	1.69E+05	3.40E+05	4.97E+05	
U-234	1.66	3.26E+03	6.20E+09	5.26E-01	
U-235	1.25	2.45E+03	2.20E+06	1.11E+03	0.223544
<b>GEL Mass Spectrum</b>					
	mCi	pCi/g	pCi/g	Ppm	Wt % U-235
U-238				4.27E+05	
U-234					
U-235				1.14E+03	0.266268

This analytical data shows that shipment 9069-17-0001 contained less uranium-235 (0.266 % U-235 Mass Spec) than the naturally occurring distribution of uranium isotopes (0.711 % U-235) therefore met the NRC's definition in title 10 CFR 71.4 for Depleted Uranium.

EnergySolutions RML LC 13 A. states, "Concentrations of SNM in individual waste containers must not exceed the values listed in Table 13-A at time of receipt".

Although the 9069-17-0001 shipment contained U-235 concentrations in excess of the Table 13-A values, **the U-235 was not enriched**, therefore did not meet the definition of special nuclear material. Therefore, the concentration limits in Table 13-A do not apply.

In summary, the analytical results from the 9069-17-0001 shipment clearly indicate that this waste was depleted uranium which exceeded the Clive RML LC 35 limits. The waste shipment was rejected and the appropriate DRC notifications were made by EnergySolutions in accordance with the RML. The analytical results from on-site and off-site verification from an independent laboratory show this waste is not enriched in U-235, therefore this waste did not meet the definitions provided by the NRC for SNM. Because the 9069-17-0001 shipment was not SNM, LC 13H did not apply and therefore NRC notification was not required. Based on this information, EnergySolutions requests that the DRC withdraw the NOV issued August 11, 2011 with regards to LC 13H.

EnergySolutions does not request a hearing before the Utah Radiation Control Board at this time; however, EnergySolutions reserves its right to request a hearing before the Board.

Please call with any questions or concerns at (801) 649-2179.

Sincerely,



Rick Chalk  
Director of Health Physics - Clive, UT.

Cc: Mr. John Hultquist, Utah DRC  
Mr. Phil Goble, Utah DRC  
Mr. Blair Spitzberg, U.S. NRC