

RADIOACTIVE MATERIAL LICENSE NO. UT 2300249

STATEMENT OF BASIS

For Proposed

LICENSE AMENDMENT No. 27

Low Level Radioactive Waste Disposal Facility

EnergySolutions, LLC
299 South Main Street, Suite 1700
Salt Lake City, UT 84111

March 1, 2023

Introduction

This Statement of Basis establishes the foundation on which Radioactive Material License No. UT 2300249 (RML) has been recommended for amendment. If the proposed revisions are approved, the revised License is to be designated as Amendment 27. On July 7, 2022, EnergySolutions LLC (ES) filed an amendment request (CD-2022-121, DRC-2022-017921).

ES submitted the request to the Director of the Division of Waste Management and Radiation Control (Director or Division) to amend **License Conditions 16.A** and **29.B** for the purpose of removing the prohibition against the disposal of sealed sources as defined in Utah Administrative Code R313-12-3. Additionally, the Division is using this licensing action as opportunity to make its annual update to surety, by increasing values described in **License Conditions 73.C**. As such, Division staff performed an evaluation of the technical and regulatory merits of this amendment request. The Division issues and regulates the License and the Director ensures that all applicable regulatory requirements are met. This request was reviewed by the Director and was deemed appropriate. Additional information addressing this request for amendment to Condition 16.A, 29.B, and 73.C is contained in Appendix A of this Statement of Basis.

Concentration Averaging and Encapsulation

In February 2015, The US Nuclear Regulatory Commission (NRC) issued a guidance document titled, "Concentration Averaging and Encapsulation Branch Technical Position, Revision 1" (referred to as the BTP). This guidance provides a set of uniform technical standards by which any waste generator or processor may mix wastes with varying radiological concentrations, in a manner that results in a final radiological concentration meeting a required classification. The BTP is an industry standard that has been in use since 2015. As the Division is required to

regulate licensees in the same way in which NRC would, the Division accepts the implementation of the BTP as a valid and scientifically rigorous approach to waste concentration averaging.

Minor Amendment

The changes proposed and described in Appendix A of this Statement of Basis are deemed minor in nature by the Director, and as a result are not subject to a mandatory public comment period. However, in accordance with Utah Administrative Code (UAC) R313-17-2(1)(a)(i)(J), in the interest of public participation during this licensing/permitting activity the Director has decided to provide an opportunity for public comment on the proposed changes.

To further clarify, minor changes to the License and/or Permit are those that are considered (i) to have no impact on the protection of the public and environment; (ii) to be a change of requirements that are more stringent than those already existing; or (iii) are administrative in nature to clarify a License and/or Permit condition(s). In contrast, the Director considers major changes to a License to be those that have a potential to adversely affect public health and/or the protection of the environment, or to represent a reduction in monitoring requirements. The changes that have been proposed to the License in this action are considered minor in nature under the administrative category because there is no technical or administrative rationale to support a prohibition against the disposal of Class-A sealed sources. The License clearly permits the disposal of Class A waste in as much as waste concentrations meet the requirements set forth in Utah Administrative Code R313-15-1009 tables I&II; and the physical form and characteristics of said Class A waste meet all applicable requirements as described in Utah Administrative Code R313-15-1009(2)(a) & R313-15-1009(2)(b).

Purpose of Public Comments

All conclusions in this Statement of Basis, including determinations that issues have been resolved or not resolved, are categorized as “proposed” because they are subject to notice and comment and reconsideration by the agency in light of comments made during the public comment period and the record as a whole. A final approval of the proposed revisions to the License is dependent on incorporating the outcome of the public comment period.

License Change Summary

License Condition	Minor/ Major Change	Description of Changes and Bases for Changes
16.A	Minor	The Director proposes to remove the blanket prohibition on the disposal of any sealed sources in favor of a new condition that allows

License Change Summary

License Condition	Minor/Major Change	Description of Changes and Bases for Changes
		for the disposal of discrete Class A sealed sources that do not exceed Low-Level Radioactive Waste disposal limits defined in UAC R313-15-1009. As a further clarification, the Director proposes to add a new condition that requires the Licensee to obtain the Director’s prior approval if the Licensee intends to rely upon the U.S. Nuclear Regulatory Commission’s “Concentration Averaging and Encapsulation Branch Technical Position” for the disposal of any specific package containing sealed source wastes.
29.B	Minor	The Director proposes to add a requirement that the Licensee include the Sealed Sources in its quarterly summary report which details the radioisotopes, activities, weighted average concentrations, volumes and tonnages received for disposal during the calendar quarter.
73.C	Minor	The Director proposes to increase combined annual surety.

Requested Changes not Incorporated

License Condition	Minor/Major Change	Description of Proposed Changes
None	NA	None

Additional Information

Additional details regarding the changes to the License are contained in the following Appendices:

Appendix A: License Conditions 16.A & 29.B – Disposition of Sealed Sources

Appendix B: License Condition 73.C – Surety Update
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Appendix A

License Conditions 16.A & 29.B– Disposition of Sealed Sources

Statement of Basis to Amend License Condition 16.A and 29.B

On July 7, 2022, (CD-2022-121 (DRC-2022-017921)), *EnergySolutions*, LLC (ES) submitted a request to the Director of the Division of Waste Management and Radiation Control (Director or Division) to amend License Condition 16.A of the Radioactive Material License No. UT 2300249 (RML). ES made a request to remove the prohibition against the disposition of Class-A Sealed Sources at their Clive, Utah disposal facility.

This Appendix A of the Statement of Basis provides additional details as to the basis on which the Division now proposes amendment to Condition 16.A & 29.B in accordance with the statutory authority granted to the Division by the Utah Administrative Code (UAC).

The License Section and current License Condition are as follows:

PROHIBITIONS AND WASTE ACCEPTANCE REQUIREMENTS:

16.A. Sealed sources as defined in UAC R313-12 shall not be accepted for disposal.

EnergySolutions did not propose any specific language aside from the general request to remove the prohibitions of sealed source for disposal. As such, the Division proposes to amend Condition 16.A as follows (track changes):

- 16.A. ~~Sealed sources as defined in UAC R313-12 shall not be accepted for disposal.~~
- i. ~~Sealed sources (as defined in UAC R313-12) are acceptable for disposal in the Containerized Waste Facility provided that each individual source and package disposed shall not exceed Class-A LLRW limits as defined in UAC R313-15-1009.~~
 - ii. ~~Director approval shall be required if the Licensee relies upon the “Concentration Averaging and Encapsulation Branch Technical Position” to demonstrate that a package of sealed sources qualifies as Class A LLRW.~~

The clean text version of the Division’s proposed, amended Condition 16.A is as follows:

16.A.

- i. Sealed sources (as defined in UAC R313-12) are acceptable for disposal in the Containerized Waste Facility provided that each individual source and package disposed shall not exceed Class-A LLRW limits as defined in UAC R313-15-1009.
- ii. Director approval shall be required if the Licensee relies upon the “Concentration Averaging and Encapsulation Branch Technical Position” to demonstrate that a package of sealed sources qualifies as Class A LLRW.

REPORTING AND NOTIFICATION

29.B. A quarterly summary report detailing the radioisotopes, activities, weighted average concentrations, volume and tonnage for waste received during the calendar quarter. The report of volume (cubic feet and cubic yards) and tonnage (tons) shall be partitioned according to waste type: Low Level Radioactive Waste (LLRW), LLRW with PCBs, Mixed Waste (MW), MW with PCBs, MW Treatment, NORM, Containerized Class A, uranium/thorium mill tailings (i.e. 11e.(2) wastes) and waste generated prior to the passage of the Uranium Mill Tailings Radiation Control Act in 1978. The report(s) shall be submitted within 30 days after the expiration of each calendar quarter. Calendar Quarter shall mean:

First Quarter	January, February, and March
Second Quarter	April, May, and June
Third Quarter	July, August, and September
Fourth Quarter	October, November, and December

EnergySolutions has proposed to track and report the volume and activity of sealed sources disposed at the Clive, Utah Facility should this amendment request be granted. As such, the Division proposes make the tracking and reporting of disposed Sealed Sources a part of License Condition 29.B as follows (track changes):

29.B A quarterly summary report detailing the radioisotopes, activities, weighted average concentrations, volume and tonnage for waste received during the calendar quarter. The report of volume (cubic feet and cubic yards) and tonnage (tons) shall be partitioned according to waste type: Low Level Radioactive Waste (LLRW), LLRW with PCBs, Mixed Waste (MW), MW with PCBs, MW Treatment, NORM, Containerized Class A, **Class A Sealed Sources**, uranium/thorium mill tailings (i.e. 11e.(2) wastes) and waste generated prior to the passage of the Uranium Mill Tailings Radiation Control Act in

1978. The report(s) shall be submitted within 30 days after the expiration of each calendar quarter. Calendar Quarter shall mean:

First Quarter	January, February, and March
Second Quarter	April, May, and June
Third Quarter	July, August, and September
Fourth Quarter	October, November, and December

The clean text version of the Division's proposed, amended Condition 29.B is as follows:

29.B A quarterly summary report detailing the radioisotopes, activities, weighted average concentrations, volume and tonnage for waste received during the calendar quarter. The report of volume (cubic feet and cubic yards) and tonnage (tons) shall be partitioned according to waste type: Low Level Radioactive Waste (LLRW), LLRW with PCBs, Mixed Waste (MW), MW with PCBs, MW Treatment, NORM, Containerized Class A, Class A Sealed Sources, uranium/thorium mill tailings (i.e. 11e.(2) wastes) and waste generated prior to the passage of the Uranium Mill Tailings Radiation Control Act in 1978. The report(s) shall be submitted within 30 days after the expiration of each calendar quarter. Calendar Quarter shall mean:

First Quarter	January, February, and March
Second Quarter	April, May, and June
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Regulatory Authority

The Division is responsible for regulating activities in the State of Utah (State of Utah or State) that involve radioactive materials, some types of radioactive waste, and radiation; and oversees the Permittee's Ground Water Quality Discharge Permit. As part of this responsibility, the Division enforces requirements promulgated by the State of Utah. Requirements applying to land disposal of radioactive waste are contained in Utah Administrative Code R313-25, "*License Requirements for Land Disposal of Radioactive Waste – General Provisions.*" Additional applicable rules are contained in UAC R313-15 "*Standards for Protection Against Radiation,*" which defines requirements for protecting individuals from the effects of radiation and UAC

R313-22, "*Specific Licenses*," which specifies licensing requirements, many of which are met by compliance with or superseded by the provisions of UAC R313-25. The Permit is issued pursuant to Utah Water Quality Rule Section UAC R317-6 "*Administrative Rules for Ground Water Quality Protection*", which requires any persons who construct, install, or operate any new facility or modify an existing or a new facility, not permitted by rule under UAC R317-6-6.2, which discharges water or would probably result in a discharge of water, to obtain a Ground Water Quality Discharge Permit. Additional chapters of the UAC rules are also applicable.

The Division evaluated Utah Administrative Codes R313-15, R313-25, in addition to US Nuclear Regulatory Commission's (US NRC) Concentration Averaging and Encapsulation Branch Technical Position (BTP) and weighed these requirements against merits of EnergySolutions' Amendment Request. The following was determined:

- **R313-15-1009(1)(a)(i)**- Waste that meets the physical form and characteristic for classification as Class A waste shall meet number of minimum requirements. If Class A waste meets the stability requirements set forth in Subsection R313-15-1009(2)(b), it is not necessary to segregate waste for disposal. This amendment request meets this requirement.
- **R313-15-1009(1)(c)(i) & R313-15-1009(1)(d)(i)** – If waste bound for disposal contains radionuclides with concentrations not in excess of 0.1 times the values in listed Table I; OR exceed the concentrations listed in Table II; OR do not contain any of the radionuclides listed in either Table I or II, then the waste is classified as Class A. Class A Sealed Source waste should follow this same approach in as much as they do not exceed the concentrations listed in Table I&II in R313-15-1009. This amendment request meets this requirement.
- **R313-15-1009(2) & R313-25-9(2)**- Class A Sealed Sources will be disposed of in the Containerized Waste Facility (CWF), which has a robust set of disposal requirements and procedures which provides assurances that the protection of health and safety for personnel at the site and the public is considered. Furthermore, a detailed Performance Assessment of the Class A West Cell was evaluated and submitted to the Division which addresses waste and cell stability. This amendment request meets this requirement.
- **US NRC BTP**- The Division agrees that it is appropriate to apply the BTP for the classification of Sealed Source Waste bound for disposition at the Clive, Utah Facility. The BPT is a robust guidance document which is implemented across the industry.
- **R313-25-9(1)(a)**- The Division agrees that Discrete Class A Sealed Sources were considered in the development of Class A waste limits. Nevertheless, it is the Division's position that should ES seek to dispose of Class A Sealed Sources as classified by application of the BTP, it shall then become EnergySolutions' obligation to demonstrate to the Director's satisfaction that placement of said waste will not affect the performance objectives applied to the Class A West Embankment. (Outlined in R313-25-19 through R313-25-23).

This Amendment Request if granted shall have the following conditions:

- 1.) Each individual source and package disposed under the variance will not exceed Class A LLRW limits as defined in UAC R313-15-1009.
- 2.) Sources will be disposed in the Containerized Waste Facility (CWF) in accordance with the most currently approved Construction Quality Assurance/Quality Control Manual requirements for CWF disposal and other applicable CWF criteria for disposal.
- 3.) The Licensee will review and approve each shipment before it is transported from the generator's or processor's facility.
- 4.) The Licensee will track and report the total number, volume, activity of sources received, and the serial numbers and/or other unique identifiers of each source disposed under this amendment. This shall be included in the quarterly waste report as described in License **Condition 29.B**. A synopsis of where the waste came from and where it is placed should be included
- 5.) The Sealed Source(s) shall be encased within the disposal containers with grout or concrete.
- 6.) Sealed Source waste present in amounts or concentrations not analyzed in development of the waste tables in 10 CFR 61 and in UAC R-313 and not described in NRC documents NUREG-0782 and NUREG-0945, the Licensee shall, to the satisfaction of the Director:
 - a. ensure that the waste is appropriately classified as Class-A LLRW prior to shipment to the Facility for disposal, and that the information requirements of the manifest section of Appendix G of 10 CFR Part 20 are met; AND
 - b. submit to the Director a site-specific analysis and plan that provides reasonable assurance that the objectives or standards described in Utah Administrative Codes R313-25-19 through R313-25-23 will be attained.

References

- EnergySolutions LLC, (ES, 2022). Radioactive Material License UT2300249: Condition 16.A Minor Replacement Amendment Request CD-2022-121. July 7, 2022 (DRC-2022-017921).
- URS Corporation, (URS, 2012). *Safety Evaluation Report*. Utah Division of Radiation Control, EnergySolutions LLRW Disposal Facility, Class A West Amendment Request. June 12, 2012. (DRC-2012-003582).
- U.S. Nuclear Regulatory Commission (2015). “Concentration Averaging and Encapsulation Branch Technical Position, Revision 1, Volume 1. ADAMS Accession No. ML12254B065

Appendix B

License Condition 73.C – Surety Update

Statement of Basis to Amend License Condition 73.C

License Condition 73.C. of the LLRW Radioactive Material License (UT 2300249) lists the approved combined annual surety amount for the Clive site and the individual surety amount for the LLRW Facility. Changes to the combined surety and individual facility amounts are updated annually based on physical changes at the facility and inflation calculations. Occasionally intermediate revisions are approved by the Director.

Within earlier License Amendment 25 (dated 8/1/18, DRC-2018-004075) and License Amendment 26 (dated 11/16/22, DRC-2022-022586) the current surety values in License Condition 73.C are based on the Director's approval of an EnergySolutions, LLC letter dated February 14, 2020 (DRC-2020-003008) and subsequent discussions.

On March 3, 2021, EnergySolutions submitted, to the Director, the 2020 Annual Surety update to the combined annual surety amount for the state-issued Part B Permit, the 11e.(2) Radioactive Material License (UT 2300478) and the LLRW Radioactive Material License (UT 2300249) (DRC-2020-003483). The Director has approved the 2020 Annual Surety update revision with an approval letter dated December 20, 2022 (DSHW-2022-027230). These 2020 Annual Surety values are being incorporated into this License Amendment 27.

Based on a Division review of the annual update submission, Condition 73.C. of the LLRW Radioactive Material License shall be revised as indicated in the following paragraphs:

The License Section and current License Condition are as follows:

FINANCIAL ASSURANCE/CLOSURE

Current surety language:

73.C. The combined annual surety is \$82,488,951.77 with the LLRW subtotal of \$53,710,953.60 as approved in the Director's letter dated February 28, 2020.

The Division proposes to amend Condition 73.C as follows (track changes):

73.C. The combined annual surety is ~~\$82,488,951.77~~ **\$84,120,006.36** with the LLRW subtotal of ~~\$50,005,828.16~~ **\$52,585,327.48** as approved in the Director's letter dated ~~April 26,~~ **2018 March XX, 2023**.

The clean text version of the Division’s proposed, amended Condition 73.C is as follows:

- 73.C. The combined annual surety is \$84,120,006.36 with the LLRW subtotal of \$52,585,327.48 as approved in the Director’s letter dated March XX, 2023.

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