



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
ARLINGTON, TEXAS 76011-4125

September 1, 2011

Robert Compernelle, President  
FMRI, Inc.  
Number 10 Tantalum Place  
Muskogee, Oklahoma 74403

SUBJECT: NRC INSPECTION REPORT 040-07580/11-001 AND NOTICE OF VIOLATION

Dear Mr. Compernelle:

This letter refers to the inspection conducted on July 19-21, 2011, at your facility located in Muskogee, Oklahoma. During this inspection, the NRC staff examined activities conducted under your license as they relate to public health and safety to confirm compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. A preliminary exit briefing was held with members of your staff at the conclusion of the onsite inspection, and a final exit briefing was held with your staff by telephone on August 31, 2011.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation involved your failure to ensure that all equipment previously released from the site met the removable contamination limit specified in the license. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at (<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>). The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited because the NRC inspectors identified the violation during the inspection.

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, an excerpt from NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is enclosed. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC review of your response to the Notice will also determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In addition, the NRC staff identified one Unresolved Item involving your financial accounting of scrap material and equipment sales. An Unresolved Item is an issue of concern about which more information is required to determine if a performance deficiency exists, if the performance deficiency is more than minor, or if the issue of concern constitutes a violation. Specifically, the inspectors were unable to determine if you are required to report the sale of scrap metal and equipment to the NRC in accordance with License Condition 44. In addition, the inspectors were unable to determine if you are required to transfer these assets to the decommissioning trust fund as required by License Condition 10. In consultation with NRC headquarters staff, we

plan to review your previous bankruptcy settlement agreements, your license application submittals, and our licensing basis documents to ensure that we understand your financial reporting requirements. The NRC staff may also elect to review this subject area with you during a future inspection. No response to this Unresolved Item is required at this time, although we may contact you in the future for additional information that may be necessary to resolve these accounting questions.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and 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, your response should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Mr. Robert Evans at (817) 860-8234 or the undersigned at (817) 860-8191.

Sincerely,

**/RA/**

D. Blair Spitzberg, PhD, Chief  
Repository and Spent Fuel Safety Branch

Docket: 040-07580  
License: SMB-911

Enclosures:

1. Notice of Violation
2. Inspection Report 040-07580/11-001
3. Excerpt from NRC Information Notice 96-28,  
"Suggested Guidance Relating to Development  
and Implementation of Corrective Action"

cc w/enclosures 1 & 2:  
Curtis J. Zamec  
President and Chief Executive Officer  
Fansteel, Inc.  
1746 Commerce Road  
Creston, Iowa 50801

Greg Marshall  
President  
Green Lantern Acquisition 1, LLC  
190 Highland Drive  
Medina, Ohio 44256

J. Gregory Buckley  
City Manager  
City of Muskogee  
P.O. Box 1927  
Muskogee, Oklahoma 74402-1927

George Brozowski  
Regional Health Physicist  
U.S. Environmental Protection Agency, Region VI  
1445 Ross Avenue  
Mail Stop 6PDT  
Dallas, Texas 75202

James L. Harris  
Environmental Biologist  
Operations Division  
Tulsa District  
U.S. Army Corps of Engineers  
1645 South 101<sup>st</sup> East Avenue  
Tulsa, Oklahoma 74128

Kelly Hunter Burch  
Assistant Attorney General  
Office of the Attorney General  
313 NE 21<sup>st</sup> Street  
Oklahoma City, Oklahoma 73105

Ed Dihrberg  
Manager  
Oklahoma Department of Environmental Quality  
Industrial Permit Section  
Water Quality Division  
P.O. Box 1677  
Oklahoma City, Oklahoma 73101-1677

Mike Broderick  
Environmental Program Manager  
Oklahoma Department of Environmental Quality  
Radiation Management Section  
Land Protection Division  
P.O. Box 1677  
Oklahoma City, OK 73101-1677

Kim T. Winton  
U.S. Geological Survey  
202 NW 66<sup>th</sup> Street, Bldng. 7  
Oklahoma City, Oklahoma 73116-8224

Richard Glastein  
Environmental Enforcement Section  
Environmental and Natural Resources Division  
U.S. Department of Justice  
P.O. Box 7611  
Washington, DC 20044-7611

Scott Thompson  
Director  
Oklahoma Department of Environmental Quality  
Land Protection Division  
P.O. Box 1677  
Oklahoma city, Oklahoma 73101-1677

Mark J. Wetterhahn  
Attorney at Law  
2 Don Mills Court  
Rockville, Maryland 20850

David Mullin  
Cherokee Nation  
115 W. North Street  
Tahlequah, Oklahoma 74464

bcc w/enclosure (via e-mail):

Roy Caniano, Director, DNMS

Vivian Campbell, Deputy Director, DNMS

Chuck Cain, Senior Materials Analyst, DNMS

D. Blair Spitzberg, Chief, RSFS

James Shepherd, FSME/DWMEP/DURLD

Robert Evans, RSFS

Gerald Schlapper, RSFS

Linda Gersey, RSFS

Marisa Herrera, Fee Coordinator

R4Enforcement.Resource@nrc.gov

DRAFT: S:\DNMS\INMSB-B\RJE\FMRI Inspection Report 11-001.doc

FINAL: R:\ DNMS

MLxxxxx

ADAMS	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> SUNSI Review Complete	Reviewer Initials: RJE
<b>Category</b>	<input checked="" type="checkbox"/> Publicly Available		<input checked="" type="checkbox"/> Non-sensitive	
<b>Category</b>	<input type="checkbox"/> Non-publicly Available		<input type="checkbox"/> Sensitive	
<b>KEYWORD:</b>		<b>Sensitive -</b>		
RIV:DNMS:RSFS	RSFS	C:RSFS		
RJEvans	LMGersey via email	DBSpitzberg		
/RA/	/RA RJE for/	/RA/		
08/30/11	08/30/11	09/01/11		

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

F=Fax

## NOTICE OF VIOLATION

FMRI, Inc.  
Muskogee, Oklahoma

Docket No. 040-07580  
License No. SMB-911

During an NRC inspection conducted on July 19-21, 2011, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

License Condition 33 of NRC License SMB-911, Amendment 13, states that before the release of any equipment, the licensee shall characterize all surfaces, interior and exterior, and shall remediate all contaminated equipment to the limits of NRC Regulatory Guide 1.86.

Contrary to the above, the licensee failed, before the release of any equipment, to characterize all surfaces, interior and exterior, and failed to remediate all contaminated equipment to the limits specified in NRC Regulatory Guide 1.86. Specifically, during May-June 2011, the licensee surveyed and released scrap metal and conduit with surface contamination above the removable contamination limit for natural thorium. The licensee failed to characterize all surfaces to ensure compliance with the natural thorium removal contamination limit and failed to remediate the equipment surfaces to less than the removable limit prior to free-releasing the equipment from the site.

This is a Severity Level IV violation (Section 6.7).

Pursuant to the provisions of 10 CFR 2.201, FMRI, Inc., is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region IV, 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; 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 or proprietary 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

ENCLOSURE 1

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 2.390(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 2 working days of receipt.

Dated this 1<sup>st</sup> day of September 2011

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

Docket: 040-07580

License: SMB-911

Report: 040-07580/11-001

Licensee: FMRI, Inc.

Facility: Muskogee Plant

Location: Muskogee, Oklahoma

Date: July 19-21, 2011

Inspectors: Robert Evans, PE, CHP, Senior Health Physicist  
Repository and Spent Fuel Safety Branch

Linda M. Gersey, Health Physicist  
Repository and Spent Fuel Safety Branch

Accompanied By: D. Blair Spitzberg, PhD, Chief  
Repository and Spent Fuel Safety Branch

Approved By: D. Blair Spitzberg, PhD, Chief  
Repository and Spent Fuel Safety Branch

Attachments: Groundwater Sample Results  
Supplemental Inspection Information



## **EXECUTIVE SUMMARY**

FMRI, Inc.  
NRC Inspection Report 040-07580/11-001

This inspection was a routine, announced inspection of decommissioning activities in progress at the FMRI facility in Muskogee, Oklahoma.

### **Decommissioning Inspection Procedure; Management Organization and Controls**

- The licensee and its contracted workforce were conducting decommissioning operations in accordance with license and regulatory requirements (Section 1).

### **Radiation Protection**

- The licensee implemented a radiation protection program in compliance with 10 CFR Part 20 and the license, with one exception. One violation was identified involving the licensee's failure to ensure that removable contamination on all equipment being released from the site was below the limit specified in the license (Section 2).

### **Environmental Protection**

- The licensee conducted environmental monitoring in accordance with license requirements. The licensee continued to evaluate and report exceedances of uranium concentrations in one monitoring well to the NRC in accordance with the license (Section 3).

### **Low-Level Radioactive Waste Storage; Radioactive Waste Management; and Onsite Construction**

- The licensee was storing radioactive material in accordance with license requirements. Unresolved Item (URI 040-07580/1101-02) was identified involving the licensee's accounting of sales from surplus equipment (Section 4).

### **Transportation Activities**

- No shipping operations were in progress during the inspection. The licensee was reconsidering its options for future shipments, and any changes will have to be reflected in an updated transportation plan (Section 5).

## **REPORTS DETAILS**

### **Summary of Site Status**

At the time of the inspection, the licensee was conducting Phase 1 decommissioning in accordance with the NRC-approved Decommissioning Plan dated January 14, 2003. Phase 1 decommissioning includes removal of work-in-progress (WIP) residue material from Ponds 2 and 3 and transfer of this material to an out-of-state uranium mill for use as alternate feed material.

The licensee commenced with Phase 1 work during 2005. The licensee began by removing, bagging, and shipping WIP material from Pond 3. The licensee completed the removal of WIP material from Pond 3 during 2010, although some WIP material remains staged for packaging in the onsite drying bed. The licensee then reshaped the slopes of Pond 3 for erosion control. The licensee then suspended most of the Phase I decommissioning work.

By letter dated June 16, 2011, the licensee notified the NRC that it planned to restart Phase I decommissioning. The licensee resumed Phase I work on July 18, 2011. At the time of this inspection, the work consisted of bagging of wastes from Ponds 2 and 3 including trash, debris, and liner material. The licensee also conducted cleanup of the 'bone yard' to support future access to Pond 2. In the next few weeks, the licensee plans to commence with reclamation of Pond 2. The licensee expects the reclamation of Pond 2 to take several months to complete.

Following the completion of Phase 1 work, the licensee plans to commence with Phase 2 work. Phase 2 includes the removal of calcium fluoride material from Ponds 5-9. The licensee predicts that Phase 2 work will commence during late 2013. Phase 3 decommissioning includes remediation of site structures and soils. This work is currently scheduled to commence during mid-2012. The final phase of decommissioning, groundwater treatment, is expected to be completed by 2023.

Plant systems still in service included the French drain, trench water collection, and the wastewater treatment system. The licensee continues to collect routine environmental and effluent samples as required by the license. Effective March 2011, the licensee began storing foundry material on behalf of Fansteel in the Chem C building. Since this material was being stored within the radiologically restricted area, the licensee will have to free-release the material from the restricted area at some point in the future.

By letter dated June 21, 2011, the licensee requested NRC approval for consent for indirect change of control of the license from Fansteel to Green Lantern Acquisition 1. The licensee also submitted a second letter dated June 21, 2011, requesting modification of the license to support the proposed change in ownership. At the time of this inspection, the NRC had not completed its review of these license amendment requests.

### **1      Decommissioning Inspection Procedure; Management Organization and Controls (87104, 88005)**

#### **1.1      Inspection Scope**

The objective of this portion of the inspection was to determine whether the licensee and its contracted workforce were conducting decommissioning activities in accordance with license and regulatory requirements.

## 1.2 Observations and Findings

### a. Site Staffing

Section 9.1 and Figure 9-1 of the decommissioning plan provide the site staffing requirements. The licensee made two management changes since the previous inspection. The licensee appointed a new individual to the position of FMRI president during April 2010, and the licensee appointed a new individual to the position of radiation safety officer during June 2011.

At the time of this inspection, site staffing included the operations manager/site project manager, radiation safety officer, health physics supervisor, and six workers. The workers included health physics technicians and laborers. In addition, the president of Green Lantern Acquisition 1 provided management consultation support. The onsite staff continued to report to the president of FMRI. In summary, the inspectors concluded that the licensee had sufficient staff to ensure compliance with license requirements.

The inspectors noted that the licensee had not assigned an individual to the position of quality control officer, a position specifically mentioned in the decommissioning plan. The licensee's representatives stated that the duties of the quality control officer had been assigned to each individual supervisor, but that the licensee would consider reassigning the duties of this position to one particular individual.

### b. Audits

License Conditions 10 and 14 specify the requirements for the Radiation Safety Committee. The goals of the committee are to ensure that occupational exposures and effluent releases are As Low As Reasonably Achievable (ALARA) and to ensure that the requirements of the license are being satisfied. The committee is required to meet at least quarterly. The inspectors reviewed the minutes for the 2010-2011 meetings and discussed the results of the meetings with the licensee's staff. The licensee's records indicated that the committee continued to monitor the radiological impacts of site activities. The committee did not identify any significant negative trends during 2010-2011.

The inspectors confirmed that the licensee continued to routinely review site procedures in accordance with license requirements. In addition, the licensee conducted the annual radiation protection program review for 2010 during January 2011 in accordance with regulatory requirements. Finally, the radiation safety officer conducted routine inspections when work was being conducted involving radioactive material.

The inspectors reviewed the licensee's condition reports for 2010-2011. The licensee issued 10 reports during this timeframe. All reports involved exceedances of gross alpha and gross beta concentrations in water samples. The licensee conducted a follow up review for each exceedance including isotopic analysis of the sample results. Two of the exceedances were determined to be reportable, and the inspectors confirmed that the licensee reported these two exceedances as required.

c. Site Tours

The inspectors conducted site tours to observe decommissioning activities in progress. At the time of the inspection, the licensee was bagging wastes and debris in super-sacks for eventual disposal at an offsite location. The inspectors also observed the storage of bagged WIP and wastes and the processing of wastewater. Adequate security measures were in place to ensure positive control over the licensed material in accordance with 10 CFR 20.1801 requirements. Site security included locked gates and fences. The inspectors determined that site operations were being conducted in accordance with license requirements.

The inspectors performed independent radiological measurements during site tours using a Ludlum Model 19 survey meter (NRC number 015540, calibration due date of 04/27/2012, calibrated to radium-226). Background measurements ranged from 6-10 microRoentgens per hour ( $\mu\text{R/hr}$ ). The inspectors noted that the ambient gamma radiation levels in and around Pond 3 were significantly lower than previous inspections, a result of the licensee's removal of WIP material from the pond. Pond 3 measured 25-30  $\mu\text{R/hr}$ . In other areas of the site, the edge of the drying bed containing WIP material measured 170  $\mu\text{R/hr}$ , the Thermite building entrance (location where residual WIP material was being staged) measured 110  $\mu\text{R/hr}$ , and the edge of Pond 2 measured 120  $\mu\text{R/hr}$ . The bagged wastes being stored adjacent to the Chem A building measured 80-200  $\mu\text{R/hr}$ . The edge of Pond 9, the location where calcium fluoride sludge was being stored, measured 22  $\mu\text{R/hr}$ . No radiation areas, i.e., areas with radiation levels greater than 5,000  $\mu\text{R/hr}$ , were identified at the site.

1.3 Conclusions

The licensee and its contracted workforce were conducting decommissioning operations in accordance with license and regulatory requirements.

**2 Radiation Protection (83822)**

2.1 Inspection Scope

The inspectors reviewed the licensee's implementation of its radiation protection program to ensure compliance with 10 CFR Part 20 requirements and the license.

2.2 Observations and Findings

a. Occupational Exposures

The occupational radiation exposure monitoring requirements are specified in Section 10 of the Decommissioning Plan. At the time of the inspection, occupational exposure monitoring consisted of measurement of internal doses only. During early 2009, the licensee suspended external personnel monitoring as allowed by 10 CFR 20.1502 based on historical results. The licensee continues to conduct routine ambient gamma radiation surveys to confirm that the general area dose rates remain low.

Internal exposures are assessed based on results obtained from lapel air samplers. During 2010, the licensee monitored selected individuals who conducted reclamation activities involving WIP material removed from Pond 3. The air sample results for 2010

were below the weekly action level, and assigned doses were well below regulatory limits. No bioassay samples have been collected and analyzed since 2007 due to the low levels indicated on lapel air sampler results.

In accordance with Section 10.2 of the Decommissioning Plan, the licensee is required to implement a respiratory protection program. The licensee typically issued respirators to workers who conducted work involving WIP material. At the time of the inspection, site workers were bagging waste material and not WIP material. These workers were wearing half-face respirators. According to the licensee's representatives, the workers were wearing the respirators for protection from airborne industrial hazards, and not for protection from radiological hazards. Consequently, no respiratory protection factors were being credited to workers' exposures.

The licensee issued special work permits for non-routine work activities involving radioactive material. The inspectors reviewed the two special work permits that had been issued for the work in progress during the inspection. The special work permits provided the safety precautions, personnel protective equipment, and monitoring requirements for the protection of site workers. At the time of the inspection, the primary health and safety concern was heat stress.

The inspectors reviewed the licensee's proposed radiation protection program that will be implemented during Pond 2 reclamation activities. The licensee plans to implement stringent personnel monitoring protocols until the radiological hazards have been identified and assessed. The licensee will conduct lapel air sampling using a conservative action level. The licensee will also conduct isotopic analysis of some air filters to determine the radionuclide mixture. A new personnel frisking station will be established near the work, and portable air monitors will be available as necessary for ambient air sampling. The licensee also plans to closely monitor workers' clothing for contamination. The licensee's implementation of these radiation protection protocols will be reviewed during a future inspection.

b. Radon and Radon Progeny Monitoring

The licensee conducted limited air sampling for radon progeny during 2010 in areas where work was being conducted with radioactive materials. During 2010, samples were collected in the Thermite building. The highest measurement was 0.02 working levels with action levels of 0.08 and 0.33 working levels. Sample results for 2010 were below the lowest action level.

The licensee conducted quarterly radon monitoring in areas where source material was being handled and stored. During 2010, radon measurements were obtained at seven locations: the plant entrance, a background sample near the access road, an environmental sample, the white house (contractor lunch and change out area), Chem A laboratory, Chem C building, and the Transportation Packaging and Processing Area. Radon samples were analyzed by an outside vendor. Radon levels ranged from background (about 0.3 pCi/L per day) to a high of 28.5 pCi/L per day for the Transportation Packaging and Processing Area. The licensee expected this sample to be elevated because WIP material was being stored in this area. All sample results were less than the licensee's action level of 30 pCi/L.

c. Contamination Control

The contamination control requirements are provided in both Section 10.6 of the Decommissioning Plan and License Condition 33. The licensee routinely surveyed roads, in-plant offices, equipment and tools, trash, and laundry. Area surveys included weekly surface surveys and biweekly swipe surveys for alpha contamination. The inspectors verified that instruments used for these contamination survey efforts were properly calibrated. The inspectors reviewed the area survey results and concluded that no contamination problems existed during the inspection period, with the exception of certain equipment releases as described below.

The inspectors reviewed the licensee's equipment release records. The majority of the records indicated that the licensee's staff had satisfactorily surveyed the equipment prior to off-site release. However, the inspectors were unable to confirm that all scrap material had been free-released with removal contamination below the limit specified in License Condition 33. In particular, the licensee surveyed scrap metal and conduit during May-June 2011, but the licensee failed to verify that the components met the release criteria for removable natural thorium. In other words, the licensee's records indicate that certain components had been free-released with total surface contamination but at levels that were less than the limit for total contamination. However, the total contamination levels remaining on the components were greater than the natural thorium removable release limit, yet the licensee's staff did not swipe sample the equipment to verify compliance with the removable release limit specified in the license.

License Condition 33 states that before the release of any equipment, the licensee shall characterize all surfaces, interior and exterior, and shall remediate all contaminated equipment to the limits of NRC Regulatory Guide 1.86. During May-June 2011, the licensee surveyed and released scrap metal and conduit with surface contamination above the removable contamination limit for natural thorium. However, the licensee failed to remediate the equipment surfaces and/or failed to characterize all surfaces to verify compliance with the natural thorium removal contamination limit prior to free-releasing the material from the site. The licensee's failure to characterize all surfaces and to remediate all contaminated equipment to the limits specified in the Regulatory Guide was a violation of License Condition 33 (VIO 040-07580/1101-01).

Although the licensee failed to verify compliance with the removable contamination limit for natural thorium, the inspectors concluded that a significant safety concern did not exist because the licensee verified that the equipment complied with the total surface contamination limit prior to release of the equipment. Immediate corrective actions taken by the licensee included suspending use of the form used to document the release of scrap and trash material. The licensee's corrective actions taken in response to this NRC finding will be reviewed during a future inspection.

d. Training

The inspectors reviewed the licensee's training program. Training consisted of annual refresher training, new employee training, and offsite responder training. The licensee provided annual general employee training to site workers during June 2010. A review of the licensee's files confirmed that individuals completed general employee training at the appropriate level prior to starting work. Individuals who were required to use a

respirator also completed a medical review, training, and a fit test as required by procedure. All workers on-site were current on their training. Finally, the City of Muskogee fire department participated in the annual familiarization tour of the facility during June 2010.

### 2.3 Conclusions

The licensee implemented a radiation protection program in compliance with 10 CFR Part 20 and the license, with one exception. One violation was identified involving the licensee's failure to ensure that removable contamination on all equipment being released from the site was below the limit specified in the license.

## 3 **Environmental Protection (88045)**

### 3.1 Inspection Scope

The inspectors reviewed the licensee's environmental monitoring program for compliance with regulatory and license requirements.

### 3.2 Observations and Findings

#### a. Liquid Effluents

The effluent control program requirements are provided in Section 11.2 of the Decommissioning Plan. The licensee used four outfalls for the discharge of water from the site. Plant waste water was discharged through Outfall 001. The other three outfalls were used for the discharge of storm water runoff.

Liquids were released through Outfall 001 in batch modes. Water samples were collected by the licensee prior to and during each batch release. The samples were analyzed for gross alpha and gross beta concentrations. These sample results were then compared to the licensed action levels. If either the gross alpha or the gross beta concentration exceeded the action level, then the licensee conducted an isotopic analysis to determine if the release was reportable.

The inspectors reviewed the licensee's water sampling records for 2010-2011 and confirmed that the licensee was sampling and analyzing the liquid effluents as required by its National Pollutant Discharge Elimination System permit. The inspectors also confirmed that the licensee was issuing condition reports for all gross alpha and gross beta concentration exceedances for a follow up review. The licensee reported the water sample results to the State of Oklahoma in accordance with permit requirements.

#### b. Environmental Air Sampling

The licensee sampled airborne alpha radioactivity at six locations. The sample stations included four perimeter stations, one background station, and one offsite station. Airborne particulates were continuously collected and analyzed weekly. The air sample filters were analyzed for their gross alpha concentrations, and these concentrations were compared to the action level. Based on the licensee's 2010-2011 records, none of the sample results exceeded the administrative action level.

c. Groundwater Monitoring

The licensee sampled 19 monitoring wells and 4 sumps on a quarterly frequency. The inspectors reviewed the sample results for 2010-2011. The samples collected from one monitoring well continued to exceed the reporting requirements.

Water samples collected from monitoring well MW-74 have exceeded the uranium concentration reporting level since March 2006. This well is located down-gradient of Pond 3 but up-gradient of the intercept trench that runs parallel to the Arkansas River. The results for samples collected from MW-74 since March 2006 are provided in Attachment 1 to this inspection report.

The licensee previously concluded that subsurface contaminant disturbance caused by the reclamation of Pond 3 was the most likely reason for the elevated uranium concentrations in Monitoring Well MW-74. Phase I decommissioning commenced in June 2005, and a negative trend was first identified in the MW-74 samples during September 2005.

The reclamation of Pond 3 was completed during 2010. The sample results for 2010-2011 suggest that the uranium concentrations in the groundwater appear to be trending downward. Regardless, the intercept trench still functions to collect potentially contaminated groundwater that may be migrating from Pond 3 towards the Arkansas River.

3.3 Conclusions

The licensee conducted environmental monitoring in accordance with license requirements. The licensee continued to evaluate and report exceedances of uranium concentrations in one monitoring well to the NRC in accordance with the license.

**4 Low-Level Radioactive Waste Storage; Radioactive Waste Management; and Onsite Construction (84900, 88035, 88001)**

4.1 Inspection Scope

The inspectors conducted a review of onsite handling and storage of radioactive wastes to ensure compliance with license requirements.

4.2 Observations and Findings

a. Storage of Contaminated WIP Material, Wastes and Soil

The licensee originally estimated that Ponds 2 and 3 contained about 18,800 tons of WIP material. At the time of the inspection, the licensee had excavated and shipped about 13,200 tons of WIP material from Pond 3. In recent months, the licensee reshaped the slopes of Pond 3 for erosion control. The licensee estimates that approximately 363 tons of excavated Pond 3 WIP material remains staged for shipment in 222 bags in the Thermite building. In addition, about 200 tons of unbagged WIP material remains in the drying bed. Finally, a small quantity of WIP material was stored in the Sodium Reduction building.



The licensee expects to begin removal of WIP material from Pond 2 in the near future. According to historical documentation, Pond 2 was placed into service during 1960 and was permanently removed from service during 1979. This clay-lined pond was capped with a polyvinyl chloride sheet and was covered with 6-24 inches of soil to support vegetation. The licensee previously estimated that approximately 5826 dry tons of WIP material may be stored in Pond 2, although the actual amount may be less than previously estimated. The licensee's representatives believe that the WIP material being stored in Pond 3 will be dry enough to be bagged immediately. This will save the licensee from having to dry the material prior to bagging.

The inspectors reviewed the Pond 2 excavation work plan during the inspection. The work plan was the same plan that was used during Pond 3 excavation activities. The plan provided sufficient details for the work that will be performed within Pond 2.

The licensee expects to store the bagged WIP material removed from the drying bed and Pond 2 in the Thermite building, until the building has been filled to capacity. At that point, the licensee will begin storing the remainder of the WIP material at its outdoor staging area in accordance with License Condition 25. The staging area is located adjacent to the Sodium Reduction building.

At the time of the inspection, the licensee had not finalized its plans for shipment of the remaining WIP material. The licensee plans to ship all WIP material to a mill in Utah for use as alternate feed material, but the licensee has not finalized its plans for how the material will be transported to the mill. Also, the licensee had not finalized its plans for shipment and disposal of all bagged wastes removed from the vicinity of Ponds 2 and 3. This waste material consisted of trash, debris, plastic sheets, and soil-like material. The bagged waste material will be temporarily stored in the Sodium Reduction building. After the licensee has determined where the waste material will be disposed, the licensee will then determine how it will ship the material to this disposal site.

The licensee continues to store contaminated soils in the Sodium Reduction building. The licensee estimated that approximately 2000 tons of contaminated soil remains in storage. This soil originated from previous reclamation work involving Ponds 1N, 1S, and 5. The licensee also continued to store about 7000 cubic yards of potentially contaminated soil recovered during construction of the intercept trench. This material was stored onsite under sheets of plastic. Further, the licensee continued to store approximately 68,000 dry tons of calcium fluoride material in Ponds 8 and 9. Finally, the licensee continues to store approximately 3000 gallons of ammonium hydroxide in an onsite storage tank. These materials will be packaged, shipped, transferred and/or disposed during future decommissioning activities.

b. Sale of Equipment

The inspectors reviewed the licensee's release and sale of equipment from the facility. In recent months, the licensee free-released a hammer mill, belt press, laboratory equipment, and scrap metal. The licensee sold some of the material released during 2010 as surplus equipment. The inspectors attempted to determine if the licensee correctly reported these sales to the NRC in its annual financial reports.

License Condition 44 states that FMRI shall submit, by March 31<sup>st</sup> of each year, an accounting of income from reorganized Fansteel that includes "any other payment

received.” The licensee erroneously failed to report the sale of the equipment during 2010 in the most recent annual income statement dated March 31, 2011. The licensee’s representatives stated that the sale of surplus equipment was instead reported as rental income. However, the inspectors were unable to determine whether this sale of assets by FMRI should have been reported to the NRC.

In addition to the reporting of income from sales of surplus equipment, License Condition 10 references the license transfer letter dated July 24, 2003. This letter suggests that asset sale proceeds are to be transferred to the standby trust. However, based on the information provided in Attachment 3 to the licensee’s letter dated March 31, 2011, there is no evidence that the monies gained from the sale of surplus equipment during 2010 was transferred to the standby trust. These questions were discussed with the NRC’s project manager and financial assurance specialist, and the inspectors determined to classify these issues as an Unresolved Item (URI 040-07580/1101-02) pending further review by the NRC staff.

#### 4.3 Conclusions

The licensee was storing radioactive material in accordance with license requirements. Unresolved Item (URI 040-07580/1101-02) was identified involving the licensee’s accounting of sales from surplus equipment.

### **5 Inspection of Transportation Activities (86740)**

#### 5.1 Inspection Scope

The inspectors reviewed the licensee’s program for packaging, shipping, and transporting radioactive material.

#### 5.2 Observations and Findings

The licensee commenced with reclamation of Pond 3 during June 2005. Shipment operations began during 2006. Since 2006, the licensee has shipped an estimated 13,204 tons of WIP material in 672 individual shipments.

During the inspection, no transportation activities were in progress; therefore, the inspectors were unable to observe the licensee’s protocols for shipping waste material. The licensee last shipped WIP material during January 2009. The inspectors previously reviewed the licensee’s shipping papers for shipments of WIP material, and the papers were found to be complete and in agreement with U.S. Department of Transportation requirements.

The licensee has a transportation plan in effect for the Phase 1 remediation project. The licensee was reconsidering its options for shipping Pond 2 WIP and other residual waste materials that will be collected and stored onsite. The licensee plans to resume shipping operations during 2012. Once the licensee determines how it will ship WIP material to the out-of-state mill, and how it will ship the residual waste material to a disposal facility, then it will update the transportation plan accordingly. The inspectors will review this program area during a future inspection.

### 5.3 Conclusions

No shipping operations were in progress during the inspection. The licensee was reconsidering its options for future shipments, and any changes will have to be reflected in an updated transportation plan.

## **6 Exit Meeting**

The inspectors reviewed the scope and findings of the inspection during the preliminary exit meeting conducted at the conclusion of the onsite inspection on July 21, 2011. A final exit briefing was held telephonically with the licensee on August 31, 2011. The licensee did not identify as proprietary any information provided to, or reviewed, by the inspectors.

**MONITORING WELL MW-74 SAMPLE RESULTS**  
(units of pCi/L)

Sample Date	Uranium-238	Uranium-235	Uranium-234	Reporting Level
March 15, 2006	5460	Not Detected	4740	3000
June 28, 2006	9040	Not Detected	8620	3000
July 14, 2006	3800	Not Detected	3360	3000
July 28, 2006	4100	Not Detected	4180	3000
August 10, 2006	8240	Not Detected	7890	3000
August 24, 2006	6080	Not Detected	5240	3000
September 20, 2006	11,300	Not Detected	10,300	3000
October 25, 2006	4610	83	4280	3000
November 15, 2006	9110	121	8320	3000
December 14, 2006	9660	24	8680	3000
March 23, 2007	8320	39	7160	3000
June 13, 2007	9070	299	8180	3000
September 12, 2007	6480	142	6280	3000
December 19, 2007	6740	70	6550	3000
March 26, 2008	1050	75	1050	3000
June 11, 2008	7840	157	7450	3000
September 24, 2008	9810	1220	9200	3000
December 17, 2008	11,400	82	10,900	3000
March 26, 2009	5730	462	5410	3000
June 25, 2009	11,400	286	10,500	3000
September 16, 2009	10,600	Not Detected	9600	3000
December 10, 2009*	10,000	500	10,000	3000
March 17, 2010	7550	50	6960	3000
June 10, 2010*	3138	141	3138	3000
September 30, 2010	4370	296	3970	3000
December 9, 2010*	2695	121	2695	3000
March 30, 2011	2730	40	2650	3000
June 23, 2011*	1884	85	1884	3000

\*The licensee analyzed these samples only for total uranium. The isotopic sample results presented in this table are the licensee's prorated estimates based on the total uranium concentrations sample results.

## SUPPLEMENTAL INSPECTION INFORMATION

### **PARTIAL LIST OF PERSONS CONTACTED**

#### Licensee

J. Burgess, Operations Manager  
R. Compennolle, President  
G. Marshall, Consultant, Premium Environmental Services  
B. Thomas, Radiation Safety Officer

#### Oklahoma Department of Environmental Quality

J. Flynn, Land Protection Division, Radiation Management Section

### **INSPECTION PROCEDURES USED**

IP 83822	Radiation Protection
IP 88045	Environmental Protection
IP 84900	Low-Level Radioactive Waste Storage
IP 88035	Radioactive Waste Management
IP 88001	Onsite Construction
IP 87104	Decommissioning Inspection Procedure for Materials Licensees
IP 88005	Management Organization and Controls
IP 86740	Inspection of Transportation Activities

### **ITEMS OPENED, CLOSED, AND DISCUSSED**

#### Open

040-07580/1101-01	VIO	Failure to ensure that all equipment released from the site met the contamination limits specified in the license
040-07580/1101-02	URI	Reporting of surplus equipment sales to NRC and transfer of these monies to standby trust

#### Closed

None

#### Discussed

None

### **LIST OF ACRONYMS AND ABBREVIATIONS USED**

CFR	Code of Federal Regulations
IP	Inspection Procedure
µR/hr	microRoentgens per hour
pCi/L	picocuries per liter
URI	Unresolved Item
WIP	Work-in-Progress