

ENCLOSURE

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket No.: 40-8971

License No.: SUA-1524

Report No.: 40-8971/97-01

Licensee: U.S. Energy Corporation

Facility: Green Mountain Ion Exchange Facility

Location: Crooks Gap Mining Operations Site  
Fremont County, Wyoming

Date: May 15, 1997

Inspector: Robert J. Evans, P.E., Health Physicist  
Nuclear Materials Licensing Branch  
Division of Nuclear Materials Safety

Approved By: Charles L. Cain, Branch Chief  
Nuclear Materials Licensing Branch  
Division of Nuclear Materials Safety

Attachments: Partial List of Persons Contacted  
Items Opened, Closed and Discussed  
List of Acronyms Used  
  
Photographs Taken at the GMIX Facility

## EXECUTIVE SUMMARY

### U.S. Energy Corporation's Green Mountain Ion Exchange Plant NRC Inspection Report 40-8971/97-01

This inspection included a review of site status, management organization and controls, site operations, and the licensee's radiation protection and environmental monitoring programs.

#### Management Organization and Controls

- The licensee's organizational structure and level of security were adequate for the amount of work in progress at the site (Section 2).
- The licensee performed the weekly site inspections as required by the conditions of the license (Section 2).

#### Operations Review

- No significant personnel health or safety hazards were identified. Site fences were in good condition and perimeter postings were appropriate (Section 3).

#### Radiation Protection

- The licensee had implemented a radiation protection program that met the requirements established in 10 CFR Part 20 and the license (Section 4).

#### Environmental Protection

- A review of the licensee's environmental monitoring program indicated that the licensee was in compliance with license requirements (Section 5).

## REPORT DETAILS

### 1 SITE STATUS

U.S. Energy acquired the Green Mountain Ion Exchange (GMIX) Plant from Western Nuclear, Inc., on February 1, 1988. An Application For Source Material License was submitted to the NRC on May 23, 1988. The licensee stated in the submittal that they would not operate the plant without NRC approval. A possession-only license was issued to U.S. Energy by the NRC during August 1988. The licensee has not operated the facility since they purchased the property in 1988.

The licensee submitted a decommissioning plan to the NRC during September 1993. This plan was subsequently incorporated into License Condition 13. However, during August 1996, the NRC granted the licensee a three year postponement of decommissioning. Decommissioning was placed on hold pending the licensee's decision on whether or not to restart the plant. At the time of the inspection, the licensee had not firmly determined if they would restart the plant, pending the conclusion of a corporate study that was in progress.

Since the last inspection, licensee activities have included routine inspections of the facility and implementation of the environmental monitoring program.

### 2 MANAGEMENT ORGANIZATION AND CONTROLS (88005)

#### 2.1 Management Organization

##### a. Inspection Scope

The organizational structure was reviewed to ensure that the licensee had established an organization with defined responsibilities and functions.

##### b. Observations and Findings

The organizational requirements were listed in the licensee's September 1993 decommissioning plan. According to the organization chart that was included in the plan, the radiation protection program personnel consisted of the radiation safety officer, a radiation specialist, an environmental coordinator, and an environmental assistant. The licensee had assigned personnel to each position although some individuals were reassigned to other duties during the inspection since decommissioning activities had not commenced. Overall, the licensee's onsite organizational structure was found to be essentially the same as the structure that was in place during the previous inspections.

The GMIX property consisted of an ion exchange plant, a barium chloride treatment facility, and three reservoirs/ponds. Oversight of the GMIX property while the facility remained in the standby mode had been assigned to the facility manager/supervisor. This person inspected the facility on a weekly basis in accordance with the conditions of the license.

Security was provided by locked access gates, and a fence was installed around the site property to keep intruders out. In addition, the licensee routinely kept the main plant building locked.

## 2.2 Management Controls

### a. Inspection Scope

The inspector reviewed the licensee's implementation of procedures and analyses related to site operations, as specified in license conditions, to evaluate the effectiveness of the licensee's control of site activities.

### b. Observations and Findings

Condition 11 of License SUA-1524 requires, in part, that the licensed material be used in accordance with statements, representations, and conditions contained in the licensee's application dated May 23, 1988. Page 2 of the application states that the building equipment, ponds, and area shall be visually checked once per week.

During the inspection, the licensee's documentation for performing and recording the inspections was reviewed. The licensee performed the inspections using guidance provided on the "GMIX Weekly Industrial Safety and Radiation Inspection Checklist" form. A review of the forms indicated that the licensee was performing the inspections on a weekly basis in accordance with the License Condition 11.

## 2.3 Conclusions

The licensee's site staffing and security were adequate for the level of activities in progress at the site. The licensee had performed a weekly inspection of the GMIX Plant in accordance with the conditions of the license.

## 3 **OPERATIONS REVIEW (88020)**

### 3.1 Inspection Scope

A site tour was performed to verify that site activities were being conducted in accordance with applicable regulations and the conditions of the license, and to ensure that operational controls were adequate to protect the health and safety of the workers and members of the general public.

### 3.2 Observations and Findings

At the time of the inspection, site structures in place at the GMIX Plant consisted of the main building housing the ion exchange equipment, a barium chloride treatment building, and several evaporation and settling ponds. All fluids and ion exchange resins had been removed from the plant prior to the transfer of the license to U.S. Energy in 1988.

During the plant tour, site buildings, fences, gates, and operating equipment were observed. Overall, no significant health or safety hazard was identified. Site fences were in good condition and were properly posted. The main access gate was also noted to be posted in accordance with License Condition 16.

While the ion exchange columns themselves appeared to be in good condition, the mechanical components, such as pumps, and the building walls appeared to be deteriorating in both buildings. Also, piles of dirt and dust, as well as animal droppings, were found throughout the site. In summary, the site appeared to be in a state of disrepair although the licensee expressed confidence that the site could be restored to an operable status if the plant were to be restarted.

Ambient gamma exposure rate readings were obtained using a Ludlum Model 19 microrentgen meter. Elevated gamma readings were identified inside and around the ion exchange building; however, no radiation areas were identified on the site property.

### 3.3 Conclusions

Site activities were limited since the plant was in the standby mode of operation. No significant personnel health or safety hazards were identified.

## 4 **RADIATION PROTECTION (83822)**

### 4.1 Inspection Scope

The purpose of this portion of the inspection effort was to determine if the licensee's radiation protection program was in compliance with requirements established in the license and 10 CFR Part 20 regulations.

### 4.2 Observations and Findings

The radiation protection program requirements were listed in License Condition 11. According to the licensee's May 23, 1988, submittal, "There will be no in-plant monitoring until operations commence." Therefore, the licensee's radiation protection program in place at the site was minimal. Radiation protection program attributes not required to be in effect included the annual As Low As Reasonably Achievable audits, use of personnel thermoluminescent dosimeters, airborne

radioactive particulate sampling, routine surveys for radioactive materials, or establishment of standard operating procedures.

License Condition 12 states that the release of equipment or packages from the restricted area shall be in accordance with the attachment entitled, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses For Byproduct or Source Materials." According to information provided by the licensee, the licensee had not released any equipment from the site during 1996. Also, Radiation work permit requirements are listed in License Condition 15. The licensee did not issue a radiation work permit during 1996.

In accordance with License Condition 22, instrument calibrations were required to be performed following repair, as recommended by the manufacturer, or at least semi-annually. The licensee possessed two survey instruments at the time of the inspection. Both had been calibrated in March 1997. The licensee allowed the instrument calibrations to expire between November 1996 to March 1997. However, the licensee did not use the instruments during this time frame for any activity, such as an equipment release, that required a calibrated instrument to be available for use.

#### 4.3 Conclusions

The radiation safety program in place at the site was minimal but met the intent of the license and 10 CFR 20 requirements.

### 5 **ENVIRONMENTAL PROTECTION (88045)**

#### 5.1 Inspection Scope

The environmental monitoring program at the site was reviewed to assess the effectiveness of the licensee's program and to evaluate the effects, if any, of site activities on the local environment.

#### 5.2 Observations and Findings

License Condition 18 states that the licensee shall implement the environmental monitoring program for groundwater, surface water, and soil sampling at the locations and frequency specified in the attachment to the license entitled, "Green Mountain Ion Exchange Environmental Monitoring Requirements." According to the attachment, the licensee is required to obtain one groundwater sample from a local well every three years, three surface water samples once per year, and two sediment samples once per year. A review of the licensee's documentation, including original laboratory sample results, revealed that the licensee had obtained the required samples during 1996.



License Condition 18 also states that the results of all effluent and environmental monitoring shall be reported in accordance with 10 CFR 40, Section 40.65. Since the environmental monitoring sampling frequency at the site was annual, the licensee submitted only one semi-annual report to the NRC for 1996. The environmental monitoring data was submitted to the NRC by letter dated October 22, 1996.

The licensee did not obtain a sample from Kirk's Well during 1996. The sample was last obtained during 1995. The next sample is not required to be obtained until 1998. The 1995 data indicated that the natural uranium concentration of the well was 35 percent of the effluent concentration limit listed in 10 CFR 20, Appendix B. All other radionuclide concentrations were less than 35 percent of the limits.

Three surface water samples were required to be obtained; one from the final settling pond discharge point and two from Crook's Creek. The licensee did not obtain a settling pond discharge sample because the settling pond was dry during the sampling period. The licensee did obtain two surface water samples from Crook's Creek during June 1996.

The sample results indicated that the natural uranium concentration in one of the two Crook's Creek sample (obtained upstream of the site) was .402 milligrams per liter, or 91 percent of the effluent concentration limit established in 10 CFR 20, Appendix B. The radium-226 concentration was 13.5 percent of the limit, while the lead-210 concentration was 10 percent of the limit. The polonium-210 and thorium-230 concentrations were less than 3 percent of the respective limits.

Two sediment samples were obtained during September 1996. Elevated levels of uranium (225 picocuries per gram, or pci/g) were identified in one sample. The same sample had elevated levels of radium-226 (13.5 pci/g), thorium-230 (63.1 pci/g), polonium-210 (27.1 pci/g), and lead-210 (12 pci/g). The licensee concluded that this area may have to be included in any future reclamation activities.

License Condition 20 states that the licensee shall utilize the lower limits of detection in accordance with Section 5 of Regulatory Guide 4.14, "Radiological Effluent and Environmental Monitoring at Uranium Mills," for analysis of effluent and environmental samples. The actual lower limits of detection, as reported by the licensee's third-party laboratory, were equal to or better than the limits listed in the Regulatory Guide.

### 5.3 Conclusions

A review of the licensee's environmental monitoring program indicated that the licensee was in compliance with the conditions of the license.

**6 FOLLOWUP (92701)**

- 6.1 (Closed) Violation 40-8971/9601-02: Failure to perform all environmental sampling as required by License Condition 18.

During the previous inspection, the NRC noted that the licensee had not obtained the minimum number of environmental monitoring samples from Crook's Creek. Specifically, the licensee had obtained only one surface water sample instead of two as required by the license.

During the current inspection, the licensee's environmental monitoring data was reviewed. The licensee obtained two surface water samples from Crook's Creek during June 1996. The inspector noted that the licensee had obtained all samples as stipulated by License Condition 18 during 1996.

**Exit Meeting Summary**

The inspector presented the inspection results to the representatives of the licensee at the conclusion of the inspection on May 15, 1997. Licensee representatives acknowledged the findings as presented.



Attachment 1

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Bill Powell, Facility Manager/Supervisor  
Ken Webber, Environmental Coordinator  
George Worman, Radiation Safety Officer

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

|                 |     |   |
|-----------------|-----|---|
| 40-8971/9601-02 | VIO | Failure to perform all environmental sampling required by License Condition 18. |
|-----------------|-----|---|

Discussed

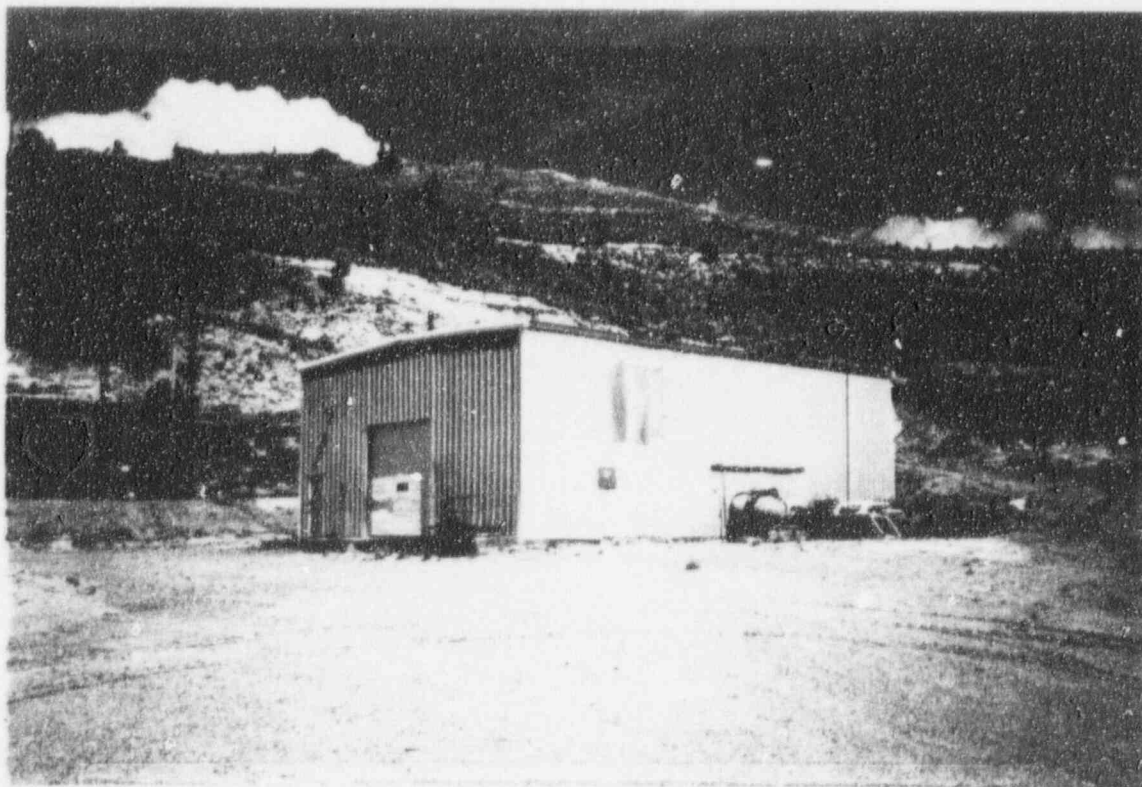
None

LIST OF ACRONYMS USED

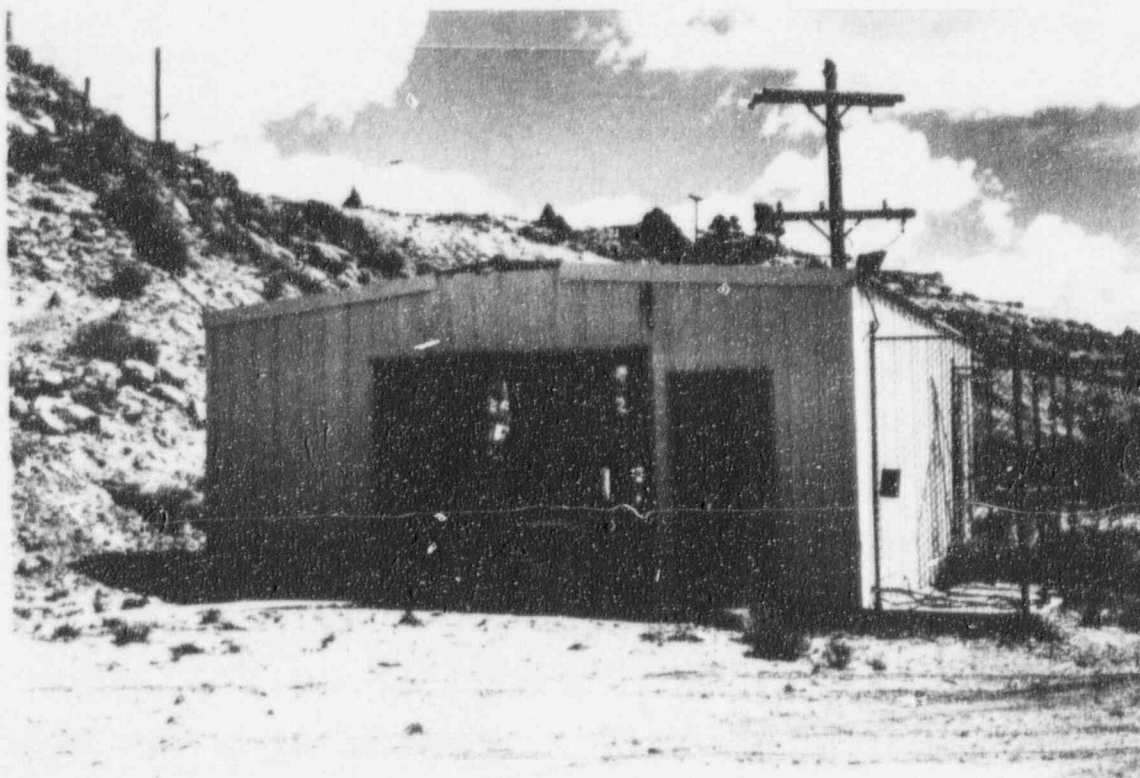
|       |                                      |
|-------|--------------------------------------|
| GMIX  | Green Mountain Ion Exchange Facility |
| pci/g | picocuries per gram                  |

Attachment 2

PHOTOGRAPHS TAKEN AT THE GMIX FACILITY



Photograph 1 - Green Mountain Ion Exchange Facility.



Photograph 2 - Barium Chloride Treatment Facility.