UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 17, 2017

Mr. Dana Stalcup, Director
Division of Assessment and Remediation
Office of Superfund Remediation
and Technology Innovation
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Mail Code: 5204P
Washington, DC 20460

SUBJECT: CONSULTATION ON THE DECOMMISSIONING OF THE FANSTEEL SITE IN MUSKOGEE, OKLAHOMA

Dear Mr. Stalcup:

This letter notifies you of the decommissioning oversight actions that the U.S. Nuclear Regulatory Commission (NRC) has taken and intends to take, for the Fansteel Site in Muskogee, Oklahoma.

On October 9, 2002, the NRC and the U.S. Environmental Protection Agency (EPA) entered into a Memorandum of Understanding (MOU) on "Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites." Under the MOU, EPA agreed to continue its deferral policy of not listing sites on the Comprehensive Environmental Response, Compensation, and Liability Act's National Priorities List that are subject to NRC's licensing authority. The MOU provides that, unless an NRC-licensed site exceeds any of the three trigger criteria contained in the MOU, EPA agrees to a policy of deferral to NRC decision-making on decommissioning without the need for consultation.

For sites that trigger the criteria in the MOU, NRC will consult with EPA at two points in the decommissioning process: (1) prior to NRC approval of the license termination plan (LTP) or decommissioning plan (DP), which the NRC terms Level 1 consultation; and (2) following completion of the Final Status Survey (FSS), which the NRC terms Level 2 consultation.

We are sending this letter as our Level 1 consultation for the Fansteel site, because the licensee's proposed derived concentration limits (CLs) for certain radionuclides for this site exceed the groundwater concentration values in 40 CFR 141.66, which is one of the three MOU criteria for consultation.

The facility, located in east-central Oklahoma, was owned and operated by Fansteel Inc. (Fansteel), and from 1957–1989 produced tantalum and columbium metals from ores and tin slags (a byproduct of ore smelting). Tantalum metal is mainly used in the electrical/electronics industry for production of tantalum capacitors. Columbium oxide is used for heat-resistant alloys. The facility extracted tantalum and columbium from uranium ore, thorium ore, and tin slag feedstock by using an acid digestion process. The digestion process did not specifically extract the uranium and thorium from the ore but did concentrate the naturally occurring

radionuclides sufficient to require the facility operate under a source materials license. FMRI, Inc., the current NRC licensee, is a wholly owned subsidiary of Fansteel and was formed in 2004 as part of the Fansteel bankruptcy settlement and reorganization, for the sole purpose of decommissioning the site.

The site is on 52 ha [110 ac] located along the Arkansas River (Mile 395). It is about 4 km [2.5 mi] northeast of Muskogee, Oklahoma, and 66 km [41 mi] southeast of Tulsa, Oklahoma. The site is in an area zoned for industrial use. There are 15 structures on the site that are used for processing and administration. Buildings associated with the ore-processing activities include the Chemical “C” building, the Chemical “A” building, and the research and development laboratory building. Other important facilities on the site are the groundwater treatment facility, the ore storage pad, and the chemical equipment room. Nine ponds were built for site operations. Ponds 1 and 4 have been closed; Ponds 2 and 3, that contain radioactive process residue, have been partially remediated. The remaining ponds contain process waste contaminated primarily with chemical materials although some radiological contamination is also known to be present.

Following cleanup activities in 1996, NRC released 14 ha [35 ac] in the northwest portion of the site for unrestricted use. In 1997, the license was amended so that ore, calcium fluoride, and wastewater treatment residues containing uranium and thorium in various site impoundments could be reprocessed and reduced in volume. Fansteel also planned to decommission the site for restricted use in accordance with 10 CFR 20.1403, with plans to place the residue of the reprocessing operations in an on-site cell. From 1999–2001, a new chemical extraction process was implemented. In late 2001, Fansteel suspended all operations because of process difficulties and a decline in the price of tantalum, and stated it would remediate the site for release for unrestricted use.

In January 2002, Fansteel filed for bankruptcy protection under Chapter 11. Later in 2002, Fansteel applied for a license renewal but NRC denied the renewal application because the required decommissioning financial assurance was not provided. In January 2003, Fansteel submitted a DP that NRC rejected. Following several discussions, in July 2003 Fansteel submitted a revised DP, a request for exemption from financial assurance requirements, and authorization to transfer the license to a subsidiary (FMRI, Inc.) as part of the bankruptcy reorganization plan. While the NRC approved the submitted DP, it noted several deficiencies including the specific criteria to which the site was to be remediated. These deficiencies were addressed by the NRC in license conditions, and later conditions in a Forbearance Agreement, which FMRI had to resolve.

FMRI has been working with the NRC since December 2015 to establish acceptable derived concentration guideline levels (DCGLs) for the site. The NRC anticipates considering the latest submittal to be partially acceptable. Specifically, the CLs proposed for groundwater and the surfaces of structures and equipment have been reviewed and NRC staff considers these limits adequate even though acceptable DCGLs for soil and sediments are lacking at this time. Complicating this situation, Fansteel again filed for bankruptcy in September 2016 and there is considerable uncertainty with regards to how the decommissioning of the site may be affected as a reorganization plan is developed. FMRI is funded almost exclusively through financial assurance instruments established by Fansteel as part of the first bankruptcy.

The CLs, which the staff anticipates approving, are provided in the enclosure. Prior to the NRC's termination of the license, the licensee must show that the FMRI site will be in compliance with the NRC's criteria in 10 CFR 20.1402. The criteria in 10 CFR 20.1402 provide that the licensee must demonstrate (e.g., through the FSS) that the residual radioactivity that is distinguishable from background radiation results in an all-pathways total effective dose equivalent to an average member of the critical group that does not exceed 0.25 millisieverts per year (25 millirem per year). In addition, the 10 CFR 20.1402 criteria require that the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). The dose criteria in 10 CFR 20.1402 are fully protective of the public health and safety, and were the result of a comprehensive rulemaking (62 FR 39058; July 21, 1997), including an accompanying generic environmental impact statement.

Individuals at a decommissioned site are expected to receive doses substantially below the constraint level because of the application of the ALARA principle, conservative dose modeling assumptions, and the nature of the cleanup process itself, which often reduces residual contamination levels significantly below site DCGLs. The DCGLs in the FMRI submittals represent the maximum levels for each radionuclide without considering the existence of other radionuclides. Thus, in applying the sum of the fraction requirement, the actual cleanup values will be reduced to ensure that the potential dose from all residual radioactivity at the site from all media is less than 25 millirem per year.

In accordance with the MOU, the NRC is requesting EPA's views on the CLs at the Fansteel site. To help expedite this Level 1 consultation, NRC staff is available to meet with you and your staff to present our technical findings in greater detail. We believe such a meeting can provide you with additional details concerning FMRI's decommissioning and answer any questions that you or your staff may have.

Should FMRI's soil and sediment DCGLs exceed the MOU trigger levels, the NRC will again contact the EPA for consultation consistent with the MOU. Following site remediation activities, the licensee will submit a FSS report. The NRC staff will review information contained in this survey report and will compare the remaining levels of residual radioactivity to the MOU trigger levels. If the FSS measurements show that the remaining radionuclide concentrations are below the values set forth in Table 1 of the MOU, then the NRC will proceed to terminate the FMRI license and the site will be released for unrestricted use. The NRC will inform the EPA of such findings. If the FSS measurements show that any of the remaining radionuclide concentrations are above the values set forth in Table 1 of the MOU, then the NRC will engage in Level 2 consultation with the EPA to identify and resolve any remaining issues.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions regarding this letter or the remediation activities at the FMRI site please contact Mr. Theodore Smith, Acting Chief, Materials Decommissioning Branch, Division of Decommissioning, Uranium Recovery and Waste Programs, Office of Nuclear Materials Safety and Safeguards, at (301) 415-6721 or Mr. Gregory Chapman, Project Manager, at (301) 415-8718.

Sincerely,

/RA/

John R. Tappert, Director
Division of Decommissioning,
Uranium Recovery, and Waste Programs
Office of Nuclear Material
Safety and Safeguards

Docket No.: 40-7580
License No.: SMB-911

Enclosure:
FMRI Proposed Groundwater Concentration Limits (CLs)

cc: Molly Marsh, NRC/OGC
Pam Dizikes, Oklahoma Department of
Environmental Quality
Richard Gladstein, Department of Justice

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OFFICE	OGC	DUWP
NAME	MMarsh	JTappert
DATE	2/23/17	3/17/17

OFFICIAL RECORD COPY

FMRI Proposed Groundwater Concentration Limits (CLs) (pCi/L)

Radionuclide and Progeny	**Concentration Limit (pCi/L)***	**EPA MCL (pCi/L)**
U-238 (Th-234, Pa-234m, Pa-234)	372	20.3**
U-234	353	20.3**
U-235 (Th-231)	375	20.3**
Pa-231	9.43	4 mrem
Ac-227 (Th-227 to stable Pb-207)	6.76	4 mrem
Th-232	36.6	15
Th-230	182	15
Th-228 (Ra-224 to stable Pb-208)	124	15
Ra-226 (Rn-222 to Po-210)	75.2	5
Ra-228 (Ac-228)	69.4	5
Pb-210 (Bi-210 to stable Pb-206)	18.6	4 mrem

*Groundwater concentrations that each result in a projected dose of 25 mrem/yr from drinking water ingestion in an industrial/commercial land use scenario.

**Actual MCL is 30 µg/L Uranium. 20.3 pCi/L is derived assuming a specific activity of 0.677 µCi/g for natural uranium.

Enclosure