

December 17, 1996

Mr. John J. Hunter, Corporate Manager of
Process Engineering and Facilities
Construction
Fansteel, Inc.
Number Ten Tantalum Place
Muskogee, Oklahoma 74401

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR LICENSE SMB-911 RENEWAL (TAC NO.
L30705)

Dear Mr. Hunter:

This refers to your application dated June 20, 1994, requesting renewal of
Materials License SMB-911.

Our review of your application has identified additional information that is
needed before final action can be taken on your request. The additional
information, specified in the enclosure, should be provided within 30 days of
the date of this letter. Please reference the above TAC No. in future
correspondence related to this request.

If you have any questions regarding this matter, please contact me at
(301) 415-8102.

Sincerely,

Susan D. Chotoo

Susan Chotoo
Licensing Section 2
Licensing Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

Docket 40-7580
License SMB-911

NIF03/1

Enclosure: As stated

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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Docket 40-7580
License SMB-911

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cc w/encls: See next page

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Tulsa, OK 74121-0061

REQUEST FOR ADDITIONAL INFORMATION
FANSTEEL, INC., SOURCE MATERIAL LICENSE SMB-911
DOCKET 40-7580

GENERAL

1. Provide a copy of the report entitled "Facility Background and Operating Data" (1995).
2. Provide a copy of the report entitled "On-Site Contamination of Affected Soils and Groundwater Recovery and Treatment System" (February 1996).
3. Describe changes in land use or in area industries that have occurred since submittal of the license renewal application.
4. Are there any buried drums on site? (Refer to Section 2.4 of the Remedial Assessment). If so, how many drums were buried, what did the drums contain, and where were they buried?
5. Provide an estimate of the annual average volume of non-contaminated waste for the next 5 years and identify expected disposal locations.
6. Provide copies of the D&D Plan Figures 2, 3 (updated version of Drawing 1748474A), 4, 5, and 6 and of Drawing 1748406.

ENVIRONMENTAL

1. Per D&D Plan Appendix A, Section 2.2.4.1, what sources other than Fansteel operations may have contributed to radioactivity in groundwater?
2. Has there ever been flooding at the site? If so, provide flood levels, rates, and time of occurrence.
3. Per Remedial Assessment Section 3.3.1, was bedrock removed when the french drain was installed at Pond 3?
4. Confirm that the nearest resident is located "on the west side of State Highway 165, approximately 1/4 mile from buildings on site" (Environmental Report Section 3.4.2). If not, identify the location for the nearest resident.
5. What sources supply drinking water for area residents and the facility? Include groundwater and surface water sources.
6. What is the location of the nearest downstream municipal water intake on the Arkansas River?
7. Provide a copy of the current atmospheric release permits.

ENCLOSURE 1

8. Provide an estimate of the annual average release of fluoride to the atmosphere for the WIP processing period. Describe effluent controls and monitors for the fluoride releases.

WORK IN PROGRESS (WIP) OPERATIONS

1. Provide a brief, non-proprietary description of WIP operations including changes since the June 1995 license amendment application.
2. Provide a summary of estimates of annual release rates of radioactive material to the atmosphere and surface waters from WIP operations for five years.
3. Provide estimates of the amounts of product streams containing radioactive material and radiologically contaminated solid residues produced in WIP processing for five years. Provide estimates of the concentrations of radioactive material in each of these streams.
4. Provide non-proprietary descriptions of atmospheric emission clean-up or control systems used in WIP operations.
5. Provide a copy of the NPDES permit expected to be in place for WIP operations.
6. Provide a non-proprietary version of a water balance for expected operations. Include the distribution of uses including D&D, site clean-up, sanitary, non-contact cooling, and process waters. Identify sources including city water, well and river water and groundwater.

SOIL REMOVAL AND SOLIDIFICATION AND D&D

1. Provide estimates of affected areas, depths of excavation, and average uranium and thorium content for each of the 11 contaminated areas presently projected for remediation. Provide an updated version of Tables 5-3a and 5-3b of Appendix A (Technical Report Feasibility Study) of Vol. 1 of the D&D Plan. Verify that the level of radiological contamination data presented in this table refers to the sum of levels of uranium-234, -235, and -238 and thorium-228 and -232.
2. Provide a list which correlates soil sampling locations with the 11 contaminated soil areas.
3. Identify excavation techniques and types of equipment that are planned for use in removal and movement of contaminated soil. Describe planned fugitive dust control measures. Provide estimates of the number of pieces of each type of equipment and of the amount of time of use of each piece of equipment in remediation of the 11 areas. What is the planned sequence of clean-up for the 11 areas?
4. Where will the soil stockpile and soil stabilization equipment be located?

5. Describe soil preparation (e.g., crushing and sizing) and solidification equipment that will be used to prepare the stabilized waste form. Provide a block diagram of the stabilization process which identifies inlet and outlet streams and major processing steps.
6. Provide estimates of emission rates and radiological characteristics for soil stabilization plant gaseous and liquid effluent. Describe control measures for these effluent streams.
7. List the categories, annual average volumes, and radiological characteristics of operational and D&D wastes expected to be generated during the next five years.
8. Describe D&D activities other than WIP processing and contaminated soil stabilization planned for the WIP operational period. Identify specific areas and clean-up actions. Specify gaseous and liquid effluent rates and radiological characteristics for these D&D activities.
9. What criteria were applied to determine that samples were significantly above background as described in Remedial Assessment Section 2.13, paragraph 4?
10. Identify representative locations for the upwind and downwind air samples to be collected during D&D activities. What constituents will be monitored? What are the action levels and what actions will be taken if these levels are exceeded?

DISPOSAL CELL CHARACTERISTICS

1. Describe the differing categories of material (e.g., soil, clay liners, etc.) planned for emplacement in the containment cell and provide estimates of volumes and radiological characteristics of each category.
2. Provide estimates of the expected and maximum dimensions and waste volumes for the containment cell.
3. Provide estimates of the water-to-cement, soil-to-cement, and flyash-to-cement weight ratios for the proposed waste form. Use dry cement weight prior to mixing as the basis for the ratios.
4. Provide experimental data or literature references supporting use of the waste form permeability cited in Section 4.2 (p. 4-5) of the D&D Plan Addendum No. 1.
5. What is the present vertical hydraulic gradient in the vicinity of the containment cell?
6. How rapidly do groundwater levels fluctuate in response to rainfall?

7. Well data presented in D&D Plan Addendum No. 1, Appendix B and summarized in D&D Plan Addendum No. 1, Figure 7 indicate that near surface soils comprise an upper silty clay layer and a lower, relatively thinner sand layer. Is this interpretation consistent with borehole data, measured hydraulic conductivities, and the location of the near-surface aquifer water table at a depth of 15 feet? Why would it not be possible to complete a well in the coarse material described as present at the base of the upper aquifer?
8. Section 3.5.2 of the 1994 Environmental Report states that wells developed in the shallow alluvial aquifer have yields ranging from 20 to 400 gallons per minute. Reconcile this data with the dose assessment model assumptions (D&D Plan Addendum No. 1, pps. 4-7 and -8) that the on-site well intake is conservatively located 100 feet below the water table and that the unsaturated zone thickness is 3.35 meters. Identify the aquifer, near-surface or deeper shale, to which this well take-off point is referenced.
9. Section 3.5.2 of the Environmental Report states that the near-surface aquifer hydraulic conductivity ranges from $3.12\text{E-}3$ to $1.32\text{E-}2$ cm/s while the dose assessment (D&D Plan Addendum No. 1, p. 4-8) proposes $1.01\text{E-}4$ cm/s (32.6 m/y) as the value of the unsaturated zone hydraulic conductivity. Provide a rationale for the selected model parameter value which discusses the applicability of the above referenced data.
10. Section 4.2 of D&D Plan Addendum No. 1 (p. 4-9) states that the thorium distribution coefficient value (60,000 ml/g) representative of clay is appropriate to the containment cell dose assessment. The value is applied to the RESRAD model contaminated, unsaturated, and saturated zones. Provide support for this value for each of these zones in light of published survey values of the parameter of 3,100 and 5,800 ml/g for sand and clay, respectively (Sheppard, M.I. and D. H. Thibault, Health Physics, Vol. 59, No. 4, pp. 471-482, October 1990).
11. Identify, in relation to the containment cell, the location of the hypothetical on-site resident considered in the RESRAD dose analysis.
12. Provide an estimate of the infiltration rate through existing soils in the vicinity of the containment cell and for infiltration through the completed containment cell under conditions at which groundwater is at the 100-year flood level.

EFFLUENT AND ENVIRONMENTAL MONITORING

1. What are the diameter, height above ground, height above roof, gas temperature, and exit gas velocity for the main plant stack?
2. What are the action levels and associated actions for the monitored gaseous and liquid effluent streams?

3. What are the lower limits of detection for radiological components for the effluent and environmental monitoring programs? Describe these limits for all media sampled.
4. Per Section 4.1.1.2 of the Environmental Report, the liquid effluent from the waste water treatment facility is analyzed for non-radiological parameters before discharge at Outfall 001. Are there non-radiological action levels that would prohibit release or warrant an investigation? If so, what are these values? Have these action levels ever been exceeded?
5. Describe the containment cell monitoring program planned for the post-closure period.
6. Per Section 4.1.2.2 of the Environmental Report, groundwater is monitored for non-radiological parameters (pH, fluorides, ammonia, total suspended solids, and specific conductance). Are there action levels for these parameters? If so, what are they and what actions are taken?
7. Provide groundwater monitoring data from 1994 to present as an update to Table E-6 of Appendix E of the Environmental Report.
8. Provide radiological effluent monitoring data from 1994 to the present as updates to Tables E-2, E-3, and E-4 of Appendix E of the Environmental Report.