



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-4005

August 25, 2003

David C. Frydenland, Vice-President and  
General Counsel  
International Uranium (USA) Corporation  
Independence Plaza, Suite 950  
1050 Seventeenth Street  
Denver, Colorado 80265

SUBJECT: NRC INSPECTION REPORT 40-08681/03-001 AND NOTICE OF VIOLATION

Dear Mr. Frydenland:

On June 26, 2003, the NRC completed an onsite inspection at your White Mesa Mill near Blanding, Utah. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. The preliminary inspection findings were presented to you and members of your staff at the conclusion of the onsite inspection. A final telephonic briefing was held with Mr. Ron Hochstein and members of your staff on July 8, 2003, following the completion of additional in-office inspection. The enclosed report presents the results of that inspection.

Based on the results of this inspection, the NRC has determined that a Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600. The current Enforcement Policy is included on the NRC's Web site at [www.nrc.gov](http://www.nrc.gov); select **What We Do, Enforcement**, then **Enforcement Policy**. This violation is cited in the enclosed Notice of Violation (Notice), and the circumstances surrounding it are described in detail in the enclosed inspection report. This violation involved the failure to conduct 11e.(2) disposal operations in accordance with License Condition 10.5.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration and convenience, NRC Information Notice 96-28, "SUGGESTED GUIDANCE RELATING TO DEVELOPMENT AND IMPLEMENTATION OF CORRECTIVE ACTION," is enclosed. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

If you contest the violation or the significance of this violation, you should provide a response within 30 days of the date of this inspection report, with the basis of your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011.

Should you have any questions concerning this inspection, please contact Mr. Louis C. Carson II at (817) 860-8221 or Mr. Jack E. Whitten at (817) 860-8197.

Sincerely,

*/RA/*

Elmo E. Collins, Director  
Division of Nuclear Materials Safety

Docket No.: 040-08681  
License No.: SUA-1358

Enclosures:

1. Notice of Violation
2. NRC Inspection Report  
040-08681/03-001
3. NRC Information Notice 96-28

cc w/enclosures:

Mr. Ron Hochstein, President  
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Mr. Ken Miyoshi, Mill Manager  
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Mr. Craig W. Jones, Acting Director  
State of Utah  
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Division of Radiation Control  
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International Uranium (USA) Corporation -3-

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bcc w/enclosures to (via ADAMS distrib.):

- EECollins
- RANelson
- RWVonTill
- MNBaker
- JWLubinski
- JEWhitten
- CLCain
- NBHolbrook
- NMLB
- RIV Nuclear Materials File - 5th Floor

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## ENCLOSURE 1

### NOTICE OF VIOLATION

International Uranium (USA) Corporation  
San Juan County, Utah

Docket No.: 040-08681  
License No.: SUA-1358

During an NRC inspection conducted on June 24-26, 2003, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation is identified below:

License Condition 10.5 requires, in part, that in accordance with the submittal dated May 20, 1993, the licensee is authorized to dispose of [11.e(2)] byproduct material generated at licensed in-situ leach facilities, subject to specific conditions. License Condition 10.5(D) requires, in part, that all disposal activities shall be documented. The documentation shall include descriptions of the waste and the disposal locations, as well as all actions required by this condition.

The May 20, 1993, submittal, Section 11(a) waste disposal procedure, requires the licensee, as part of a complete set of waste disposal records, to provide a plat of the waste disposal site for each waste shipment.

Contrary to the above, the documentation and records for waste disposal shipments from calendar year 2002 to June 17, 2003, did not include descriptions of each waste disposal location or a plat of each disposal site.

This is a Severity Level IV violation (Supplement IV).

Pursuant to the provisions of 10 CFR 2.201, International Uranium (USA) Corporation, is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information).

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 25<sup>th</sup> day of August 2003

## **ENCLOSURE 2**

### U.S. NUCLEAR REGULATORY COMMISSION REGION IV

Docket No.: 040-08681

License No.: SUA-1358

Report No.: 040-08681/03-001

Licensee: International Uranium (USA) Corporation

Facility: White Mesa Mill

Location: San Juan County, Utah

Dates: June 22-24 and July 8, 2003

Inspectors: Louis C. Carson II, Health Physicist  
Nuclear Materials Licensing Branch

Merritt N. Baker, Fuel Cycle Inspector  
Special Projects Inspection Branch  
Fuel Cycle Safety and Safeguards (FCSS)

Accompanied by: R. William VonTill, Geotechnical Engineer  
Uranium Processing Section, FCSS

Ron C. Linton, Hydrologist  
Uranium Processing Section, FCSS

Diana B. Diaz-Toro, Process Engineer  
Fuel Cycle Facilities Branch, FCSS

William Brock, Health Physicist  
Office of State and Tribal Programs  
Nuclear Materials Safety and Safeguards

Approved by: Jack E. Whitten, Acting Chief  
Nuclear Materials Licensing Branch, DNMS

Attachment: Supplementary Information

## **EXECUTIVE SUMMARY**

### White Mesa Mill NRC Inspection Report 040-08681/03-001

This inspection included a review of site status, management organization and controls, site operations, radiation protection, radioactive waste management, environmental protection programs, and chemical process safety.

#### Management Organization and Controls

- The licensee had maintained an organization structure that agreed with the requirements of the license (Section 2.0).
- The licensee had adequately implemented the performance-based conditions of the license (Section 2.0).
- The licensee had adequately reviewed and properly used site procedures with one exception. This exception is discussed in this report (Section 2.0).

#### Operations Review

- Operational activities were being conducted safely and in accordance with the license and NRC regulations (Section 3.0).
- Inspection of the licensee's alternate feed material operations revealed that the material was handled in an orderly and controlled fashion (Section 3.0).

#### Radiation Protection

- The radiation protection program areas reviewed and found to be acceptable were facility posting and access control, personnel air sample analyses, release surveys, and the as low as is reasonably achievable (ALARA) program reviews (Section 4.0).

#### Radioactive Waste Management and Environmental Protection

- Environmental activities were being conducted safely and in accordance with the license and NRC regulations (Section 5.0).
- The licensee had collected environmental monitoring samples as required by the license and as reported in its calendar year (CY) 2002 semi-annual effluent reports. All sample results were less than the effluent release limits specified in 10 CFR Part 20 during 2002. No adverse trends were identified by the inspectors (Section 5.0).
- The licensee had failed since CY 2002 to maintain records that documented the specific location of each 11e.(2) shipment buried in Tailing Cell No. 3. This failure to maintain records was identified as a violation of License Condition 10.5(D) (Section 5.0).



Process Safety Information, Hazard Identification and Assessment, and OSHA Interface Activities

- Adequate chemical safety was demonstrated by the licensee during the inspection for activities involving licensed materials (Section 6.0).

## Report Details

### **1 Site Status**

The NRC issued Source Material License SUA-1358 to Energy Fuels Nuclear during August 1979. Ownership and control of the site was eventually transferred to Umetco Minerals, then back to Energy Fuels Nuclear, and finally to International Uranium (USA) Corporation (IUC). IUC assumed ownership of the White Mesa Mill on May 10, 1997, based on the NRC's approval of the transfer of ownership to IUC via Amendment 2 of revised License SUA-1358.

The mill has actively received and processed alternate feed material since the previous inspection. Alternate feed material by definition is material considered to be non-conventional uranium ore. The licensee is authorized by License Conditions 10.6 through 10.18 to receive and process alternate feed materials from certain out-of-state entities.

The inspectors noted that the licensee has not received or processed conventional uranium ore from active mines since 1999. As authorized by License Condition 10.5, the licensee was disposing of 11e.(2) byproduct material waste.

### **2 Management Organization and Controls (88005)**

#### **2.1 Inspection Scope**

The organization structure was reviewed to ensure the licensee had maintained effective organization and management controls in place to ensure compliance with NRC requirements. Also, the utilization and implementation by the licensee of its performance-based license was reviewed by the inspectors.

#### **2.2 Observations and Findings**

##### **a. Management Organization**

The required organization structure is provided in License Condition 9.3, which references the NRC-approved license renewal application dated January 30, 1997. No changes have been made to the licensee's organization structure since the previous inspection. The current organization structure was found by the inspectors to be in agreement with the intent of License Condition 9.3. However, the inspectors noted that White Mesa's staff had decreased from 65 to 15 employees at the termination of the recent alternate feed material campaign that ended in late May 2003. The licensee's current staff was determined by the inspectors to be adequate based on current limited facility operations.

b. Performance-Based License Review

License Condition 9.4 states, in part, that the licensee may under certain conditions and without prior NRC approval, make changes in the facility or processes, make changes to procedures, or conduct tests and experiments not presented in the license application. The licensee's implementation of the performance-based license provisions was reviewed by the inspectors to ensure that any changes made by the licensee did not negatively impact the licensing basis of the site. The NRC granted the licensee a performance-based license during March 1997.

Changes made pursuant to the provisions of License Condition 9.4 are required to be reviewed by a Safety and Environmental Review Panel (SERP). Any proposed changes, and the deliberations made in support of these changes, are required to be documented pursuant to License Condition 9.4(D). On June 26, 2002, the licensee submitted its annual SERP report to the NRC pursuant to the provisions of License Condition 9.4(D). During the licensee's SERP period (July 1, 2001 - June 30, 2002), the licensee held five SERP meetings. During the licensee's current SERP period (July 1, 2002 - June 30, 2003), the licensee held six SERP meetings. The inspectors reviewed the meeting minutes from the SERPs conducted during CY 2003 and found them to be adequate. Specifically, the inspectors reviewed two SERP packages that the licensee had completed since the previous inspection. SERP meetings Nos. 02/03-01 and 02/03-06 involved changes to the facility process flow diagram and the Molycorp material operations described in the license, respectively. The SERP packages and changes made by the licensee were reviewed by the inspectors and found to be acceptable. The inspectors determined that the SERP changes met the requirements of License Condition 9.4.

c. As low As Reasonably Achievable Program Review

License Condition 11.6 requires that the licensee perform an annual as low as is reasonably achievable (ALARA) audit of the radiation safety program in accordance with Regulatory Guide 8.31. The inspectors reviewed the following aspects of the licensee's ALARA program:

- CY 2002 ALARA report to the NRC
- October and November 2002 IUC Corporate ALARA Audit
- CY 2002 Quarterly ALARA Committee Meeting Minutes

The CY 2002 ALARA audit was submitted to the NRC on March 29, 2002. The inspectors reviewed this ALARA audit and found it to be adequate. Portions of the radiation safety officer's (RSO's) daily, weekly and monthly ALARA inspection reports were also reviewed. These periodic ALARA reports required by Section 3.6 of the license application were found to be adequate. The RSO's ALARA inspection reports provided useful information such as in-plant radiological sampling and survey results. The inspectors identified no significant health or safety issues. Since the last NRC inspection, the licensee had made no ALARA significant recommendations to reduce personnel exposures to radioactive materials. The CY 2002 ALARA report provided to the NRC stated that recommendations and issues from the Corporate ALARA Audit were forwarded to the ALARA committee for their consideration. The CY 2002 IUC Corporate Audit contained 13 recommendations.

On November 19, 2002, and March 24, 2003, the licensee conducted ALARA committee meetings and the inspectors reviewed the content of these ALARA committee meeting minutes. The licensee's November 2002 ALARA committee meeting covered several of the recommendations and issues that were addressed in the CY 2002 Corporate ALARA Audit. However, the March 2003 ALARA committee meeting minutes did not specifically address the recommendations from the CY 2002 Corporate ALARA Audit and the ALARA report provided to the NRC for review. The inspectors determined that both the ALARA program and minutes to the ALARA meetings were adequate.

d. Site Procedures

In accordance with License Condition 9.6 the licensee is to establish and follow standard operating procedures (SOPs) for all operational process activities involving radioactive materials that are handled, processed, or stored. During this inspection, the inspectors reviewed the health physics manual, SOPs for plant process operations, and the emergency response plan. The inspectors noted a continual improvement by the licensee in the quality of the SOP review process. The RSO and staff had updated the SOPs, reviewed the SOPs on a quarterly basis, and approved procedures as required by the provisions of License Condition 9.6. However, the inspectors did identify one example where an SOP was not established, reviewed, or maintained by the licensee. The licensee's 11e.(2) disposal operations procedure was established when the facility was under the ownership and control of UMETCO in the early 1990s. This SOP had not been updated or reviewed by the RSO since the site was owned and operated by UMETCO. During this inspection, the inspectors determined that the licensee had implemented a radiation work permit (RWP) program in accordance with the license application. However, the inspectors discovered that the licensee had not established a written procedure for implementing RWPs. This finding seemed inconsistent with the intent of License Condition 9.6 which requires the licensee to establish written SOPs. Licensee management agreed that they would continue to review all site activities to assure the adequacy of procedures.

2.3 Conclusions

Since the last inspection, the licensee had maintained an organization structure that agreed with the requirements of the license. The licensee had correctly implemented the performance-based conditions of the license. The licensee's review and use of site procedures were adequate with one exception noted in Section 2.2.

**3 Operations Review (88020)**

3.1 Inspection Scope

The objective of this portion of the inspection was to verify that site operations were being conducted in accordance with applicable regulations and license conditions, and to ensure that operational controls were adequate to protect the health and safety of workers and members of the general public. There are three operations authorized by the IUC White Mesa license: (1) conventional uranium ore processing, (2) non-conventional ore processing of alternate feed material, and (3) commercial 11e.(2) byproduct waste disposal. However, the licensee has not processed conventional ore since 1999. Disposal of 11e.(2) byproduct waste is addressed in Section 5.0 of this inspection report.

### 3.2 Observations and Findings

#### Alternate Feed Material Operations

License Conditions 10.6 through 10.18 authorizes the licensee to receive and process source material in the form of alternate feed material from 13 specific providers. Sites where the licensee was authorized to receive alternate feed materials included:

(1) Honeywell Corporation, formerly Allied Signal Incorporated, in Metropolis, Illinois; (2) Ashland and Linde (Formerly Utilized Sites Remedial Action Program (FUSRAP)) near Tonowanda, New York, and St. Louis, Missouri; (3) Cameco Corporation's Blind River and Port Hope facilities in Ontario, Canada (drummed calcined byproduct materials); (4) W.R. Grace in Chattanooga, Tennessee; (5) Heritage Minerals in Lakehurst, New Jersey, (6) Molycorp in Mountain Pass, California, and (7) Maywood Site, Maywood, New Jersey

From the period June 13, 2002, to May 30, 2003, the licensee processed 272,465 tons of alternate feed material for its source material content, which included the following quantities: (a) 172,830 tons from Ashland-1 site, (b) 11,550 tons from Molycorp site, (c) 78,389 tons from Linde site, (d) 5,775 ton of various feed materials, and (e) 3,921 tons from Heritage site.

The licensee has determined that for every 1,000 pounds of alternate feed material fed into the screening operation, approximately 600 pounds make it to the acid leaching and decantation wash circuit. During this inspection, the inspectors noted that the licensee had transferred uranium bearing liquid from the leaching and wash circuit to the solvent extraction (SX) facility. The inspectors also noted that the licensee's alternate feed material processing had resulted in the production of several tons of  $U_3O_8$  slurry in the thickener tank. This  $U_3O_8$  slurry in the thickener tank was being readied for yellowcake drying operations.

As of this inspection, the only alternate feed material remaining unprocessed was total of 20,417 tons; 15,000 tons of Linde feed material and 5,417 tons (35,700 drums) of Cameco material.

### 3.3 Conclusions

The inspectors determined that operational activities were being conducted safely and in accordance with the license and NRC regulations. Observations made by the inspectors of the licensee's alternate feed material operations revealed that the material was handled in an orderly and controlled fashion.

## **4 Radiation Protection (83822)**

### 4.1 Inspection Scope

Specific parts of the licensee's radiation protection program were reviewed to verify compliance with license conditions and the requirements of 10 CFR Part 20. The inspectors specifically reviewed the licensee's implementation of License Condition Nos. 10.5, 10.12, 10.14, 10.16, and 10.17. Additionally, the inspectors reviewed the areas of airborne contamination, radiation safety, and release surveys.

4.2 Observations and Findings

a. Site Tour

During this inspection, a facility tour was performed by the inspectors to observe licensed activities in progress. Site perimeter postings required by License Condition 9.9 were in place at all entrances to the mill. During the inspectors' site tour, radiation levels were measured using an NRC microRoentgen ( $\mu\text{R}$ ) meter, serial number 15540 with a calibration due date of March 2, 2004. The background radiation level measured offsite ranged between 10-15  $\mu\text{R/hr}$ . Radiation surveys were conducted in various locations throughout the mill and around the ore pad revealed the following measurements:

<u>Facility</u>	<u><math>\mu\text{R/hr}</math></u>
• Sag Mill	200-400
• Main Grizzly	800
• Trommel Grizzly	310 -1,600
• Pulp storage tank area	200
• Truck Wash/Decon Pad	200
• Ore pad near fenceline	300-1,600
• Truck checkout Point	100
• Cell 2, 11e.(2) area	60
• White Mesa Fenceline	200-900
• Molycorp Area	300-1,500

The inspectors' radiation measurements were consistent with the licensee's routine radiation survey results. No "Radiation Areas" as defined by 10 CFR 20.1003 were identified within the process facility. Overall, the inspectors detected some elevated radiation levels in several areas around the site, but none that would meet the threshold of a radiation area. The RSO stated that site radiation levels were higher than usual because alternate feed material had shielded ambient radiation levels that were associated with conventional uranium ore that was embedded in the surface soils. The site restricted area was found to be adequately posted as required by License Condition 9.9. No health or safety concern was identified by the inspectors during the tour of the site.

b. Internal and External Radiation Exposures and Bioassay Results

The inspectors reviewed the deep dose equivalent (DDE) radiation exposures to site personnel since the previous inspection. Since the last inspection, the RSO had issued dosimeters and reviewed the reported DDE results of each radiation worker. During the site tours, the inspectors observed that site radiation workers wearing dosimeters in restricted areas.

The highest worker total effective dose equivalent (TEDE) recorded by the licensee was less than 5 millirems. This recorded dose was based on air sampling analyses. To date in CY 2003, all workers' TEDEs were less than 10 percent of the 5,000 millirem annual limit specified in 10 CFR 20.1201.

The inspectors reviewed the licensee's bioassay results for CY 2002 and 2003. The inspectors determined that the licensee had implemented the bioassay program as

specified by NRC Regulatory Guide 8.22, "Bioassay at Uranium Mills." An employee's bioassay result, using urinalysis, that exceeds 15 micrograms per liter uranium was required to be investigated. Reviews of bioassay records indicated that no bioassay result had exceeded the action level in CY 2003. The inspectors determined that the licensee's bioassay program was adequate.

c. Instrument Calibrations

Section 3.0 of the license application and radiation protection manual requires, in part, that all radiation monitoring, sampling, and detection equipment be recalibrated after each repair, as recommended by the manufacturer, or at least annually. A review of the instrument calibration records by the inspectors indicated that the licensee had maintained the instrument calibrations up-to-date, and that calibrated equipment was available at the site for immediate use.

d. Air Samples Analyses

License Condition 11.4 requires, in part, that on an annual basis the licensee collect, during mill operations, a set of air samples covering 8 hours of sampling in routinely and frequently occupied areas of the mill. Additionally, with each change in mill feed material or at least annually, the licensee must analyze mill feed or production product for natural uranium, thorium-230, radium-226, and lead-210. The inspectors reviewed breathing zone and area air sample results from CY 2002 and 2003. Since the last inspection the RSO had collected annual 8-hour continuous air samples from 30 mill locations including alternate feed materials being processed and in storage. With one exception, all the results of air samples collected during CY 2002 were less than 10 percent of any derived air concentration (DAC) specified in 10 CFR Part 20. The inspectors noted that one worker was exposed to uranium particulates from Molycorp feed material which was equivalent to 14 percent of a DAC. The inspectors concluded that the licensee had met the requirements of License Condition 11.4.

e. The Molycorp Ore Radiation Work Permits

The inspectors reviewed RWPs issued by the RSO since the last inspection. RWPs were issued for activities that presented a significant potential for workers to be exposed to radioactive material. Since the last inspection, the licensee issued six RWPs for the handling of alternate feed materials. RWPs reviewed in detail by the inspectors included RWPs 377 and 378. These RWPs were written by the licensee specifically for activities involving the Molycorp ore. The inspectors reviewed licensee memoranda on the results on implementing the Molycorp RWPs. The RSO explained that personnel conducting the Molycorp operation received specific training on the RWPs. The inspectors reviewed the training records of the workers who signed or were included in RWPs and determined that they were adequately trained. Directions provided in the RWPs required personnel to don protective equipment such as full-face respirators, coveralls, and rubber gloves. In accordance with License Condition 10.17, specific for receiving and processing Molycorp ore, the licensee had analyzed air samples for lead concentrations. These air sample analyses demonstrated that lead concentrations were minimal.

As part of its radiation safety program, the licensee had collected breathing zone measurements and analyzed them for radon, uranium, and thorium. The inspectors

reviewed the results of airborne radioactivity samples that were collected during the Molycorp work. With a few exceptions, the inspectors determined that air samples collected had airborne concentrations of less than 10 percent of a DAC. The licensee had established an action level of 25 percent of a DAC for Molycorp ore. Overall, the inspectors concluded that the workers' total effective dose equivalent results were less than 1 percent of the 5,000 millirem annual limit specified in 10 CFR 20.1201.

f. Release Surveys for Equipment, Packages, and Personnel

License Condition 9.10 requires, in part, that equipment or packages released from the restricted area shall be in accordance with the "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 NRC prior to any such release.

The inspectors observed the licensee's process for releasing intermodal containers. The licensee conducted contamination surveys on each intermodal container before the container was released from the controlled area and transported from the White Mesa facility. The licensee was required to assure that the amount of external radiation contamination on each intermodal containers was not in excess of Department of Transportation (DOT) limits specified in 49 CFR 173.428. DOT's external radiation contamination limit for the intermodal container is 22 disintegrations per minute per square centimeter squared (dpm/cm<sup>2</sup>) loose beta-gamma contamination. The inspectors reviewed container release survey records for intermodal containers released since the last inspection and determined that the licensee was meeting DOT's established contamination limit. The inspectors concluded that the licensee was continuing to release empty alternate feed material intermodal containers in accordance with applicable license conditions, NRC regulations, and DOT requirements.

Worker contamination monitoring procedures require that before leaving any restricted area, all workers will either shower or monitor themselves for radioactive contamination. During the site tours the inspectors observed the alpha meters used by employees for self-scanning. The inspectors confirmed that survey meters were properly calibrated, had been operationally checked daily, and were fully functional. Monitoring records reviewed by the inspectors indicated that no individual had left the site with contamination above the licensee's action level of 650 dpm/100 cm<sup>2</sup>.

4.3 Conclusions

The radiation protection program areas that were reviewed by the inspectors and found to be acceptable were facility posting, personnel air sample analyses, release surveys, and the ALARA program reviews.

**5 Radioactive Waste Management (88035) and Environmental Monitoring (88045)**

5.1 Inspection Scope

The environmental, effluent and groundwater monitoring programs were reviewed by the inspectors to assess the effectiveness of the licensee's programs and to evaluate the effects, if any, of site activities on the local environment.



## 5.2 Observations and Findings

### a. Radioactive Waste Receipts and Disposal Inspections

License Condition 10.5 authorizes, in part, that White Mesa dispose of [11.e(2)] byproduct material generated at licensed in-situ leach facilities in accordance with the licensee's submittal dated May 20, 1993. The licensee is required to submit an annual summary to the NRC of waste disposed of from offsite generators in accordance with License Condition 10.5(D). The inspectors reviewed the licensee's CY 2001 and 2002 annual 11e.(2) byproduct summaries dated March 31, 2002, and March 31, 2003, respectively. The inspectors determined that during CY 2001 and CY 2002, the licensee received shipments of 11e.(2) byproduct waste for disposal from three individual waste generators. The licensee received several shipments of 11e.(2) waste from offsite generators in CY 2003. The inspectors determined that the volume of 11e.(2) waste received was within the limits of the license. However, during the inspection the inspectors discovered that the licensee had not received, processed, or disposed of the 11e.(2) materials in accordance with commitments in the license.

License Condition 10.5(D) requires, in part, that all disposal activities be documented to include a description of the waste and the disposal location. The licensee's submittal dated May 20, 1993, contained the waste disposal procedure that the licensee is required to follow. Section 6 of this procedure requires the licensee to select a location in NRC-approved Cell No. 3 for 11e.(2) waste disposals. The waste material's disposal location is required to be noted on the shipping manifest and waste disposal plat. Both documents are required to be entered into the site's permanent records. Section 11(a) of this procedure also requires the licensee, as part of a complete set of waste disposal records, to provide a plat of the waste disposal site for each waste shipment buried in Cell No. 3.

The inspectors reviewed 11e.(2) byproduct waste disposal records beginning CY 2002 and continuing through June 17, 2003. The inspectors determined that the licensee's waste disposal records for this time period did not include a description of each waste disposal location and a plat of each disposal site. For burials occurring in the above time frame, the licensee did not know the specific location where each 11e.(2) shipment had been placed in disposal Cell No. 3.

Representatives of the licensee, when questioned about the location of burials, explained that they buried 11e.(2) waste from outside generators in same section of Cell No. 3. The licensee also took photographs of each shipment's contents before burial in Cell No. 3. The licensee, when questioned about the change in procedure, was not certain when they stopped documenting the specific disposal location of each shipment and stopped providing plats of each waste disposal location. The inspectors determined that this change in procedure was not in accordance with the license. The inspectors were concerned that if a waste generator were to notify the licensee that a problem existed with a particular waste shipment, the licensee would not be able to identify the specific location where the 11e.(2) waste was buried in Cell No. 3. The licensee's failure to maintain records documenting the specific location of each 11e.(2) shipment buried in disposal Cell No. 3 beginning in CY 2002 was a violation of License Condition 10.5(D) (40-8681/0301-01).

b. Environmental and Effluent Monitoring Programs

License Condition 11.2 requires, in part, that the licensee implement an effluent and environmental monitoring program as specified in Section 5.5 of the renewal application. The inspectors reviewed the semi-annual effluent report for the second half of CY 2002. At the time of this inspection, the licensee had not issued the first half of CY 2003 semi-annual effluent report; however, the raw data provided by the licensee was reviewed for consistency. The licensee's environmental monitoring program consisted of taking samples of air continuously, groundwater, surface water, and vegetation, as well as making ambient gamma exposure rate measurements. The licensee had collected the required samples at the five sampling stations, including a nearest resident and a background location.

Internal procedures for taking environmental samples were evaluated by the inspectors. An assessment was made of the licensee's performance in following procedures for surface water sampling, soil sampling, and vegetation sampling. The inspectors concluded that the licensee was adequately following their environmental monitoring procedures and that these procedures were up-to-date.

c. Environmental Air Sampling

The licensee collected environmental air samples at four stations using continuous high volume samplers. The sample filters in the high volume samplers were exchanged weekly. These sample filters were analyzed quarterly for natural uranium, radium-226, thorium-230, and lead-210 concentrations. All environmental sample results for CY 2002 were less than the concentrations specified in 10 CFR Part 20, Appendix B. The inspectors identified no adverse trends.

Discussions with White Mesa staff and review of records indicated that the licensee used two water sprays for dust suppression during alternate feed material operations. The licensee also routinely used tanker trucks to spray water on the alternate feed material piles and ore pad roads during unloading and loading operations. The inspectors verified that the piles of feed material that were located nearest to the public highway for the last 3 years no longer existed. The inspector observed that the only piles of alternate feed material onsite was approximately 15,000 tons of material from the Linde site.

The inspectors reviewed radioactive and non-radioactive air particulate data collected and analyzed during CY 2002. The inspectors review of this data indicated that the volume of dust collected on sample filters was especially high from April to August 2002. However, the inspector noted that the concentration of radioactive material had not increased in proportion to the volume of dust collected. Based on this finding, the inspectors concluded that the dust blowing from the White Mesa site was not alternate feed or radioactive material when compared to previous years of environmental air sample results.

d. Environmental Exposure Rates

Ambient gamma radiation levels were continuously measured at the five sample stations using thermoluminescent dosimeters (TLDs). The TLDs were exchanged and analyzed on a quarterly basis. Sample results of the TLDs varied in CY2002 from 12.6  $\mu\text{R/hr}$  at

the background station to 20  $\mu\text{R/hr}$  at an onsite sample station (East Tailings Area). Ambient gamma exposure rates were found to be below the limits established in 10 CFR 20.1301. The licensee determined the average dose rate offsite to range between 10-15  $\mu\text{R/hr}$  by using direct radiation measurement surveys and was comparable to the readings at each TLD location. The licensee reported each TLD location as being background corrected.

e. Vegetation

Vegetation samples were collected at three locations by the licensee around the mill during early spring, late spring, and fall. The samples collected by the licensee were analyzed for radium-226 and lead-210 concentrations. Sample results for the second half of CY 2002 were comparable to those taken in the first half of CY 2002. The inspectors noted no observable adverse trends.

f. Groundwater Detection Monitoring Program

License Condition 11.3(A) requires, in part, that the licensee implement a groundwater detection monitoring program. The licensee's internal procedure entitled "Groundwater Monitoring Plan and Standard Operating Procedures," was reviewed along with monitoring records maintained by the licensee since the last inspection. The inspectors focused on the licensee's performance when following and implementing the groundwater sampling procedure. Inspectors interviewed and observed staff who were involved in groundwater sampling. A technician's water sampling technique was evaluated. The inspectors determined that the licensee was adequately following their procedures on groundwater sampling and monitoring.

5.3 Conclusions

Environmental activities were being conducted safely and in accordance with the license and NRC regulations. The inspectors determined that the licensee was collecting environmental monitoring samples as required by the license. The licensee had collected environmental samples at the intervals specified in the license, and as reported in the CY 2002 semi-annual effluent reports. All environmental monitoring sample results were less than the effluent release limits specified in 10 CFR Part 20 during CY 2002. The inspectors noted no adverse trends. The inspectors concluded that the licensee's failure since CY 2002 to maintain records documenting the specific location of each 11e.(2) shipment buried in Tailing Cell No. 3 was a violation of License Condition 10.5(D).

**6 Process Safety Information (88056), Hazard Identification and Assessment (88057) Management of Change (88065), OSHA Interface Activities (93001)**

6.1 Inspection Scope

The objective of this portion of the inspection was to verify that site activities were being conducted in accordance with applicable regulations, occupational safety standards, and license conditions. Additionally, this portion of the inspection was to ensure that chemical safety at White Mesa was adequate to protect the health and safety of the workers and the members of the general public.

## 6.2 Observations and Findings

### Site Safety and Operations

During the facility tour, the inspectors observed licensee practices related to worker occupational and industrial safety activities under the regulatory jurisdiction of the Mine Safety and Health Administration (MSHA). MSHA has a memorandum of understanding (MOU) with the Occupational Safety and Health Administration (OSHA) regarding OSHA requirements at MSHA facilities. The NRC has MOUs with both MSHA and OSHA regarding NRC licensed facilities.

The NRC conducted a routine, scheduled, and announced inspection of chemical safety programs at the White Mesa Uranium Mill in Blanding, Utah, on June 24, 2003. The purpose of the inspection was to determine whether activities involving licensed materials were conducted safely and in accordance with regulatory requirements. The inspectors determined by interviews with licensee personnel that process safety information was available, material safety data sheets were located in the control room, and the emergency response plan was adequate. The inspectors verified by interviews with licensee personnel that the following programs were in place and functioning:

- ▶ Operators and mechanics training
- ▶ Contractor worker training
- ▶ Pre-startup safety reviews
- ▶ Hot work permits
- ▶ Compliance audits

The inspectors verified that written operating procedures were available for the following licensed processes. Additionally, the inspectors confirmed that the licensee had subjected the following procedures to an annual review and that the procedures were updated as required:

- ▶ Yellowcake precipitation
- ▶ Uranium Solvent Exchange
- ▶ Counter-current decantation
- ▶ Pre-Leach and Leach
- ▶ Ore receiving and grinding

Licensee personnel, when interviewed by the inspectors, were unable to demonstrate a management of change program. Drawings showing the as-found plant condition were not available. The inspectors verified that the external material condition of anhydrous ammonia, sulfuric acid, and propane bulk storage tanks, pumps, and piping was satisfactory. The inspectors examined copies of the most recent pressure test documents for the anhydrous ammonia tanks. The inspectors examined round sheets maintained by the licensee when conducting daily mill inspections.

During interviews, licensee personnel described an adequate program for investigation of unusual incidents. The inspectors reviewed a copy of the "UMETCO Corporation Safety Manual" (1988), which included, but was not limited to: Accident Notification and Investigation; Safe Work Permits; Inspections and Audits; Hazardous Materials Identification. Later in the inspection, the licensee produced a copy of the "1991 Safety

and Health Program,” which the licensee stated included the current incident investigation procedure.

### 6.3 Conclusions

Based on this inspection, the inspectors determined that adequate chemical safety was demonstrated by the licensee for activities involving licensed materials.

## 7 **Exit Meeting Summary**

The inspectors presented the preliminary inspection results to the licensee representatives of the licensee at the conclusion of the onsite inspection on June 26, 2003. A telephonic exit briefing was held on July 8, 2003, to discuss the results of the inspection as described in this report. Representatives of the licensee acknowledged the findings as presented. During the inspection, the licensee did not identify any information reviewed by the inspectors as propriety information.

**ATTACHMENT**

**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

R. Bartlett, Maintenance Manager  
R. Berg, Radiation Safety Officer  
D. Frydenlund, Vice President and General Counsel  
R. Hochstein, President  
K. Miyoshi, Mill Manager

Utah Department of Environmental Quality-Division of Radiation Controls

B. Hamos, Environmental Scientist

**INSPECTION PROCEDURES USED**

83822	Radiation Protection
88005	Management Organization and Controls
88020	Operations Review
88035	Radioactive Waste Management
88045	Environmental Monitoring
88056	Process Safety Information
88057	Hazard Identification and Assessment
88063	Management of Change
93001	OSHA Interface Activities

**ITEMS OPENED, CLOSED AND DISCUSSED**

Opened

40-8681/0301-01	VIO	Failure to document or provide a plat of the locations of 11e.(2) shipments that were place into the disposal cell (License Condition 10.5).
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Closed

none

Discussed

none

## LIST OF ACRONYMS USED

ALARA	as low as reasonably achievable
CFR	Code of Federal Regulations
CY	calendar year
DAC	derived air concentration
DOT	Department of Transportation
DDE	deep dose equivalent
dpm/cm <sup>2</sup>	disintegrations per minute/centimeter squared
FUSRAP	Formerly Utilized Sites Remedial Action Program
IN	Information Notice
IUC	International Uranium Corporation
mg/l	milligrams per liter
μR/hr	microRoentgen/hour
MOU	memorandum of understanding
MSHA	Mine Safety and Health Administration
OSHA	Occupational Safety and Health Administration
PDR	Public Document Room
RWP	radiation work permit
RSO	radiation safety officer
SERP	Safety and Environmental Review Panel
SOP	standard operating procedure
SX	solvent extraction
TEDE	total effective dose equivalent
TLD	thermoluminescent dosimeters
URI	Unresolved Item
U <sub>3</sub> O <sub>8</sub>	yellowcake