



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 E. LAMAR BLVD
ARLINGTON TX 76011-4511

August 28, 2015

Mr. Robert Compennolle, President
FMRI, Inc.
Number 10 Tantalum Place
Muskogee, OK 74403

SUBJECT: NRC INSPECTION REPORT 040-07580/15-001

Dear Mr. Compennolle:

This letter refers to the inspection conducted on August 3-6, 2015, at your facility located in Muskogee, Oklahoma. The purpose of the inspection was to determine whether decommissioning activities were being conducted safely and in conformance with the U.S. Nuclear Regulatory Commission (NRC) requirements. The results of the inspection were discussed with members of your staff at the conclusion of the onsite inspection on August 6, 2015.

During this inspection, 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. The enclosed report presents the results of this inspection. No violations were identified and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's Web site at <https://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

Should you have any questions concerning this inspection, please contact Dr. Gerald Schlapper, Health Physicist, at 817-200-1273 or the undersigned at 817-200-1191.

Sincerely,

/RA by RSBrowder Acting For/

Ray L. Kellar, P. E., Chief
Repository and Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Docket No: 040-07580

License No: SNM-911

Enclosure:

NRC Inspection Report 040-07580/15-001

cc: See next page

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U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-07580

License: SMB-911

Report: 040-07580/15-001

Licensee: FMRI, Inc.

Facility: Muskogee Plant

Location: Number 10 Tantalum Place
Muskogee, Oklahoma

Dates: August 3-6, 2015

Inspector: Gerald A. Schlapper, PhD, CHP, Health Physicist
Repository and Spent Fuel Safety Branch

Approved by: Ray L. Kellar, P. E., Chief
Repository and Spent Fuel Safety Branch
Division of Nuclear Material Safety

Attachment: Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

FMRI, INC.
NRC Inspection Report 040-07580/15-001

This inspection was a routine, announced inspection of decommissioning activities being conducted at the FMRI facility in Muskogee, Oklahoma. In summary, the licensee was conducting site activities in compliance with regulatory and license requirements.

Organization, Management, and Controls

The licensee maintained staffing in accordance with license requirements (Section 1.2)

Radiation Protection/Maintenance and Surveillance Testing

The licensee implemented its radiation protection program in compliance with 10 CFR Part 20 requirements and the license. Occupational exposures were a small fraction of the regulatory limits. (Section 2.2)

Radioactive Waste Management/Low-Level Radioactive Waste Storage and Transportation of Radioactive Materials

The licensee was storing bagged work-in progress (WIP) and waste materials in the onsite buildings in accordance with license requirements. Shipping operations were in progress during the inspection. (Section 3.2)

Environmental Protection

The licensee conducted environmental monitoring in accordance with license requirements. No samples exceeded the reporting limit specified in the license. (Section 4.2)

Emergency Preparedness/Fire Protection

The licensee had emergency response and fire protection programs in effect that were appropriate for the current mode of plant operation. (Section 5.2)

Report Details

Summary of Plant Status - Unit 3

At the time of the inspection, the licensee was in the process of excavating soil from Pond 2 and shipping previously bagged WIP material. The Muskogee site is continuing work in Phase 1 of decommissioning. Phase 1 decommissioning includes removal of WIP residue material from Ponds 2 and 3 and shipment 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 started by removing, bagging, and shipping WIP material from Pond 3. Removal of WIP material from Pond 3 was completed during 2010. During 2011 the licensee removed all material stored outside and placed the packaged material in storage in on-site buildings.

The licensee began removing WIP material from Pond 2 in August 2011, but suspended this work in December 2011. Bagging operations of Pond 2 material were resumed in July 2012. Bagging operations were stopped in October 2012 because storage space in buildings in use (Chem A and Chem C buildings) were full of bagged material. The licensee resumed shipping of bagged material stored in the Chem A building to the out-of-state mill in September 2013. Excavation and bagging of material from Pond 2 was resumed with bagged material stored in the Chem A building.

Since the last inspection, the licensee has continued to decontaminate, survey, and free-release scrap material from the facility. The waste water treatment system remains in service as required by the decommissioning plan instructions. The licensee continued to conduct routine monitoring and surveys in accordance with license requirements.

During the previous inspection it was noted that by letter dated June 21, 2011, the licensee requested approval for indirect change of control of the license from Fansteel to Green Lantern Acquisition 1. The licensee submitted a second letter dated June 21, 2011, requesting a license amendment to support the ownership change. The NRC issued the license amendment on October 2, 2012 (Amendment 14 to SMB-911) that authorized the change in ownership to Green Lantern Acquisition 1. However, by letter dated April 12, 2013, the licensee notified NRC that the change of ownership did not occur. Thus, the amended license did not reflect the current condition of the site. The NRC issued an Order by letter dated September 20, 2013, that revoked the license amendment 14, issued on October 2, 2012.

1 Management Organization and Controls (88005)

1.1 Inspection Scope

The inspector evaluated the licensee's management organization and controls to ensure that the licensee was maintaining effective oversight of decommissioning activities.

1.2 Observations

The licensee's organizational requirements are provided in Figure 9-1 of the decommissioning plan. At the time of the inspection, site staffing consisted of the general manager/operations manager, one radiation protection technician, one maintenance worker, two laborers, and the part-time radiation safety officer. The general manager reported to the company president who routinely visits the site. Other than the increase by one laborer, there have been no changes in staffing since the last inspection. In summary, site staffing was in compliance with decommissioning plan requirements and the licensee had adequate staff to ensure continuation of shipping of WIP material and compliance with routine monitoring and maintenance as required by the license.

1.3 Conclusions

The inspector concluded that the licensee maintained site staffing in accordance with license and regulatory requirements.

2 Radiation Protection/Maintenance and Surveillance Testing (83822/88025)

2.1 Inspection Scope

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

2.2 Observations

The inspector reviewed a selection of daily, weekly, bi-weekly, monthly, quarterly, and annual area radiation surveys for the years 2013, 2014, and 2015. The radiation safety officer (RSO) determined survey frequencies based on prior history and ongoing work and posted a summary of required surveys in the laboratory for ease of reference for the radiological technician who conducted the surveys. The latest survey frequency matrix was dated January 28, 2015. Survey forms were complete and the location of measurements was specified on the form. Appropriate radiation and contamination surveys were observed to be posted in surveyed areas. The inspector also observed the conduct of surveys by the radiation technician and noted appropriate technique and procedural adherence. The inspector conducted a concurrent survey with a Rad Eye B20, Serial Number 096531, calibration due date of 9/24/2015 and noted similar results to those obtained by the site radiation technician. The inspector reviewed the database of portable radiation measurement instruments, selected instruments in the field, and noted that calibrations were current.

License SMB-911 states that equipment released from the site satisfy the limits provided in Regulatory Guide 1.86. Selected release forms for 2013 through 2015 were reviewed for items such as tools, equipment and departing vehicles and the inspector noted that release criteria were met. The inspector noted that the RSO also reviewed and approved release survey results.

The inspector noted that at the time of the inspection there was only one active Special Work Permit (SWP), Number 1863, titled, Pond 2 – WIP Package

Residue in Bags per Work Plan, which was approved by the operations manager on June 5, 2015 and the RSO on June 8, 2015. The SWP specified safety precautions and PPE along with general comments of conditions on the site. The inspector noted that all active site workers signed the SWP prior to the start of work governed by the permit.

The licensee discontinued the use of individual dosimeters for determining external dose at the end of 2007 based on historical results of minimal exposure and work that was underway at the time. The licensee's Radiation Safety Committee approved this action. An action level to support non-use of personnel dosimeters was set at 2000 micro-R per hour for any area surveys. The inspector noted and verified that typical general area levels are less than 20 micro-R per hour with higher levels found in locations where a large number of bags filled with WIP are located. Levels near bag are nominally in the 200-300 microR per hour. The inspector noted that for 2013, 2014 and 2015, the RSO issued a memorandum to file noting that operations had not changed and thus external dose monitoring would not be required.

The licensee has also discontinued the use of personnel lapel air samplers for the monitoring of internal dose. Justification of this action was based on a change in the technique used for bagging of WIP material, which eliminated concerns, related to the generation of high levels of dust. Also noted was that levels of exposure in 2011 and 2012 were on the order of 120-130 mrem per year for monitored individuals, well below the action level of 500 mrem and well below the regulatory limit of 5 rem per year.

The inspector reviewed the documentation of training for active site personnel for 2013, 2014 and 2015 to date of inspection. Training and qualification memos were issued by the RSO and general manager in 2014 for all current workers. All on-site personnel other than visitors are required to complete General Employee Training (GET) as described in Standard Operating Procedure G-005, Revision 1, with approval date of June 3, 2015. Levels of training are specified depending on duties of the individual. Any waiver of training requirements based on prior experience must be approved by the general manager. The GET procedure requires refresher training on an annual basis. Licensee records reflect the completion of annual refresher training in July 2015 by all active employees.

The inspector noted that training in Department of Transportation (DOT) requirements for individuals signing shipping paperwork as specified in 49 CFR 107.601, Subchapter C, Subpart H, had been completed in 2013, following the last on-site inspection. Training included Hazmat Transportation Security Awareness, Hazardous Materials Transportation Security, and 49 CFR, Part 172, Subpart I, Safety and Security Plans. The inspector noted that the site general manager was a registrant of the DOT as required by 49 CFR Part 107, Subpart G for the period September 16, 2013 through June 30, 2016. The general manager is the only party on-site allowed to sign the Bill of Lading for shipments of the WIP material to the Utah mill recovery site.

2.3 Conclusions

The licensee implemented its radiation protection program in compliance with requirements of 10 CFR Part 20 and 49 CFR Part 170. Occupational exposures were essentially at background levels, a small fraction of regulatory limits.

3 **Radioactive Waste Management/Low-level Radioactive Waste Storage and Transportation Activities (86850/84900/86740)**

3.1 Inspection Scope

During the inspection, the inspector reviewed the licensee's handling and storage of radioactive wastes to ensure compliance with license requirements.

3.2 Observations

The licensee continues to store bagged WIP material awaiting shipment at the Chem A, Chem C and thermite buildings on site. As of January 24, 2014, records indicated that the licensee stored 2752 bags of WIP material. Resumption of shipping efforts has reduced this inventory of previously bagged WIP material, also known as "old WIP material," to 977 bags as of July 30, 2015. The previously bagged "old" WIP material was stored in the thermite building (259 bags), the Chem C building (714 bags), and the Chem A building (4 bags). Newly excavated material from Pond 2 is bagged, weighed and grouped for placement in a DOT approved transport container and stored in Chem A. The licensee also continued to store about 7000 cubic yards of potentially contaminated soil. The soil was generated during construction of a groundwater intercept trench and is stored in a central location outside and under sheets of plastic. The licensee also stores approximately 68,000 tons of calcium fluoride material in other on-site ponds, numbered 5, 6, 7, 8, and 9. The potentially contaminated soil and calcium fluoride material will be transferred and/or disposed of in future phases of decommissioning.

Resumption of shipments of bagged WIP material is based on a transportation plan dated September 25, 2013. The inspector reviewed the plan and noted that activities at the site are in compliance with commitments in the plan. To ensure compliance with applicable NRC and DOT regulations, the licensee utilized a checklist. Documents supplied in the package indicated that the container had been inspected by the licensee and determined to be in compliance with DOT packaging requirements. Radiation/contamination survey data sheets were noted that verified compliance with applicable limits as outlined in 10 CFR 71.47. Emergency response information was supplied with all shipments. Required direct radiation and contamination surveys were conducted and results were acceptable for this shipment. The inspector observed the radiation protection technician conduct a survey of a shipment selected for review by the inspector and noted compliance with requirements. A vehicle inspection checklist was completed prior to approval for the vehicle to depart the site. A review of documents for shipments selected by the inspector for review indicated that license and regulatory requirements were met. Prior to departure, a signature by the site general manager, a registrant of DOT, is required that indicates that all documents associated with the shipment have been completed in accordance with licensee procedures and that the material is

packaged, characterized, classified, marked, labeled, placarded and transported in accordance with regulatory requirements of US NRC and the DOT.

During the period of the inspection, the licensee shipped a total of 11 DOT approved transport containers containing bagged WIP material to the mill site in Utah. The route of transport involves truck movement to the Port of Catoosa, Oklahoma, and rail transport from the Port of Catoosa to a terminal in Salt Lake City, Utah followed by truck transport to the mill site in Blanding, Utah. As the truck discharges a full container at the Port of Catoosa, it picks up an empty container and returns it to the Muskogee site. The inspector verified that there were 10 empty containers on-site and ready for loading with bagged WIP material.

3.3 Conclusions

The licensee's program for storage and transportation of solid waste material was found to be performed in accordance with license and regulatory requirements.

4 Environmental Protection (88045)

4.1 Inspection Scope

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

4.2 Observations and Findings

Requirements for control and sampling of liquid effluents are provided in Section 11.2 of the decommissioning plan. Plant wastewater is discharged through Outfall 001 while Outfalls 002, 003 and 004 are used for discharge of storm water runoff. All outfalls discharge to the Arkansas River. Selected data reviewed by the inspector indicated that the licensee collected water samples prior to and during wastewater releases and sampled storm water outfalls during rain events. The licensee compared sample results to action levels specified in the license. If the limits on gross alpha or gross beta concentration exceeded the action level, then the licensee issued a condition report (CR) for tracking purposes and forwarded the sample to the contract analysis laboratory for an isotopic analysis of the sample to determine if the release was reportable to the NRC. There were no releases that required a report to the NRC for the period June 2013 to the date of inspection.

On March 26, 2013, the State of Oklahoma, Department of Environmental Quality (OKDEQ) issued a consent order to FMRI that would have required either installation of a synthetic liner or the closure of Ponds 6, designated as F01 in the Order, and Pond 7, designated as F02 in the Order. The Consent Order required that FMRI develop a sampling plan, complete the sampling plan with affidavit, and develop an engineering report and schedule to either close or line F01 and F02. However, the Order allowed FMRI time to attain compliance. As part of the permit renewal process, calculations were made to verify the classification of the waste water and based on these calculations, OKDEQ determined that the waste water could be reclassified. Based on the reclassification, Ponds 6 and 7 would

not have to be equipped with a synthetic liner. The consent order was closed. OKDEQ issued OPDES Permit No OK0001643 on May 22, 2015, with an effective date of July 1, 2015, and an expiration date of June 30, 2020.

The licensee sampled airborne radioactivity at six locations, four perimeter stations, one background station, and one off-site station. The licensee continuously collected airborne particulates at these six locations and analyzed the samples for gross alpha concentrations on a weekly basis. Based on the licensee's 2013 (3rd and 4th quarter), 2014 and 2015 (1st and 2nd quarter) data, samples were a small fraction of the administrative action level of 3E-14 micro-Curies per milliliter. Radon sampling was conducted on a quarterly frequency at eight locations including the environmental stations. Elevated measurements were identified in the Chem A and Pond 2 locations, as would be expected due to the higher amounts of WIP present in these locations, but levels remained below 10 pico-Curies/liter.

FMRI has a series of 19 wells and four sumps used to monitor the groundwater at the site. If any samples from these locations exceeded action limits on gross alpha of 15 pico-Curies per liter or gross beta of 50 pico-Curies per liter, the licensee issued a CR and sent the sample for analysis by a contract laboratory. FMRI established an administrative limit of 25 percent and an action limit of fifty percent of the isotopic concentrations for release to an unrestricted area as listed in 10 CFR Part 20, Appendix B, Table II. In 2013, five CRs were issued and all were closed at the time of inspection. For 2014, there were a total of 8 CRs issued and these reports were also closed at the time of the inspection. So far, in 2015, there have been 5 CRs issued and only one report remains open, awaiting isotopic analysis results from the laboratory. The inspector reviewed the licensee's sample results for 2013-2015. The licensee collected all required samples and conducted an isotopic analysis when action levels were exceeded. There were no releases that required reporting to NRC.

4.3 Conclusions

The licensee conducted environmental monitoring in accordance with license requirements.

5 **Emergency Preparedness/Fire Protection (88050/88055)**

5.1 Inspection Scope

The inspector reviewed the licensee's emergency preparedness program to ensure that the program was being maintained in compliance with license and regulatory requirements. The inspector also reviewed the organization, equipment, and controls to implement the fire protection program.

5.2 Observations and Findings

The inspector reviewed the only Emergency Procedure in use, General Emergency Response, EP-100. This procedure is required to be reviewed every 24 months and was last reviewed by the RSO in June 2015. The emergency response procedure indicates that no process lines are currently in operation.

Section 3.0 of the procedure included information on characteristics of the hazardous materials present on site and indicated the location of the materials. The location of emergency response equipment such as fire extinguishers and spill kits were provided in Attachment 1 of the procedure. Attachment 2 of the procedure contained emergency contact information and the inspector noted that the information was current.

The inspector reviewed equipment supporting fire protection at the site. The listing of fire extinguishers that is maintained by the licensee staff was reviewed. The inspector noticed that the listing indicated that the last annual inspection was conducted in June 2013. When the inspector discussed this with the licensee, the licensee stated that the required annual inspections had been completed. The licensee provided copies of invoices submitted by a certified inspector for 2013, 2014 and 2015 inspections. The licensee stated that the form utilized was in error and corrected the form while the inspector was on-site to indicate conduct of the last annual inspection in June 2015. During site tours, the inspector verified the inspection date to be June 2015 on selected fire extinguishers and found their location to be consistent with the location listed on the licensee's form.

5.3 Conclusions

The licensee had emergency response and fire protection programs in effect that were appropriate for the current mode of plant operation.

6 **Exit Meeting**

The inspector reviewed the scope and findings of the inspection during the exit meeting conducted at the conclusion of the on-site inspection of August 6, 2015. The licensee did not identify as proprietary any information provided to or reviewed by the inspector.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

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R. Compermolle, President, FMRI
T. Lawrence, Radiation Technician
R. Miller, Radiation Safety Officer, Omega Project Services

State of Oklahoma, Department of Environmental Quality

L. McCaskill, Environmental Programs Specialist

INSPECTION PROCEDURES (IP) USED

IP 83822	Radiation Protection
IP 84850	Radioactive Waste Management
IP 84900	Low Level Waste Storage
IP 86740	Inspection of Transportation Activities
IP 88005	Management Organization and Controls
IP 88025	Maintenance and Surveillance Testing
IP 88045	Environmental Protection
IP 88050	Emergency Preparedness
IP 88055	Fire Protection

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
CR	Condition Report
CFR	<i>Code of Federal Regulations</i>
DOT	Department of Transportation
GET	General Employee Training
IP	NRC Inspection Procedure
NRC	U.S. Nuclear Regulatory Commission
OKDEQ	Oklahoma Department of Environmental Quality
RSO	Radiation Safety Officer
SWP	Special Work Permit
WIP	Work In Progress