



State of Utah

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DIVISION OF RADIATION CONTROL  
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*Director*

July 2, 2009

David C. Frydenlund  
Vice President, Regulatory Affairs and Counsel  
Denison Mines (USA) Corp.  
1050 17<sup>th</sup> Street, Suite 950  
Denver, Colorado 80265

RE: Renewal Application for Radioactive Material License (RML) No. UT1900479

Dear Mr. Frydenlund:

On February 28, 2007, Denison Mines (USA) Corp. submitted an application to renew the State of Utah RML No. UT1900479 for the White Mesa Uranium Mill located near Blanding Utah. The Division of Radiation Control (DRC) has reviewed the documentation that you provided according to NUREG 1556. On November 24, 2008, additional information was requested by the DRC and was later provided by Denison Mines. After reviewing the additional information provided, it has been determined that additional information is still required before the renewal of your RML (UT1900479) can proceed. Attached you will find a list of Interrogatory Statements outlining the information requiring further explanation. This list is divided into two sections. The first section is the 2<sup>nd</sup> round of Health Physics Interrogatories and the second section are Engineering Interrogatories. Environmental issues regarding this RML renewal were addressed during the last Groundwater Quality Discharge Permit Amendment of March 17, 2008. The DRC requests a response to these Interrogatory Statements by August 17, 2009. Please contact John Hultquist at (801) 536-4250 if you have any questions or concerns.

UTAH RADIATION CONTROL BOARD

Dane Finerfrock, Executive Secretary

Cc: David Turk, Radiation Safety Officer (w/enclosure)  
Harold Roberts, Executive Vice President, U.S. Operations (w/enclosure)

enclosure  
DLF/RJ/rj

# **SECTION 1**

**UTAH DIVISION OF RADIATION CONTROL  
DENISON MINES (USA) CORPORATION  
WHITE MESA URANIUM MILL  
BLANDING, UTAH**

**HEALTH PHYSICS INTERROGATORIES – ROUND 2**

**JULY 2, 2009**

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## ACRONYMS AND ABBREVIATIONS

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
DOT	US Department of Transportation
NRC	Nuclear Regulatory Commission
OSL	Optically Stimulated Luminescence
RML	Radioactive Materials License
RPP	Respiratory Protection Program
RSO	Radiation Safety Officer
RWP	Radiation Work Permit
SOP	Standard Operating Procedures
URCR	Utah Radiation Control Rules

**INTERROGATORY STATEMENT- RADIATION SAFETY OFFICER (RSO):**

Round One Interrogatory Statements 1 through 9 were answered appropriately and to the satisfaction of the DRC.

**INTERROGATORY STATEMENT-THE EMERGENCY RESPONSE PLAN:**

Round One Interrogatory Statement 10 was answered appropriately and to the satisfaction of the DRC.

**INTERROGATORY STATEMENT-ALTERNATE FEED:**

1. Round One Interrogatory Statement 11 "Provide the inspection procedure that discusses the inspection requirements of the alternate feed material that are stored in containers other than drums from when the mill takes acceptance of the material until they process the material" and Statement 12 "Provide the procedure that discusses how alternate feed material that is leaking from containers other than drums and is exposed to the wind will be containerized." The issue is ALARA. Demonstrate how mill workers and the General Public are protected from unnecessary inhalation exposure from alternate Feed Stocks that have 0.009 to 65% uranium content that are allowed to be exposed to the wind.

**BASIS FOR INTERROGATORY:**

Appendix C: Best Management Practices Plan 4.2.2 states that drums and other containers stored outdoors are maintained in good condition and secured from wind or leakage. During multiple inspections it has been observed and documented with photographs that alternate feed that have been shipped and stored in super sack type containers. These containers have been compromised and this material is leaking and is exposed to the wind.

**APPLICABLE RULE(S) OR REGULATION(S):**

R313-24-1(3). Purpose and Authority  
R313-15-101. Radiation Protection Programs

**REFERENCES:**

Radioactive Materials License Renewal Application for RML UT1900479: Appendix C: Best Management Practices Plan Section 4.2.2 *Protect Material Outside*.

**INTERROGATORY STATEMENT-ALTERNATE FEED:**

2. Round One Interrogatory Statement 13 "Provide the procedure used to determine how and when alternate feed material is to be processed through the mill." The Mill is currently installing an Alternate Feed Circuit to the mill with operational status to begin in June 2009. Provide Radiation Safety information, for example additional PPE requirements and monitoring requirements, and a general overview of operation of this new circuit.

**BASIS FOR INTERROGATORY:**

In UAC R313-22-33(1)(b). General Requirements for the Issuance of Specific Licenses. states "A license application shall be approved if the Executive Secretary determines that the applicant's proposed equipment, facilities, and procedures are adequate to minimize danger to public health and safety or the environment." Section 9 of the License Application requires a description of the Mills facilities and Section 10 requires a description of the Radiation Safety Program. During multiple inspections in 2008 it has been observed and documented with photographs that alternate feed is being store at the mill for future process.

**APPLICABLE RULE(S) OR REGULATION(S):**

R313-24-1(3). Purpose and Authority  
R313-15-101. Radiation Protection Programs  
R313-22-33(1)(b). General Requirements for the Issuance of Specific Licenses

**REFERENCES:**

UAC R313-22-33(1)(b). General Requirements for the Issuance of Specific Licenses

**INTERROGATORY STATEMENT-ALTERNATE FEED:**

3. Provide a list of approved alternate feed material that Denison Mines will no longer be accepting. Include an updated list of approved alternate feeds with their corresponding License Condition.

**BASIS FOR INTERROGATORY:**

Use the License Renewal to remove alternate feed license conditions that are no longer active.

**APPLICABLE RULE(S) OR REGULATION(S):**

R313-24-1(3). Purpose and Authority  
R313-15-101. Radiation Protection Programs

**REFERENCES:**

Radioactive Materials License Renewal Application for RML UT1900479: Volume 1: Table 4.2-1 "Alternate Feed Materials Licensed to Date for Processing at the Mill".

**INTERROGATORY STATEMENT-RELEASE SURVEYS:**

4. Procedure *End Dump Trailer Acceptance, Handling and Release, PBL-9, Rev No R-0* that was provided in Round 1 response. The procedure does not instruct the mills radiation safety technicians on the radiation survey techniques or documentation requirements used by the mill to release ore trucks from the restricted area. Provide a procedure that instructs radiation safety technicians on how to perform and document radiological surveys.

**BASIS FOR INTERROGATORY:**

Procedure *End Dump Trailer Acceptance, Handling and Release, PBL-9, Rev No R-0*, was provided in Exhibit C of Dension Mines Interrogatory Round 1 response dated February 5, 2009. This procedure in Section 5 *Decontamination and Release of End Dump Trailers and Trucks* will be surveyed to document that the trucks meet the different DOT release criteria. This procedure does not instruct the Mills Radiation Technicians that use this procedure the proper survey methods to perform a radiological survey to verify that the DOT criteria have been met.

**APPLICABLE RULE(S) OR REGULATION(S):**

R313-24-1(3). Purpose and Authority  
R313-15-101. Radiation Protection Programs  
R313-15-501(1). Survey and Monitoring-General  
R313-22-33(1)(b). General Requirements for the Issuance of Specific Licenses

**REFERENCES:**

Radioactive Materials License Renewal Application for RML UT1900479: Appendix I: ALARA Program 2.6 *Surveys*.  
U.S. Nuclear Regulatory Commission Regulatory Guide 8.30: Health Physics Surveys in Uranium Recovery Facilities.  
*End Dump Trailer Acceptance, Handling and Release, PBL-9, Rev No R-0*, Section 5 *Decontamination and Release of End Dump Trailers and Trucks*

**INTERROGATORY STATEMENT-RELEASE SURVEYS:**

5. Procedure *Intermodal Container Acceptance, Handling and Release, PBL-2, Rev No R-0* that was provided in Round 1 response. The procedure does not instruct the mills radiation safety technicians on the radiation survey techniques and documentation requirements used by the mill to release ore trucks from the restricted area. Provide a procedure that instructs radiation safety technicians on how to perform and document radiological surveys.

**BASIS FOR INTERROGATORY:**

Procedure *Intermodal Container Acceptance, Handling and Release, PBL-2, Rev No R-0*, was provided in Exhibit D of Dension Mines Interrogatory Round 1 response dated February 5, 2009. This procedure in Section 5 *Decontamination and Release of IMCs for Restricted Use* and Section 6 *Decontamination and Release of IMCs for Unrestricted Use* will be surveyed to document that the intermodals meet the different release criteria. This procedure does not instruct the Mills Radiation Technicians that use this procedure the proper survey methods to perform a radiological survey to verify that the release criteria have been met.

**APPLICABLE RULE(S) OR REGULATION(S):**

R313-24-1(3). Purpose and Authority  
R313-15-101. Radiation Protection Programs  
R313-15-501(1). Survey and Monitoring-General  
R313-22-33(1)(b). General Requirements for the Issuance of Specific Licenses

**REFERENCES:**

Radioactive Materials License Renewal Application for RML UT1900479: Appendix I: ALARA Program Section 2.6 *Surveys*.  
U.S. Nuclear Regulatory Commission Regulatory Guide 8.30: Health Physics Surveys in Uranium Recovery Facilities.  
*Procedure Intermodal Container Acceptance, Handling and Release, PBL-2, Rev No R-0*

## **INTERROGATORY STATEMENT-RELEASE SURVEYS:**

6. Round One Interrogatory Statement 16 "Release Surveys for Product Drums:  
Explain how the survey techniques, the release standards used and documentation of surveys of Product Drums that contain radioactive material are sufficient to demonstrate regulatory compliance and maintain public health and safety. Explain why surveying techniques such as the use of Large Area Wipes or swipes to look for removable contamination are not being used on all Product Drums being surveyed for release." 49CFR 173.443(1) Contamination Control requires a removable contamination survey on **EACH** package. Change product drum survey procedures to reflect the regulatory requirement.

## **BASIS FOR INTERROGATORY:**

Appendix B and E: says that a fixed Alpha Survey will be performed on each product drum but a removable survey will only be performed on 25% of the product drums. Main concern is removable contamination but survey procedures only require 25%. Appendix I Section 2.6 references NRC Reg. Guide 8.30 which states that product shipments should not exceed DOT limits in 49 CFR 173.443 on removable external contamination. 49 CFR 173.443(1) describes the method of surveying for removable contamination. Specifies release limits for removable contamination are in Table 9 at 2,200 dpm/100 cm<sup>2</sup> Alpha and 2,200 dpm/100 cm<sup>2</sup> Beta and the dose rate is less than 0.5 mrem/hr which is in paragraph (c). 49CFR173.443 also states that *each* package will be surveyed for removable contamination. Even though NRC Reg. Guide 8.30 states that not every package needs to be surveyed for removable contamination, 49CFR173.443 overrides NRC Reg. Guide 8.30.

## **APPLICABLE RULE(S) OR REGULATION(S):**

R313-24-1(3). Purpose and Authority  
R313-15-101. Radiation Protection Programs  
R313-15-501(1). Survey and Monitoring-General  
49CFR173.443(1) Contamination Control

## **REFERENCES:**

Radioactive Materials License Renewal Application for RML UT1900479: Appendix B: Release and Shipping of Vanadium Blackflake Section 5 *Product Shipment Surveys*.  
Radioactive Materials License Renewal Application for RML UT1900479: Appendix E: Radiation Protection Manual Section 2.7 *Product Shipment Surveys*.  
Radioactive Materials License Renewal Application for RML UT1900479: Appendix G: Yellowcake Precipitation Section 10 *Procedures for preparing yellowcake drums and shipping*.  
U.S. Nuclear Regulatory Commission Regulatory Guide 8.30: Health Physics Surveys in Uranium Recovery Facilities Section 2.8 *Surveys of Packages Prepared for Shipment*.



**INTERROGATORY STATEMENT-RELEASE SURVEYS:**

7. Provide a procedure that instructs radiation safety technicians on how to perform and document radiological surveys for releasing equipment from the Mills restricted area.

**BASIS FOR INTERROGATORY:**

Appendix E says that equipment will meet Reg. Guide 1.86 standards but does not indicate how the surveys will be performed. No procedure in renewal application for conducting an unrestricted survey or releasing surveyed equipment out of the Restricted Area.

**APPLICABLE RULE(S) OR REGULATION(S):**

R313-24-1(3). Purpose and Authority  
R313-15-101. Radiation Protection Programs  
R313-15-501(1). Survey and Monitoring-General

**REFERENCES:**

Radioactive Materials License Renewal Application for RML UT1900479: Appendix E:  
Radiation Protection Manual Section 2.6 *Equipment Release Surveys*.  
U.S. Nuclear Regulatory Commission Regulatory Guide 1.86: Decontamination of  
Facilities and Equipment Prior to Release for Unrestricted Use.

### **INTERROGATORY STATEMENT-RELEASE SURVEYS:**

8. Round One Interrogatory statements 14-17 "Explain how the survey techniques, the release standards used and documentation of surveys of Equipment are sufficient to demonstrate regulatory compliance and maintain public health and safety. Explain why surveying techniques such as the use of Large Area Wipes and swipes to look for removable contamination are not being used on all items being surveyed for release"

In response to the method outlined in 49 CFR 173.443(1)(a) Denison Mines states "Using portable alpha detection equipment that measures the combined fixed and removable contamination is therefore "another method" contemplated by paragraph b)(which is 49CFR 173.443(1)(b)) above "equal or greater efficiency", because the Mill applies the removable contamination standard to a combined reading of fixed and removable contamination." Provide efficiency calculations to determine the efficiency of this method. Include the survey procedure used, the efficiency of the meters and probes used in relation to U-238. Show that the meters and probes that are/will be used has the appropriate sensitivity to provide a small enough reading to measure the required release limits.

### **BASIS FOR INTERROGATORY:**

Appendix E also says that equipment will meet Reg. Guide 1.86 standards but does not indicate how the surveys will be performed. No procedure in renewal application for conducting an unrestricted survey or releasing surveyed equipment out of the Restricted Area.

### **APPLICABLE RULE(S) OR REGULATION(S):**

R313-24-1(3). Purpose and Authority  
R313-15-101. Radiation Protection Programs  
R313-15-501(1). Survey and Monitoring-General

### **REFERENCES:**

Radioactive Materials License Renewal Application for RML UT1900479: Appendix E:  
Radiation Protection Manual Section 2.6 *Equipment Release Surveys*.  
U.S. Nuclear Regulatory Commission Regulatory Guide 1.86: Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use.