

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee 1. Fansteel, Inc. 2. Number One Tantalum Place North Chicago, Illinois 60064	3. License Number SMB-911, Amendment-911 4. Expiration Date September 30, 2002 5. Docket No. 40-7580 Reference No.
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6. Byproduct Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum amount that Licensee May Possess at Any One Time Under This License
Natural uranium and thorium	Any	400 tons as elemental uranium and thorium
A. Natural Uranium	A. Tin slags, ores, concentrates, process residues, and uranium oxides	A. 43,000 kg uranium
B. Natural Thorium	B. Tin slags, ores, concentrates, process residues, and thorium hydroxide	B. 71,000 kg thorium
C. Natural Uranium	C. As a contaminant in soil and sediment	C. 4,000 kg uranium
D. Natural Thorium	D. As a contaminant in soil and sediment	D. 2,500 kg thorium

9. Authorized place of use: The licensee's existing facilities at Muskogee, Oklahoma. ~~The portion of the Fansteel Property identified as the Northwest Property in Figure 2, Dwg. No. 0111210, of the licensee's Additional Radiation Survey Activities Report dated December 1995, and as defined by the legal description provided thereon, is released from the restrictions of this license. This release is based on the statements and representations made in the application dated July 8, 1993, and supplements dated December 28, 1993; May 24, July 27, and December 1, 1994; December 18, 1995; and March 16, 1996.~~, as described in the submittal of January 14, 2003.

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10. Authorized use: For use activities related to decommissioning and characterization of contaminated facilities, equipment, and land, and maintenance of control over licensed materials in accordance with statements, representations, and conditions contained in Part I (Chapters 1 through 5) of the application submitted by letter dated ~~May 10, 1999~~, January 14, 2003, and supplemented by letters dated ~~February 3, May 17, July 7, 1999, January 25, 2000, and March 5, 2002~~, May 8, 2003, and July 24, 2003.
11. Deleted by Amendment 4, dated March 1999.
12. The licensee shall have a qualified Plant Radiation Safety Officer (PRSO) on site for all licensed activities.
13. Deleted by Amendment 2, dated February 1999.
14. The minutes of the Radiation Safety Committee meeting shall be submitted, as a minimum, to the Committee members.
15. Deleted by Amendment 2, dated February 1999.
16. Deleted by Amendment 5, dated May 1999.
17. Deleted by Amendment 2, dated February 1999.
18. Deleted by Amendment 4, dated March 1999.
19. Deleted by Amendment 4, dated March 1999.
20. Deleted by Amendment 6, dated August 1999.
21. ~~The license shall review the decommissioning cost estimate by June 25, 2002, and thereafter at intervals not to exceed thirteen (13) months. The estimate shall be adjusted to reflect the current appraisal of waste volumes, costs, and disposal methods. Financial instruments to assure the cost estimate shall also be updated to reflect changes in this amount, if the amount increases by more than 1 percent.~~ Deleted by Amendment 11, dated November **, 2003.
22. Deleted by Amendment 6, dated August 1999.
23. Deleted by Amendment 2, dated February 1999.
24. ~~The licensee shall notify all recipients of solid products/waste of the concentration of radionuclides in each batch transferred.~~ Deleted by Amendment 11, dated November **, 2003.
25. All source material stored outside of the process buildings at the Fansteel facility (other than material contained in the ponds and as contaminants in soils and sediments) shall be placed on raised pallets on a concrete pad. The area shall be sheltered by a roof and shall be surrounded by a concrete berm for containment.

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26. Remediation and decommissioning activities at the Muskogee facility shall be performed in accordance with the decommissioning plan and supplemental correspondence submitted by letter dated June 16, 1999 and supplemented by letters dated July 16, 1999, and November 9, 2000. January 24, 2003, and supplemented by letters dated May 8, 2003, and July 24, 2003.

27. The licensee shall use the following criteria for release for unrestricted use:

~~Groundwater activity:~~

- ~~30 pCi/L of uranium (U-238, U-235, and U-234) and~~
- ~~15 pCi/L adjusted gross alpha (gross alpha excluding radium-226 and uranium);~~

~~Soil activity:~~

- ~~10 pCi/g from any combination of natural uranium and thorium;~~

~~Exposure rate from soil:~~

- ~~10 micro-roentgen (μ R) per hour (hr) above background at one meter (m) from the surface averaged over a 100 m² grid, where the maximum may not exceed 20 μ R/hr;~~

~~Activity on equipment and structure surfaces:~~

~~Surfaces are to be cleaned to the release limits for natural thorium:~~

- ~~1,000 dpm per 100 cm² alpha radioactivity, total;~~
- ~~200 dpm per 100 cm² alpha radioactivity, removable;~~
- ~~3,000 dpm per 100 cm² alpha radioactivity, maximum over 100 cm²;~~
- ~~5,000 dpm per 100 cm² beta gamma radioactivity, total;~~
- ~~1,000 dpm per 100 cm² beta gamma radioactivity, removable; and~~
- ~~15,000 dpm per 100 cm² beta gamma radioactivity, maximum over 100 cm²;~~

~~For surfaces contaminated with natural uranium and thorium that cannot be cleaned to the thorium release limit, the sum of uranium and thorium activity fractions may not exceed 1 (as defined by the unity rule in Section 4.2 of the Decommissioning Plan submitted by letter dated June 16, 1999), where uranium activity values are as follows:~~

- ~~5,000 dpm per 100 cm² alpha radioactivity, total;~~
- ~~1,000 dpm per 100 cm² alpha radioactivity, removable;~~
- ~~15,000 dpm per 100 cm² alpha radioactivity, maximum over 100 cm²;~~
- ~~5,000 dpm per 100 cm² beta gamma radioactivity, total;~~
- ~~1,000 dpm per 100 cm² beta gamma radioactivity, removable; and~~
- ~~15,000 dpm per 100 cm² beta gamma radioactivity, maximum over 100 cm²;~~

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Exposure rate from building surfaces:

5 μ R/hr above background at 1 m from the surface averaged over area not to exceed 10 m²
Deleted by Amendment 11, dated November **, 2003.

28. The licensee shall conduct a final survey and sampling program to ensure that residual contamination meets the unrestricted use criteria in this license. Buildings, equipment, and outdoor areas shall be surveyed in accordance with NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination."
- a.) Soil and soil-like materials with elevated activities exceeding the unrestricted use criteria shall be investigated to determine compliance with the averaging criteria of NUREG/CR-5849. These criteria address averaging concentrations over any 100 m² (A) and use the (100/A)^{1/2}-elevated area method.
- b.) Radioactivity levels shall not exceed the averaging criteria in NUREG/CR-5849. Radioactively contaminated material that exceeds the averaging criteria defined in NUREG/CR-5849 shall be removed and transferred to a licensed, low-level radioactive waste disposal facility. Deleted by Amendment 11, dated November **, 2003.
29. In accordance with provisions of 10 CFR 40.42(g)(4)(i) Licensee shall, not later than May 31, 2004, provide a physical description - dimensions, types of liners, etc. - of Pond 1, Pond 1S and 1N, and Pond 4, the time during which each [of] the ponds were used, what process-related materials and how much was placed in each of the ponds, and how and where those materials were disposed when the ponds were closed.
30. At the time Ponds 2 and 3 are emptied, Licensee shall undertake to excavate and dispose of any identified WIP material that migrated from the ponds For the purpose of this paragraph, WIP that migrated from ponds 2 and 3 shall be defined as material that exhibits the same physical characteristics as the sludge-like material contained in the ponds.
31. Licensee shall conduct an additional characterization of any additional contaminants at the site, as contemplated by Section III.E.4.(c) ii. of Fansteel's Plan of Reorganization, VI.C.5.a of the Reorganization Plan of Fansteel. Inc., et al of September 18, 2003, including: all soils, buildings and groundwater on the site, using guidance in NUREG-1757, Vol. 2. Upon agreement by NRC that any additional contamination is adequately characterized, Licensee shall identify the cost to remediate all contamination identified in this study. Work shall be performed according to the following schedule:
- a. Submit a site characterization plan not later than February 28, 2011.
- b. Submit a site characterization report (SCR) not later than December 29, 2011.
- c. Develop detailed work plans to be submitted with the SCR, including cost and schedule, for any additional work identified in the SCR.
32. The licensee shall not have a removable fraction of residual radioactivity on any specific building surface that exceeds 3%.
33. Before release of any equipment, Licensee shall characterize all surfaces, interior and exterior, and shall remediate all contaminated equipment to the limits of RG 1.86.

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34. Licensee shall verify the conditions used in its dose analyses (secular equilibrium, ratio of decay chains, etc.) for each area of remediation not later than the date of submission of the FSSR for Phases 3 and 4.
35. Licensee shall remediate the site to residual radioactive levels to ensure that exposure to residual radiation in all media from applicable pathways will not result in a dose exceeding 25 mrem/y, as specified in 10 CFR 20.1402. Licensee will establish remediation levels (DCGLs) as part of the Phase 3 Workplan, approved by NRC, that demonstrate the 25 mrem/y dose limit will not be exceeded.
36. Licensee shall use the sum of fractions rule, as shown below, to fraction the concentration when multiple radionuclides are present so that the total dose will not exceed 25 mrem/y.
- $$\sum_{i=1}^N \frac{Conc_i}{DCGL_i} \leq 1$$
- where:
- Conc_i ≡ concentration of radionuclide i
- DCGL_i ≡ derived concentration guideline level for radionuclide i
- N ≡ total number of radionuclides
37. In accordance with 10 CFR 40.42(g)(4)(ii), Licensee shall provide to NRC the following detailed plans, including work to be performed by contractors and the qualifications of all contractors, for remediating contamination at the site identified in the July 24, 2003 DP:
- WIP (Phase 1) not later than August 2, 2004.
 - CaF (Phase 2) not later than January 2, 2007.
 - all contaminated soil, buildings and equipment not later than August 1, 2011.
 - groundwater remediation (Phase 4) not later than January 5, 2012.
38. Licensee shall obtain NRC approval of survey and sampling methods prior to reuse of any materials. NRC will be notified 30 days before the survey is performed. NRC or its contractor will be given the opportunity to observe the licensee's survey and perform an independent confirmatory survey. NRC will review the results to determine if the material meets release criteria.
39. Licensee shall, prior to application for license termination or any partial site release, describe the nature of the permanent surface water and E&S controls identified in §8.3.2.6 of the DP, and why they are consistent with the unrestricted release criteria of 10 CFR 20.1402.
40. Licensee shall update the DP not later than December 31, 2003 to describe current activities to remediate radioactive contamination in groundwater.
41. Licensee shall develop a method not later than January 15, 2012, to be approved by NRC, to demonstrate compliance with radioactive release criteria for groundwater.
42. Licensee shall update Figure 8-3 of the January, 2003 DP submittal annually, and submit the revised

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figure to NRC not later than January 15 of each year until license termination.

43. FMRI shall submit, by March 31st of each year, an accounting of expenses that shall include:
- the same line items as provided in Table 15-11 of the Decommissioning Plan,
 - the amount spent on each line item during the reporting period,
 - the cumulative amount spent for each line item through the end of the reporting period,
 - identification of variances (both positive and negative) between the planned expense and the actual expense for each line item during the reporting period,
 - an explanation of the reasons for variances that exceed 5% of the planned expense for a line item during the reporting period,
 - a comparison of the cost of work remaining to the funding remaining under the assurances provided to the NRC, where
 - the cost of work remaining must be determined by estimating the amount and cost of labor, materials, services, etc., required to complete the work, and not by simply subtracting the cost of work performed from the amount budgeted for decommissioning, and
 - if the cost of remaining activities exceeds the remaining amounts assured to the NRC, then the accounting, to the extent possible, must include a detailed plan to adjust the work plan to the available funding.
 - all expenses not covered by the line items of Table 15-11, if any, and an explanation of the reason for such expenses
44. FMRI shall submit, by March 31st of each year, an accounting of income from Reorganized Fansteel that shall include amounts paid to FMRI:
- annual mandatory prepayments,
 - minimum semi-annual payment,
 - additional annual prepayment (1) insurance proceeds, and (2) reorganized debtor asset sale proceeds,
 - payments under the secondary promissory note,
 - payments under the contingent promissory note, and
 - any other payments received.
45. FMRI shall submit, by March 31st of each year, updated versions of Tables 15-11 and 15-12, showing actual figures for previous periods, and updated projections using current information.
46. FMRI shall maintain, for inspection at its facility, monthly updates of its accounting of expenses and income.
47. FMRI shall provide annual financial statements of FMRI and Reorganized Fansteel to NRC within 30 days of the issuance of such statements.
48. If any payment due to FMRI under the Notes from Reorganized Fansteel has not been paid on the date it is due, and if such payment default is not cured within three working days following the due date, FMRI shall, within three additional working days, notify Reorganized Fansteel in writing, initiate appropriate action to collect the payment, and notify the NRC in writing of the late payment and the actions initiated to collect the payments below:
- Payment Due Date Under Primary Promissory Note
 - April 10 - annual mandatory prepayments
 - June 30 - first minimum semi-annual payment

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- iii. December 31 - second minimum semi-annual payment
- b. Payment Due Date under the Primary Promissory Note for additional annual prepayment (insurance proceeds and reorganized debtor asset sale proceeds), if any, within 30 days after receipt by Reorganized Fansteel
- c. Payment Due Date for Secondary Promissory Note by January 1 of each year, commencing in 2009
- d. Payment Due Date under the Contingent Promissory Note as determined at the time the principal amount of the note is established
49. FMRI shall, up to the amount available from the payments or proceeds identified below, replenish any withdrawal from the Decommissioning Trust Fund within 30 days of receipt of any payments or proceeds intended to provide for replenishment, as provided in the Decommissioning Plan or the terms and conditions of the Joint Reorganization Plan as approved the United States Bankruptcy Court.
50. Licensee shall provide to NRC not later than August 2, 2004 the experience and education requirements for the HPS [Health Physics Supervisor], the CS [Construction Supervisor], and the QCO [Quality Control Officer].
51. Not later than August 2, 2004, Licensee shall define changes to the FSSP [Final Status Survey Plan] that may be made without prior approval of NRC.
52. Not later than August 1, 2004, Licensee shall make available at the site for review by NRC a revised RWMP and QA Plan, for Phase 1 of decommissioning activities. Thereafter, Fansteel shall update and have available at the site the RHSP, EMP, RWMP and QA Plan prior to the beginning of each phase of decommissioning.
53. Licensee shall conduct the following final status surveys and submit reports to NRC to demonstrate compliance with decommissioning criteria. NRC will be notified 30 days before a survey is performed, and NRC or its contractor will be given the opportunity to observe the licensee's survey and perform an independent confirmatory survey. If NRC does not approve a survey, additional remediation and resurvey shall be promptly conducted.
- a. Immediately following completion of remediation of all soils, buildings and equipment, but not later than 9 months after approval of the FSSP, Licensee shall conduct a final status survey of all areas remediated and submit a Phase 3 FSSR
- b. Immediately following completion of remediation of the groundwater, Licensee shall conduct a final status survey of site groundwater and submit a Phase 4 FSSR.

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- 54. Not later than February 28, 2011, Licensee shall submit, applicable FSSPs for Phases 3 and 4, for prior NRC approval, which shall include measures to evaluate volumetric, subsurface, and groundwater contamination that are beyond the scope of MARSSIM (NUREG-1575, Table 1.1)

FOR THE NUCLEAR REGULATORY COMMISSION

Date: *****

By: Daniel M. Gillen, Chief
 Decommissioning Branch
 Division of Waste Management
 Office of Nuclear Materials Safety
 and Safeguards



