



State of Utah

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*Lieutenant Governor*

Department of  
Environmental Quality

Alan Matheson  
*Executive Director*

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

February 16, 2018

David Frydenlund  
Senior Vice President General Counsel and Corporate Secretary  
Energy Fuels Resources (USA) Inc.  
225 Union Boulevard, Suite 600  
Lakewood, CO 80228

RE: Radioactive Material License Renewal Number UT 1900479, Amendment 8

Dear Mr. Frydenlund:

Please find enclosed the reissued Amendment 8 (Renewal) of Utah Radioactive Material License (RML) UT1900479. The reference to Rev 5.1 of the White Mesa Uranium Mill Reclamation and Decommission Plan in License Condition 13.1.AA was changed to Rev 5.1B. No other changes to the RML were made and the changes to Rev 5.1B were considered and approved as part of the RML renewal. Due to this correction, I have resigned the RML and the new issue date for the entire package will be February 16, 2018.

If you have any questions, please call Phil Goble at (801) 536-4044.

Sincerely,

Scott T. Anderson, Director  
Division of Waste Management and Radiation Control

STA/RMJ/ka

Enclosure: Radioactive Material License Renewal Number UT 1900479, Amendment 8  
(DRC-2018-001589)

c: Kirk Bengé, Health Officer, San Juan Public Health Department  
Rick Meyer, Environmental Health Director, San Juan Public Health Department  
Scott Hacking, P.E., DEQ District Engineer

DRC-2018-001587

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UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WASTE MANAGEMENT AND RADIATION CONTROL
RADIOACTIVE MATERIALS LICENSE

RENEWAL

Pursuant to the Utah Code Annotated, Title 19, Chapter 3 and R313 of the Utah Administrative Code (Radiation Control Rules) and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material designated below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This licensee is subject to all applicable rules, and orders now or hereafter in effect and to any conditions specified below.

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LICENSEE ) 3. License Number UT1900479
) Amendment # 8 (Renewal)
1. Name Energy Fuels ) \*\*\*\*\*
Resources (USA) Inc. )
2. Address 225 Union ) 4. Expiration Date
Boulevard, Suite 600 ) February 16, 2028
Lakewood, CO )
80228 ) \*\*\*\*\*
) 5. License Category 2-b
)

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6. Radioactive material (element and mass number) 7. Chemical and/or physical form 8. Maximum quantity licensee may possess at any one time
Natural Uranium, 11e.(2) By-product Material, Approved Alternate Feed Material Any Unlimited

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SECTION 9: ADMINISTRATIVE CONDITIONS

9.1 The authorized place of use shall be the licensee's White Mesa uranium milling facility, located in San Juan County, Utah. The White Mesa uranium mill is located on fee land and mill site claims, covering approximately 5,415 acres encompassing all or part of Sections 21, 22, 27, 28, 29, 32, and 33 of T37S, R22E, and Sections and 16 of T38S, R22E Salt Lake Base and Meridian. [Applicable UDWMRC Amendment: 8 Renewal]

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- 9.2 All written notices and reports to the Director required under this license, with the exception of incident and event notifications under R313-15-1202 and R313-19-50 requiring telephone notification, shall be addressed to the Director, Division of Waste Management and Radiation Control, Utah Department of Environmental Quality, 195 North 1950 West, P.O. Box 144880, Salt Lake City, UT 84114-4850. All written submittals to the Director shall include at the time of submittal, a searchable electronic copy, as required by R313-12-111. Incident and event notifications that require telephone notification shall be made to the Director at (801) 536-0200 during normal business hours or after hours to the DEQ Duty Officer at (801) 536-4123. *[Applicable UDWMRC Amendment: 8 Renewal]*
- 9.3 RESERVED [License Condition moved to SECTION 13: CLOSE OUT CONDITION]
- 9.4 A. The licensee may, without prior Director approval, and subject to the conditions specified in Part B of this condition:
- (1) Make changes in the facility or process, as presented in the application.
  - (2) Make changes in the procedures presented in the application.
  - (3) Conduct tests or experiments not presented in the application.
- B. The licensee shall file an application for an amendment to the license, unless the following conditions are satisfied.
- (1) The change, test or experiment does not conflict with any requirement specifically stated in this license, or impair the licensee's ability to meet all applicable regulations.
  - (2) There is no degradation in the essential safety or environmental commitments in the license application or provided by the approved reclamation plan.
  - (3) The change, test or experiment is consistent with the conclusions of actions analyzed in the most recent Environmental Assessment conducted by the Division from the last license renewal and/or major license amendment.
- C. The licensee's determinations concerning Part B of this condition shall be made by a "Safety and Environmental Review Panel (SERP)." The SERP shall consist of a minimum of three individuals. One member of the SERP shall have expertise in management and shall be responsible for managerial and financial approval changes; one member shall have expertise in operations and/or construction and shall have responsibility for implementing any operational changes; and, one member shall be the Mill Radiation Safety Officer (RSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. Additional members may be included in the SERP as appropriate, to address technical aspects such as health physics, groundwater hydrology, surface-water

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hydrology, specific earth sciences and other technical disciplines. Temporary members or permanent members, other than the three above-specified individuals, may be consultants.

- D. The licensee shall maintain records of any changes made pursuant to this condition until license termination. These records shall include written safety and environmental evaluations made by the SERP that provide the basis for determining that changes are in compliance with the requirements referred to in Part B of this condition. The licensee shall furnish, in an annual report to the Director, a description of such changes, tests or experiments, including a summary of the safety and environmental evaluation of each. In addition, the licensee shall annually submit to the Director changed pages to the Operations Plan and Reclamation Plan of the approved license application to reflect changes made under this condition. Annual reports shall address the previous calendar year and be submitted no later than March 31 each year.

The licensee's SERP shall function in accordance with the most current version of the standard operating procedures submitted by letter to the Director dated February 27, 2007. *[Applicable UDWMRC Amendment 3]*  
*[Applicable UDWMRC Amendment: 8 Renewal]*

- 9.5 The licensee shall at all times maintain a financial surety, approved by the Director, consistent with R313-24-4 (10CFR 40, Appendix A, Criteria 9 and 10, as incorporated by reference), that is adequate to cover the estimated costs, accomplished by a third party, for decommissioning and decontamination of the mill and mill site, reclamation of any tailings or waste disposal areas, groundwater remediation as required by License Condition 10.21, and the long-term surveillance fee. The Licensee is prohibited from use and/or operation of any tailings disposal cell or related new permanent fixture or facility not already accounted for by the currently approved surety, without prior submittal and Director approval of written evidence of adequate financial surety. Within 60 calendar days of Director approval of a revised reclamation/decommissioning plan, the licensee shall submit written evidence of an adequate surety regarding the newly approved plan.

Annual updates to the surety amount, required by R313-24-4 (10CFR40, Appendix A, Criteria 9 and 10, as incorporated by reference), shall be submitted for Director approval by March 4 of each year. Within 30 calendar days of Director approval of an annual update of surety cost estimates, the licensee shall submit written evidence of adequate surety for Director approval.

Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 25 percent contingency fee, changes in

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engineering plans, activities performed and any other conditions affecting estimated costs for site closure. The basis for the cost estimate is the current Director-approved reclamation/decommissioning plan or Director-approved revisions to the plan and guidance contained in NUREG-1620, "Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites under Title II of the Uranium Mill Tailings Radiation Control Act of 1978."

The currently approved surety instrument, a Performance Bond issued by Argonaut Insurance Company in favor of the Director and the associated Standby Trust Agreement, shall be continuously maintained by the Licensee in an amount not less than the amount currently approved by the Director pursuant to the requirements of UAC R313-24-4 (10 CFR 40, Appendix A, Criteria 9 and 10 as incorporated by reference).

On or before March 4, 2018, the annual surety estimate shall also include all costs necessary to remediate any groundwater contamination required by License Condition 10.21, after facility closure, to be determined by the Director.

*[Applicable UDWMRC Amendment: 1][Applicable UDWMRC Amendment 3]  
[Applicable UDWMRC Amendment: 8 Renewal]*

- 9.6 Standard operating procedures (SOPs) shall be established and followed for all operational and non-operational activities involving radioactive material. Up-to-date copies of the SOPs shall incorporate operating instructions and appropriate safety precautions for licensed activities. SOPs shall be kept, maintained and made available to employees in the mill area to which it applies. The written SOPs established shall include activities of the radiation safety and environmental monitoring programs, the employee training program, a respirator protection program, operational procedures, analytical procedures, bioassay analyses and instrument calibration.

At least annually, the uranium milling facility Radiation Safety Officer (RSO) shall review and approve in writing all procedures to determine their continued applicability to the RML license conditions, Utah rules and Federal regulations. Up-to-date copies of all operational and non-operational SOPs shall be submitted electronically to the Director by December 31st of each year. *[Applicable UDWMRC Amendment: 8 Renewal]*

- 9.7 In accordance with the Memorandum of Agreement (MOA) negotiated by the Utah State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), the NRC and Energy Fuels Nuclear Inc. (EFN) and ratified on August 20, 1979 and as amended on May 3, 1983 and substantially as implemented in NRC License SUA-1358:

Before engaging in any activity not previously assessed by the Director, the licensee shall administer a cultural resource inventory. All disturbances associated with the proposed

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development will be completed in compliance with the National Historic Preservation Act (as amended) and its implementing regulations, and the Archaeological Resources Protection Act (as amended) and its implementing regulations.

In order to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of previously unknown cultural artifacts shall cease. The artifacts shall be inventoried and evaluated in accordance with the National Historic Preservation Act (as amended) and no disturbance shall occur until the licensee has received authorization from the Director to proceed.

The licensee shall avoid by project design, where feasible, the archaeological sites designated "contributing" in the report submitted by letter to the NRC dated July 28, 1988. When it is not feasible to avoid a site designated "contributing" in the report, the licensee shall institute a data recovery program for that site based on the research design submitted by letter from C. E. Baker of Energy Fuels Nuclear to Mr. Melvin T. Smith, Utah State Historic Preservation Officer (SHPO), dated April 13, 1981.

The licensee shall recover through archaeological excavation all "contributing" sites listed in the report which are located in or within 100 feet of borrow areas, stockpile areas, construction areas or the perimeter of the reclaimed tailings impoundment. Data recovery fieldwork at each site meeting these criteria shall be completed prior to the start of any project related disturbance within 100 feet of the site but analysis and report preparation need not be complete.

Additionally, the licensee shall conduct such testing as is required to enable the Director to determine if those sites designated as "Undetermined" in the report and located within 100 feet of present or known future construction areas are of such significance to warrant their redesignation as "contributing." In all cases, such testing shall be completed before any aspect of the undertaking affects a site.

Archaeological contractors shall be approved in writing by the Utah SHPO. The Utah SHPO will approve an archaeological contractor who meets the minimum standards of the State of Utah as the principal investigator.

- 9.8 The licensee is hereby authorized to possess byproduct material in the form of uranium waste tailings and other uranium byproduct waste generated by the licensee's milling operations authorized by this license. Mill tailings shall not be transferred from the site without specific prior approval of the Director in the form of a license amendment. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.

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- 9.9 The licensee is hereby exempted from the requirements of R313-15-902(5) for areas within the mill, provided that all entrances to the mill are conspicuously posted in accordance with R313-15-902(5) and with the words, "Any area within this mill may contain radioactive material."
- 9.10 Release of ore trucks and intermodal containers from the restricted area for restricted release shall be in accordance with Department of Transportation standards set forth in 49 CFR 173.443 or 49 CFR 173.428, as amended. Release of equipment or packages from the restricted area for unrestricted release shall be in accordance with Table 2 in the NRC Regulatory Guide 8.30 Rev. 1 "Health Physics Surveys in Uranium Recovery Facilities" dated May 2002, or NRC document "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated May 1987 or suitable alternative procedures approved by the Director prior to any such release.  
*[Applicable UDWMRC Amendment: 8 Renewal]*
- 9.11 Reserved *[Applicable UDWMRC Amendment: 8 Renewal]*
- 9.12 The Licensee shall at all times have a valid groundwater discharge permit issued by the Co-Director. No transfer of this License will be approved unless the Ground Water Quality Discharge Permit is also transferred.  
*[Applicable UDWMRC Amendment: 8 Renewal]*
- 9.13 The Licensee shall perform all decommissioning and reclamation activities in conformance to the currently approved Reclamation Plan. *[Applicable UDWMRC Amendment: 8 Renewal]*

**SECTION 10: OPERATIONAL CONTROLS, LIMITS, AND RESTRICTIONS**

- 10.1 A. The mill production rate shall not exceed 4380 tons of yellowcake per year.
- B. The licensee may not dispose of any material on site that is not "byproduct material," as that term is defined in 42 U.S.C. Section 2014(e)(2) (Atomic Energy Act of 1954, Section 11(e)(2) as amended).
- C. The licensee may not receive or process any alternate feed material without first applying for and obtaining approval of a license amendment. For any such proposal, the licensee shall demonstrate that it will comply with Condition 10.1(B). Any such demonstration shall include:
- (1) Demonstration of compliance with the NRC Regulatory Summary 2000-23 Recent Changes to Uranium Recovery Policy, November 30, 2000; and

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- (2) Demonstration of compliance with the November 22, 1999 Protocol for Determining Whether Alternate Feed Materials are Listed Hazardous Wastes, as approved by the Utah Division of Solid and Hazardous Waste (now Utah Division of Waste Management and Radiation Control) December 7, 1999.
- D. Maximum quantities of feed material stored on the mill site, including alternate feed materials or other ores, shall not exceed the total material storage quantity found in the currently approved mill surety pursuant to License Condition 9.5, without prior approval of the Director.
- E. The licensee may not receive any alternate feed materials or other ores if those materials would cause the facility to exceed the tailings cell disposal capacity established by the currently approved tailing cells engineering design and construction reclamation plan and/or the annual surety report required by License Condition 9.5 without prior approval of the Director.  
*[Applicable UDWMRC Amendment: 2] [Applicable UDWMRC Amendment: 8 Renewal]*
- 10.2 All liquid effluents from mill process buildings, with the exception of sanitary wastes, shall be returned to the mill circuit or discharged to the tailings impoundment.
- 10.3 Freeboard limits, stormwater and wastewater management for the tailings cells shall be determined as follows:
- A. The Freeboard limit for Cell 1 shall be set annually in accordance with the procedures set out in Section 3.0 to Appendix E of the previously approved NRC license application, including the January 10, 1990 Drainage Report. Discharge of any surface water or wastewater from Cell 1 is expressly prohibited.
- B. The freeboard limit for Cell 4B shall be recalculated annually in accordance with the procedures approved by the Director. Said calculations for freeboard limits shall be submitted as part of the Annual Technical Evaluation Report (ATER), as described in Condition 12.2 below.
- C. The discharge of any surface water, stormwater or wastewater from Cells 3, 4A, and 4B shall only be through a Director authorized spillway structure.  
*[Applicable UDWMRC Amendment 3] [Applicable UDWMRC Amendment: 4] [Applicable UDWMRC Amendment:8 Renewal]*
- 10.4 Disposal of material and equipment generated at the mill site shall be conducted as described in the licensee's submittals to the NRC dated December 12, 1994 and May 23, 1995, with the following addition:

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- A. The maximum lift thickness for materials placed over tailings shall be less than four feet thick. Subsequent lifts shall be less than two feet thick. Each lift shall be compacted by tracking of heavy equipment, such as a Cat D-6, at least four times prior to placement of subsequent lifts.
- 10.5 In accordance with the licensee's submittal to the NRC dated May 20, 1993, the licensee is hereby authorized to dispose of byproduct material generated at licensed in-situ leach (ISL) facilities, subject to the following conditions:
- A. Disposal of ISL waste is limited to 5000 cubic yards from a single source.
- B. All ISL contaminated equipment shall be dismantled, crushed or sectioned to minimize void spaces. Barrels containing waste other than soil or sludges shall be emptied into the disposal area and the barrels crushed. Barrels containing soil or sludges shall be verified by the Licensee to be full prior to disposal. Barrels not completely full shall be filled with tailings or soil prior to disposal.
- C. All ISL waste shall be buried in Cell No. 3 unless prior written approval is obtained from the Director for alternate burial locations.
- D. All disposal activities shall be documented and records thereof maintained on-site. The documentation shall include descriptions of the ISL waste and the disposal locations, as well as all actions required by this License condition.
- E. ISL Disposal Requirements. The licensee shall perform ISL disposal activities in accordance with the current Director approved Standard Operating Procedure (SOP) for ISL disposal. Said plan includes the following minimum provisions:
- (1) The material disposal area must be located on a tailings beach area of the disposal cell or on an area of the cell that is underlain by tailings sands;
  - (2) The elevation of the material disposal area shall not exceed the plane or grade of the elevations of the uppermost flexible membrane liner of the tailings cell;
  - (3) Such ISL byproduct material shall be segregated from any mill material and equipment disposed of in the cells pursuant to License Condition 10.4, and the ISL byproduct material from each in-situ leach source shall be segregated from the byproduct material from all other in-situ leach sources;
  - (4) Absence of void space inside barrels disposed, including physical verification before disposal; and
  - (5) Detailed engineering drawings which demonstrate:

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- a. There are at least four feet of tailings sands under the bottom of each disposal area; and
- b. The bottom of each disposal area is located at least 12 feet from the sides or dikes of the tailings cell.
- F. The Licensee shall notify the Director in writing at least seven calendar days prior to the proposed scheduled date for disposal of any byproduct material generated at ISL facilities in the tailings cells.
- An annual summary of the amounts of waste disposed of from off-site ISL generators shall be sent to the Director on or before November 1 of each calendar year.  
*[Applicable UDWMRC Amendment: 4] [Applicable UDWMRC Amendment: 8 Renewal]*
- 10.6 The licensee is authorized to receive and process source materials from the Allied Signal Corporation's Metropolis, Illinois, facility in accordance with the amendment request to the NRC dated June 15, 1993.
- 10.7 The licensee is authorized to receive and process source material from Allied Signal, Inc. of Metropolis, Illinois, in accordance with the amendment request to the NRC dated September 20, 1996 and amended by letters to the NRC dated October 30, 1996 and November 11, 1996.
- 10.8 The Licensee is authorized to receive source material (the SFC Uranium Material) from the Sequoyah Fuels Corporation Facility located near Gore, Oklahoma, in accordance with statements, representations and commitments contained in the Amendment Request submitted to the Director dated December 15, 2011 and supplemented by submittals dated August 30, 2013 and October 21, 2013. The total amount of material stored and processed shall not exceed the following parameters:
- (1) Alternate feed material stockpiled in bulk form shall not exceed 16,700 tons gross weight (approximately 7,520 tons dry weight), without prior approval of the Director; and
  - (2) The number of bags of the SFC Uranium Material stored on the ore storage pad shall not exceed 17,250 SuperSaks, without prior approval of the Director. The weight of any SuperSak contain the SFC Uranium Material shall not exceed approximately 2,200 pounds.

The following specific provisions apply to off-loading and on-site storage of the SFC Uranium Material: (1) SuperSaks of the SFC Uranium Material stored (stockpiled) at the Mill Site shall be covered with a minimum six-inch thick layer of soil to provide resistance to damage of the fabric bags containing the SFC Uranium Material by ultraviolet (UV)

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radiation and provide shielding of the gamma radiation field emanating from the bagged material, and to the extent any SuperSacs are damaged or leaking, the SuperSacs shall be kept in a moist condition by daily water sprays until such time as they are covered with soil; (2) Soil cover shall be applied over SuperSaks within three days following placement of the SuperSaks on the ore storage pad; (3) Soil cover shall be monitored daily for apparent dusting and will be sprayed with water when the cover soil or the ore pad conditions in general, indicate the potential for dust generation; (4) If at any time, visible dust is observed to be originating from SFC Uranium Material stored on site or from the cover placed over this material, the EFRI RSO or his or her authorized representative shall take actions within 30 minutes to stop the generation of visible dust; and (5) All offloading of SuperSaks onto the storage pad shall cease when wind speeds exceed 20 mph, unless such Super Sacs are not damaged or leaking upon arrival and during offloading.

*[Applicable UDWMRC Amendment: 8 Renewal]*

- 10.9 The licensee is authorized to receive and process source material from Cabot Performance Materials' facility near Boyertown, Pennsylvania, in accordance with the amendment request to the NRC dated April 3, 1997, as amended by submittals to the NRC dated May 19, 1997 and August 6, 1997.

*[Applicable NRC Amendments: 4]*

- 10.10 DELETED by DWMRC Reserved *[Applicable UDWMRC Amendment:8 Renewal]*

- 10.11 The licensee is authorized to receive and process source material from Cameco Corporation's Blind River and Port Hope facilities, located in Ontario, Canada, in accordance with the amendment request to the NRC dated June 4, 1998, and by the submittals to the NRC dated September 14, 1998, September 16, 1998, September 25, 1998, October 7, 1998 and October 8, 1998.

However, the licensee is not authorized to receive or process from these facilities, the crushed carbon anodes identified in these submittals, either as a separate material or mixed in with material already approved for receipt or processing.

- 10.12 DELETED by DWMRC Reserved *[Applicable UDWMRC Amendment: 8 Renewal]*

- 10.13 DELETED by DWMRC Reserved *[Applicable UDWMRC Amendment:8 Renewal]*

- 10.14 DELETED by DWMRC Reserved *[Applicable UDWMRC Amendment:8 Renewal]*

- 10.15 DELETED by DWMRC Reserved *[Applicable UDWMRC Amendment: 8 Renewal]*

- 10.16 DELETED by DWMRC Reserved *[Applicable UDWMRC Amendment: 8 Renewal]*

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10.17 The licensee is authorized to receive and process source material from the Molycorp site located in Mountain Pass, California, in accordance with statements, representations and commitments contained in the amendment request to the NRC dated December 19, 2000, and supplemental information in letters dated January 29, 2001, February 2, 2001, March 20, 2001, August 15, 2001, October 17, 2001 and November 16, 2001.

*[Applicable NRC Amendment: 20] [Applicable UDWMRC Amendment: 8 Renewal]*

10.18 DELETED by DWMRC Reserved*[Applicable UDWMRC Amendment: 8 Renewal]*

10.19 The licensee is authorized to receive and process source material from Ponds 2 and 3 of the FMRI's Muskogee Facility located in Muskogee, Oklahoma, in accordance with statements, representations and commitments contained in the amendment requests and submittals to the Director dated March 7, 2005, June 22, 2005, and April 28, 2006.

*[Applicable UDWMRC Amendment: 2]*

10.20 The licensee is authorized to receive and process source material from Dawn Mining Company's Midnite Mine site in Wellpinit, Washington, in accordance with statements, representations and commitments contained in the Amendment Request submitted to the Director, Division of Radiation Control dated April 27, 2011 and submittals to the Director dated December 5, 2012, June 14, 2013 and August 7, 2013. The Licensee is authorized to receive no more than 1,000 tons per year and a total limit of 4,500 tons (dry weight) under this license condition without prior approval from the Director.

A. (1) Unless contained within a closed SuperSac or other container that is not damaged or leaking, Dawn Mining Uranium Material stored (stockpiled) at the Mill Site longer than 14 days shall be covered with a durable geomembrane cover resistant to damage by ultraviolet (UV) radiation and sufficient ballast shall be placed over the cover to prevent wind uplift of the cover during peak wind conditions at the site; and

(2) If at any time, visible dust is observed to be originating from Uranium Material stored on site, the EFRI RSO or his or her authorized representative shall take actions within 30 minutes to stop the generation of visible dust.

*[Applicable UDWMRC Amendment: 7]*

10.21 The licensee shall remediate, in accordance with applicable rules and regulations, any groundwater contamination found at or near the White Mesa facility in a manner and schedule approved by the Director. Any wastewater or contaminated groundwater generated, recovered or produced by a remediation process or activity at the White Mesa facility shall be 11e.(2) byproduct material. As of May 1, 2017, groundwater contaminants

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that require remediation at or near the site include, but are not limited to, chloroform, carbon tetrachloride, dichloromethane, chloromethane and nitrate.

*[Applicable UDWMRC Amendment: 8 Renewal]*

**SECTION 11: MONITORING, RECORDING, AND BOOKKEEPING REQUIREMENTS**

- 11.1 The results of sampling, analyses, surveys and monitoring, the results of calibration of equipment, reports on audits and inspections, all meetings and training courses required by this license and any subsequent reviews, investigations and corrective actions, shall be documented. Unless otherwise specified in the Radiation Control Rules, all such documentation shall be maintained for a period of at least five years.
- 11.2 The licensee shall implement an effluent and environmental monitoring program as described in Sections 2 through 7 of the NRC Regulatory Guide 4.14 *Radiological Effluent and Environmental Monitoring at Uranium Mills* and as revised with the following modifications, additions and exceptions:
- A. Stack sampling shall include a determination of flow rate.
  - B. Surface water samples shall be analyzed semiannually for total and dissolved U-nat, Ra-226, and Th-230, with the exception of the Westwater Creek, which shall be sampled annually for water or sediments and analyzed as above. A sediment sample shall not be taken in place of a water sample unless a water sample was not available.
  - C. Groundwater sampling shall be conducted in accordance with the requirements in the current Utah Ground Water Discharge Permit No. UGW370004.
  - D. With the exception of groundwater sampling, the licensee shall utilize lower limits of detection in accordance with Section 5 of the NRC Regulatory Guide 4.14, as amended, for analysis of effluent and environmental samples.
  - E. The inspections performed semiannually of the critical orifice assembly committed to in the submittal to the NRC dated March 15, 1986, shall be documented. The critical orifice assembly shall be calibrated at least every two years against a positive displacement Roots meter to obtain the required calibration curve.  
*[Applicable UDWMRC Amendment 3] [Applicable UDWMRC Amendment: 8 Renewal]*
- 11.3 The licensee shall implement a monitoring program of the leak detection systems for disposal Cells 4A and 4B in accordance with requirements of the Permit. The licensee shall

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also implement an operation, maintenance and monitoring program of the leak detection systems for disposal Cells 1, 2, and 3 as follows:

- A. The licensee shall maintain all leak detection system piping, including any access pipes, open, fully functional and free of soil, debris or detritus. All access pipes shall be capped to prevent inflow of rainwater, soil, debris or detritus when not in use for monitoring or pumping. The licensee shall conduct annual video logs of all access pipes to demonstrate the physical condition of the system. In the event that the licensee determines any access pipe is blocked, partially blocked or otherwise not fully functional, the licensee shall: 1) remove all blockages within 14 calendar days of discovery, and 2) submit a written report for Director approval within 30 calendar days of discovery.
- B. Leak Detection System. The licensee shall measure and record the inches of water pressure head on the pump transducer in each of the tailings disposal cell leak detection system standpipes on a weekly basis in a manner approved by the Director. The transducer and pump shall be placed as low as reasonably practical in the standpipe as approved by the Director. The system shall be set such that the alarm will be triggered when the transducer senses a pressure of two inches of water head or greater. The pump shall turn on when the transducer senses a water head pressure on the transducer at or above the level for the cell specified in the following table:

<b>Cell</b>	<b>Water Head Pressure on Transducer</b>
Cell 1	12 inches
Cell 2	18 inches
Cell 3	12 inches

- C. If fluid is present in the leak detection system (LDS) of any cell above the water head pressure on the transducer specified in the table set out in License Condition 11.3B, the licensee shall:
1. Pump the fluid from the LDS immediately upon discovery to a water head pressure on the transducer at or below the level for the cell specified in the table set out in License Condition 11.3B.
  2. Immediately commence and continue daily monitoring of LDS water head pressure on the transducer and volumes removed, until otherwise approved by the Director.

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3. Maintain the water head pressure on the transducer at or below the level for the cell specified in the table set out in License Condition 11.3(B).
  4. Return any LDS fluid pumped to an approved disposal cell.
- D. If fluid is pumped from a LDS, the licensee shall calculate the flow rate either by a flow meter or by dividing the recorded volume of fluid recovered by the elapsed time since fluid was last pumped or increases in the LDS fluid levels were recorded, whichever is the more recent. The licensee shall document the results of this calculation.
- E. If the flow rate calculated under License Condition 11.3(D) is greater than zero for 30 continuous calendar days, but does not exceed one gallon per minute, the licensee shall, unless it determines the root cause of the failure through other means, reduce the solution level in the Cell by up to 12 inches elevation to determine whether or not the reduction in solution elevation materially reduces the flow rate. If the flow rate is materially reduced, this will be considered to indicate that one or more liner repairs are required above the reduced elevation level, where exposure to wave action and the elements are most likely to have impacted the liner. If any such repairs are required, the licensee will submit a plan and schedule for Director approval for an investigation of the liner above such reduced solution level and for completion of such repairs.
- If the licensee is unable to determine the root cause of the leak after following the steps described in this license condition, the licensee shall meet with the Director to determine whether or not any further actions are warranted and practicable in the circumstances.
- F. Either of the following events shall constitute a violation of this License: 1) Failure to maintain the LDS fluid level elevation pursuant to License Condition 11.3(C)(1), above, and such failure is not rectified within two days after discovery; or 2) the flow rate calculated under License Condition 11.3(D) is equal to or greater than one gallon per minute. Immediately upon determination of such an event, the licensee shall:
- (1) Evaluate the root cause of the event and take appropriate and timely actions to mitigate the event and any consequent potential impacts;
  - (2) Continue to measure and record LDS water head pressure on the transducer and removed volume measurements daily until otherwise approved by the Director; and
  - (3) Notify the Director by telephone within 48 hours, in accordance with License Condition 9.2, and submit a written report, for Director approval, within 30

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calendar days of the telephone notice, in accordance with License Condition 9.2. The written report shall include a description of the mitigative action(s) taken and a discussion of the mitigative action results. In the event that mitigative actions have yet to be taken, the written report will include a detailed workplan and schedule.

G. In addition to the reporting required in License Condition 11.3(A), (B), (C), and (D), all sampling, analysis and evaluation of LDS fluids shall be documented and all records retained onsite until license termination for Director inspection.

*[Applicable UDWLRC Amendment 3] [Applicable UDWLRC Amendment: 4]*

*[Applicable UDWLRC Amendment: 8 Renewal]*

- 11.4 Annually, the licensee shall collect, during mill operations, a set of air samples covering eight hours of sampling, at a high collection flow rate (i.e., greater than or equal to 40 liters per minute) in routinely or frequently occupied areas of the mill. These samples shall be analyzed for gross alpha. In addition, with each change in mill feed material or at least annually, the licensee shall analyze the mill feed or production product for U-nat, Th-230, Ra-226, and Pb-210 and use the analysis results to assess the fundamental constituent composition of air sample particulates.  
*[Applicable NRC Amendment: 7]*
- 11.5 Calibration of in-plant air and radiation monitoring equipment shall be performed as specified in the license renewal application, under Section 3.0 of the "Radiation Protection Procedures Manual," with the exception that in-plant air sampling equipment shall be calibrated at least quarterly and air sampling equipment checks shall be documented.
- 11.6 The licensee shall perform an annual ALARA audit of the radiation safety program in accordance with the NRC Regulatory Guide 8.31.
- 11.7 Settlement Monitoring Standard Operating Procedure. The licensee shall perform settlement monitoring for vertical settlement in the tailings management cell area in accordance with the current Director approved Settlement Monitoring Standard Operating Procedure (SOP). The licensee shall document settlement monitoring data and compare such data to previous data to track potential settlement. All data collected by the Licensee for these purposes shall be included in an annual report to be submitted to the Director, pursuant to License Condition 12.2. The SOP shall include the following minimum provisions:
- A. Require that settlement monitors (e.g., settlement stands) be promptly installed following placement of temporary cover over placed tailings;

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- B. Require installation of one or more representative settlement monitoring stand(s) above each ISL source disposal area that has been closed to further disposal pursuant to License Condition 10.5.A. There shall be at least one settlement monitoring stand for each ISL source disposal area, estimated to be about 22,500 square feet. Installation of the settlement monitoring stand and initial elevation survey shall be completed by the licensee within 30 calendar days of completion of each ISL source disposal area;
- C. Indicate that the licensee will utilize settlement monitoring devices and methods that are resistant to shifting in their positions as a result of such forces as frost heave, erosion, burrowing animals, or other environmental factors;
- D. Include provisions to prevent man-caused damage to settlement monitoring devices, including, but not limited to vehicle and construction traffic damage. Such measures will include: 1) all equipment, procedures and provisions needed to protect the settlement monitoring devices, 2) schedules for rapid verbal and written reporting of any such damage, and 3) corrective actions taken or to be taken by the licensee to replace and/or repair said devices;
- E. Indicate that settlement monitors will be:
- (1) Initially surveyed by a Utah Licensed Professional Land Surveyor within 30 calendar days of installation;
  - (2) Surveyed monthly; and
  - (3) Surveyed annually by a Utah Licensed Land Surveyor. Review of the data and an analysis shall be performed and certified by a Utah Licensed Professional Engineer and submitted annually as part of the ATER required by License Condition 12.2;
- F. Include procedures requiring that such settlement monitors be placed, surveyed, mapped and maintained; that corrective action and maintenance activities be performed to maintain existing monitoring devices in a reliable, good working condition, as needed; that the addition, surveying and mapping of new settlement monitoring devices installed be documented; and that records be made of observations of site conditions as they relate to the conditions at and in the vicinity of the installed monitoring devices;
- G. Provide quantitative performance criteria and describe how such criteria will be used to evaluate vertical movement;
- H. Indicate that any settlement monitoring device that is irreparably damaged as a result of environmental stresses or through man-caused contact, including but not limited

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to cell construction or other operational equipment, shall be promptly replaced with an identical or equivalent monitoring device and provisions provided to guide the interpretation of data from both the former and the replacement device;

- I. Indicate that where survey evidence suggests that significant apparent movement in a settlement monitor has occurred, in excess of the approved performance criteria, that the departure(s) will be investigated and explained and errors corrected and resolved in a timely manner, subject to Director approval;
- J. Indicate that photographs shall be taken of the monitoring areas at least annually to document site and device conditions. Additionally, the SOP shall indicate that photographs shall be taken following any instances of unusually severe weather or incidents involving equipment if they result in physical damage or disturbance to any settlement monitoring device or significant changes to the ground surface areas adjacent to or surrounding a settlement or displacement monitoring device;
- K. Include a list of records that will be prepared for documenting settlement data for each settlement monitoring device and related site observations and activities; and
- L. Indicate that results and records of settlement monitoring shall be submitted annually as part of the ATER required by License Condition 12.2.  
*[Applicable UDWMRC Amendment: 4]*

11.8 Movement (Displacement) Monitoring Standard Operating Procedure. The licensee shall perform monitoring for potential vertical and horizontal movements in the constructed dike portions of the tailings management cells in accordance with the current Director approved Movement Monitoring Standard Operating Procedure (SOP). The licensee shall document displacement monitoring data and compare such data to previous data to track potential movement (displacement). All data collected by the licensee for these purposes shall be included in an annual report to be submitted to the Director, pursuant to License Condition 12.2. Said SOP includes the following minimum provisions:

- A. Require that movement monuments be promptly installed following completion of construction of cell dikes;
- B. Indicate that the licensee shall utilize movement monuments and monitoring methods that are resistant to shifting in their positions as a result of such forces as frost heave, erosion, burrowing animals or other environmental factors;
- C. Include an obligation for the licensee to prevent man-caused damage to movement monuments, including but not limited to, vehicle and construction traffic damage. Such measures will include: 1) all equipment, procedures and provisions needed to

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protect said settlement monitoring devices, 2) schedules for rapid verbal and written reporting of any such damage, and 3) corrective actions taken or to be taken by the licensee to replace and/or repair said devices;

- D. Indicate that movement monuments will be:
- (1) Initially surveyed by a Utah Licensed Land Surveyor within 30 calendar days of installation;
  - (2) Surveyed semi-annually for the first three years following installation by a Utah Licensed Land Surveyor.
  - (3) Surveyed annually after the first three years by a Utah Licensed Land Surveyor
  - (4) Subjected to accelerated monitoring conducted under certain circumstances, at a frequency and in a manner approved by the Director; and
  - (5) Reviewed annually by a Utah Licensed Professional Engineer, who shall perform and certify an analysis of all survey data. This analysis shall be submitted pursuant to License Condition 12.2;
- E. Include procedures requiring that such movement monuments be placed, surveyed, mapped and maintained; that corrective action and maintenance activities be performed to maintain existing movement monuments in a reliable, good working condition, as needed; that the addition, surveying and mapping of new movement monuments installed be documented; and that records be made of observations of site conditions as they relate to the conditions at and in the vicinity of the installed monuments;
- F. Provide quantitative performance criteria and describe how such criteria will be used to evaluate movements (displacements);
- G. Indicate that any movement monument that is irreparably damaged as a result of environmental stresses or through man-caused contact, including but not limited to cell construction or other operational equipment, shall be promptly replaced with an identical or equivalent movement monument and provisions provided to guide the interpretation of data from both the former and the replacement device;
- H. Include a list of records that will be prepared for documenting movement (displacement) data for each movement monument and related site observations and activities; and
- I. Indicate that results and records of movements (displacements) shall be submitted annually as part of the ATER required by License Condition 12.2.  
*[Applicable UDWMRC Amendment: 4]*

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**SECTION 12: REPORTING REQUIREMENTS**

- 12.1 The licensee shall submit a detailed decommissioning plan to the Director at least 12 months prior to planned final shutdown of mill operations that includes a detailed Quality Assurance Plan. The plan will be in accordance with NRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs" and NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)" or equivalent most current guidance.

*[Applicable NRC Amendment: 13][Applicable UDWMRC Amendment: 1]  
[Applicable UDWMRC Amendment: 2]*

- 12.2 Annual Technical Evaluation Report (ATER). The licensee shall submit an ATER for Director approval no later than December 1 of each year, to coincide with the annual freeboard calculation date of November 1<sup>st</sup> of each year when using the new Freeboard Calculation Method, as described in the letter from David A. Rupp of the Utah Division of Radiation Control to Mr. David C. Frydenlund of Denison Mines (USA) Corp, dated April 29, 2010. Each ATER shall incorporate all documents and attachments, including applicable updates to previously submitted documents with attachments that support information presented in the ATER, including, but not limited to maps, drawings, tables and figures. The licensee shall include, as part of the ATER, results of tailings cell temporary cover settlement and dike displacement monitoring activities. The content of the tailings cell temporary cover settlement and displacement monitoring program related information shall include those records required under the Settlement Monitoring and Movement Monitoring SOPs (License Conditions 11.7 and 11.8) as approved by the Director.

*[Applicable UDWMRC Amendment: 4]*

- 12.3 The licensee shall conduct a survey of land use (private residences, grazing areas, private and public potable water and agricultural wells, non-residential structures and uses and assess population growth or industry growth) in the area within five kilometers radius once every two years of the White Mesa Uranium Mill facility property boundaries and submit a report of this survey to the Director. The report shall be submitted on or before June 30 on even numbered years. This report shall indicate any differences in land use from that described in the last report including the following: 1) providing references and/or a description of methods utilized to obtain information included in the report; 2) listing all water wells, owners, approved use and contact information within the specified search radius; and 3) including information on an updated land use map to be included with the report. *[Applicable UDWMRC Amendment: 8 Renewal]*

**SECTION 13: CLOSEOUT CONDITIONS**

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- 13.1 Except as specifically provided otherwise by this license, the licensee shall conduct operations in accordance with the statements, representations and procedures contained in the documents, including any enclosures, listed below. Whenever the word "will" is used in the documents referenced below, it shall denote a requirement. The Radiation Control Rules shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the rules.\*
- A. Licensee's Standby Trust Agreement, as amended;
  - B. Licensee's letter to the NRC dated August 23, 1991 (including the license renewal application);
  - C. Licensee's revision submitted to NRC January 13, 1992;
  - D. Licensee's revision submitted to NRC April 7, 1992;
  - E. Licensee's revision submitted to NRC November 22, 1994;
  - F. Licensee's revision submitted to NRC July 27, 1995;
  - G. Licensee's revision submitted to NRC December 13, 1996;
  - H. Licensee's revision submitted to NRC December 31, 1996;
  - I. Licensee's revision submitted to NRC January 30, 1997.
  - J. Licensee's letter dated May 25, 2012 (Transfer of Control)
  - K. Licensee's letter dated June 27, 2012 (Transfer of Control)
  - L. Director's Letter dated June 27, 2012 (Transfer of Control Approval)
  - M. Licensee's letter dated August 3, 2012 (Name Change)
  - N. Electronic Mail from David Frydenlund dated August 15, 2012 (Change Mailing Address)
  - O. Electronic Emails from David Frydenlund dated October 22 and 23, 2013
  - P. Licensee's letter dated December 13, 2013 (Performance Bond)
  - Q. Director's letter dated December 20, 2013
  - R. Licensee's letter dated April 27, 2011 (Dawn Mining Alt feed)
  - S. Licensee's letter dated December 5, 2012 (Dawn Mining Alt feed)
  - T. Licensee's letter dated June 14, 2013 (Dawn Mining Alt feed)
  - U. Licensee's letter dated August 7, 2013 (Dawn Mining Alt feed)
  - V. Electronic Email from Kathy Weinel dated April 24, 2014 to John Hultquist requesting minor mod to LC 11.9.
  - W. White Mesa Uranium Mill License Renewal Application State of Utah Radioactive Materials License No. UT1900479, Volumes 1 through 5, from Denison Mines (USA) Corp. dated February 28, 2007 to Utah Division of Radiation Control.
  - X. Health Physics and Engineering Interrogatories, Rounds 1 through 3, from Utah Division of Radiation Control dated November 24, 2008, July 2, 2009, and December 28, 2009 to Denison Mines.
  - Y. Responses to DWMRC Health Physics and Engineering Interrogatories, From Denison Mines dated February 5, 2009, April 20, 2009, May 15, 2009, August 14, 2009, September 14, 2009, September 28, 2009, November 24, 2009, November 25, 2009, and March 5, 2010 to Utah Division of Radiation Control

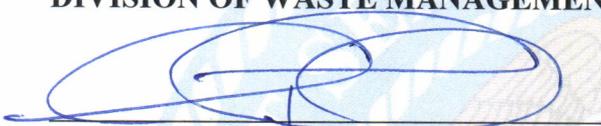
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- Z. Sequoyah Fuels Alternate Feed Request dated December 15, 2012, from Energy Fuels Resources Inc. to the Division of Radiation Control.
  - AA. White Mesa Uranium Mill Reclamation and Decommissioning Plan Rev 5.1B, from Energy Fuels dated February 8, 2018 to the Division of Radiation Control.

*\* For 13. LB through 13.1.1- NRC Amendment: 2;  
For 13. I.J through 13.1.N- UDWMRC Amendment 5  
For 13.1.0 through 13.1.Q - UDWMRC Amendment 6  
For 13.1.R through 13.1. V- UDWMRC Amendment 7  
For 13.1 W through 13.1AA – UDWMRC Amendment 8*

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Scott T. Anderson, Director

*16 February 2018*  
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Date

