

RAS 7557



OFFICE OF ATTORNEY GENERAL  
STATE OF OKLAHOMA

DOCKETED  
USNRC

April 6, 2004 (9:13AM)

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

April 1, 2004

Alan S. Rosenthal, Presiding Officer  
Administrative Judge  
United States Nuclear Regulatory Commission  
Mail Stop: T-3F23  
Washington, D.C. 20555-0001

Dear Judge Rosenthal:

Due to a miscommunication, the State of Oklahoma's Rebuttal Presentation was not filed on March 31, 2004. The Rebuttal Presentation was completed on Friday, March 26, 2004, which was my last working day with the Office of the Attorney General. My instructions to the secretary were mislaid.

The State does intend to file a Rebuttal which is attached. Included in this filing is a notice of withdrawal and substitution of counsel.

I understand the filing was the responsibility of the attorney and pray that the United States Nuclear Regulatory Commission accepts the filing of the State of Oklahoma's Rebuttal Presentation.

Sincerely,

Sarah E. Penn, Esquire

Enclosures



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SECY-02



OFFICE OF ATTORNEY GENERAL  
STATE OF OKLAHOMA

April 1, 2004

Alan S. Rosenthal, Presiding Officer  
Administrative Judge  
United States Nuclear Regulatory Commission  
Mail Stop: T-3F23  
Washington, DC 20555-0001

Re: Substitution of Counsel

Dear Judge Rosenthal:

Please let this letter serve as a request that Assistant Attorney General Kelly Hunter Burch be substituted for Assistant Attorney General Sarah E. Penn, as counsel of record in case number 40-7580-MLA-3, In the Matter of Fansteel, Inc. (Request to Amend Source Material License No. SMB-911.

Thank you for your consideration regarding this matter. Should any questions or concerns arise, please do not hesitate to contact me at (405) 522-4417.

Sincerely,

A handwritten signature in cursive script that reads "Kelly Hunter Burch".

Kelly Hunter Burch  
Assistant Attorney General

A handwritten signature in cursive script that reads "Sarah E. Penn".

Sarah E. Penn  
Assistant Attorney General



OFFICE OF ATTORNEY GENERAL  
STATE OF OKLAHOMA

April 1, 2004

**Via Facsimile and U.S. Mail First Class**

Office of the Secretary  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001  
Attention: Rulemakings and Adjudications Staff

**Re: In the Matter of Fansteel, Inc., State of Oklahoma's Response to Fansteel, Inc. and NRC Response to State of Oklahoma's Written Presentation U.S. Nuclear Regulatory Commission, Docket No. 40-7580-MLA-3**

Sir or Madam:

Enclosed please find an original of the State of Oklahoma's Response to Fansteel, Inc. and NRC Response to State of Oklahoma's Written Presentation and three conformed copies thereof, prepared for filing with the U.S. Nuclear Regulatory Commission in the referenced matter. Pursuant to 10 C.F.R. 2.708(f) (2002), only one Response is being transmitted by facsimile as the original and three conformed copies will be transmitted by certified U.S. mail.

Upon receipt, please return the remaining file-stamped copy of the enclosed to this office in the self-addressed, stamped envelope enclosed for that purpose.

Thank you in advance for your assistance in this matter. Should you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in black ink that reads "Sarah E. Penn". The signature is written in a cursive style.

SARAH E. PENN

SEP/jb  
Enclosures

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

Before Administrative Judges:

Alan S. Rosenthal, Presiding Officer  
Richard F. Cole, Special Assistant

In the Matter of	)	
	)	Docket No. 40-7580-MLA-3
FANSTEEL, INC.,	)	
	)	ASLBP No. 04-816-01-MLA
(Request to Amend Source Materials	)	
License No. SMB-911)	)	March 31, 2004

**STATE OF OKLAHOMA'S RESPONSE TO FANSTEEL, INC. AND**  
**NRC RESPONSE TO STATE OF OKLAHOMA'S**  
**WRITTEN PRESENTATION**

**W.A. DREW EDMONDSON  
ATTORNEY GENERAL OF OKLAHOMA**

**SARAH E. PENN  
ASSISTANT ATTORNEY GENERAL  
ENVIRONMENTAL PROTECTION UNIT  
4545 N. Lincoln Blvd., Suite 260  
Oklahoma City, Oklahoma 73105  
Telephone: (405) 521-4274  
Telefax: (405) 528-1867**

Dated: March 31, 2004

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

Before Administrative Judges:

Alan S. Rosenthal, Presiding Officer

Richard F. Cole, Special Assistant

In the Matter of	)	
	)	Docket No. 40-7580 - MLA-3
FANSTEEL, INC.,	)	
	)	ASLBP No. 04-816-01-MLA
(Request to Amend Source Material	)	
License No. SMB-911)	)	March 31, 2004

**STATE OF OKLAHOMA'S WRITTEN PRESENTATION**

The Attorney General of the State of Oklahoma, W.A. Drew Edmondson, by and through the undersigned, Sarah E. Penn, Assistant Attorney General, on behalf of the State of Oklahoma ("Oklahoma"), hereby submits its Reply pursuant to 10 C.F.R. § 2.1233 on the matter of Fansteel, Inc.'s ("Fansteel") request to amend Source Material License No. SMB-911 at Fansteel's facility in Muskogee, Oklahoma (the "Fansteel Facility").

**I. BACKGROUND**

**A. Factual**

The Fansteel Facility is located on 110 acres of land located directly on the western bank of the Arkansas River (Webbers Falls Reservoir) in eastern Oklahoma near the City of Muskogee. It is bounded on the west by State Highway 165 (a/k/a the

Muskogee Turnpike) and on the south by U.S. Highway 62. From 1958 until 1989, the Fansteel Facility was a rare metal extraction operation, producing tantalum and columbium metals from raw and beneficiated ores, and tin slag feedstock. The raw materials used for tantalum and columbium production contained uranium and thorium as naturally occurring trace constituents in such concentrations that Fansteel was required to obtain an NRC license. Id. The Fansteel Facility was licensed by NRC in 1967 to process ore concentrates and tin slags in the production of refined tantalum and niobium products. U.S. NUCLEAR REGULATORY COMMISSION, ENVIRONMENTAL ASSESSMENT-LICENSE AMENDMENT FOR MATERIAL LICENSE NO. SMB-911, 1-1 (December 1997). Processing operations at the Fansteel Facility substantially ceased in December of 1989. Id.

As a result of operations and various accidents and releases, the Fansteel Facility, including its soils, groundwater, and surface waters have been and continue to be contaminated by uranium, thorium, ammonia, arsenic, chromium, metals, cadmium, ammonia, methyl isobutyl ketone (MIBK), and fluoride. EARTH SCIENCES CONSULTANTS, INC., REMEDIATION ASSESSMENT, FANSTEEL, INC. - MUSKOGEE, OKLAHOMA 1-2 (1993).

## **B. PROCEDURAL HISTORY**

On July 6, 1998, Fansteel submitted its proposed Decommissioning Plan for the Fansteel Facility, therein requesting an amendment to Source Materials License SMB-911 to decommission the Fansteel Facility. Fansteel thereafter supplemented the Proposed

Decommissioning Plan on December 4, 1998. On September 14, 1999, NRC caused to be published in the Federal Register its Notice of Consideration of an Amendment Request for the Fansteel Facility in Muskogee, Oklahoma and Opportunity for a Hearing (the "Notice"), relating to the Restricted Release Decommissioning Plan. In response, on October 14, 1999, the Oklahoma Attorney General filed a Request for Hearing Pursuant to 10 C.F.R. § 2.1205. Fansteel filed its Response to the Request for Hearing on October 29, 1999, and NRC Staff filed its response on November 5, 1999.

In a Memorandum and Order, dated December 29, 1999, the Presiding Officer Granted the Oklahoma Attorney General's Request for Hearing based on the finding that Oklahoma had the requisite standing to participate as a party and that Oklahoma specified areas of concern germane to the Proceeding.

On January 13, 2000, Fansteel, Inc's appealed from the Presiding Officer's Decision to Grant a Hearing to Oklahoma. On February 2, 2000, NRC Staff responded to Fansteel's appeal to the Presiding Officer's decision, stating that Oklahoma was properly granted a hearing, as it successfully demonstrated both standing and injury-in-fact, as well as areas of concern germane to the proceeding. Oklahoma filed its Counter-Statement in Opposition to Fansteel Inc.'s Appeal on February 2, 2000.

On May 9, 2000, Fansteel, Inc. requested that the NRC staff discontinue review of Fansteel's Restricted Release Decommissioning Plan and on July 25, 2000, the NRC staff agreed to discontinue review of Docket No. 40-7580-MLA, ASLBP No. 00-772-01-MLA. Pursuant to the agreement of NRC staff to discontinue review of the Restricted

Release Decommissioning Plan, Fansteel, Inc., Oklahoma and the NRC staff filed a joint motion to dismiss on January 2, 2001. On January 31, 2001, the Presiding Officer determined Fansteel Inc.'s appeal moot and accordingly, dismissed the case.

On January 14, 2003, Fansteel submitted a new DP to terminate the License No. SMB-911 for unrestricted use in accordance with 10 C.F.R. §20.1402. On January 15, 2003, Fansteel, Inc., filed for Chapter 11 bankruptcy protection.

On April 28, 2003, NRC staff member Daniel M. Gillen, (Gillen) Chief, Decommissioning Branch, Division of Waste Management sent a letter to Gary Tessitore, (Tessitore) Chief Executive Officer, Fansteel, Inc. indicating the Results of Preliminary Review of Fansteel's Decommissioning Plan dated January 2003. The letter stated that NRC staff had concluded that the DP did not contain sufficient information to conduct a detailed review at this time, and further added that many sections, chapters were conceptual only and that the radiological status of the site was incomplete, nor did the DP demonstrate how the estimated cost of remediation was reduced to less than half of the previous estimate of Fansteel's bankruptcy filing.

On May 8, 2003, Tessitore sent a letter to Gillen which stated it was a follow-up to the April 28, 2003 letter, as well as the discussions and meeting held between the NRC and Fansteel regarding the licensee's bankruptcy. This letter outlined, in one page, a four-phased approach to decommissioning the Fansteel Facility, Muskogee site by a new entity MRI (a wholly-owned subsidiary of Reorganized Fansteel). On May 9, 2003, Gillen responded to Tessitore's letter of May 8, 2003, stating NRC staff had now reviewed

Fansteel's one page submittal of May 8, 2003, and concluded that Fansteel had now submitted sufficient information to proceed with the detailed technical review of the DP.

On May 15, 2003, Oklahoma received the May 9, 2003, letter indicating acceptance of the Fansteel DP for Technical Review.

On June 16, 2003, the State filed a Request for Hearing in connection with Fansteel's January 14, 2003, DP. Thereafter, Gary Tessitore, CEO of Fansteel, indicated the withdrawal of Fansteel's DP due to NRC Staff's ("Staff") suspension of review in Fansteel's letter of June 26, 2003. The reasons for Staff's suspension of review are stated in a July 8, 2003, letter to Tessitore.

On July 9, 2003, a Presiding Officer was designated to rule on, inter alia, petitions for leave to intervene and/or requests for hearing in this proceeding. Also on July 9, the Presiding Officer issued an Order directing the State of Oklahoma to show cause, in light of Fansteel's withdrawal of its DP, why this proceeding should not be dismissed.

On July 15, 2003, Fansteel filed a Notification to request the Presiding Officer to suspend the show cause schedule to allow Fansteel until July 25, 2003, to decide whether it would resubmit its DP for NRC consideration. The State objected on the same day to Fansteel's request for abeyance. Staff filed a response on July 16, 2003, stating it did not object to the request for abeyance.

On July 16, 2003, the Presiding Officer denied Fansteel's request for abeyance indicating that the schedule established in the Presiding Officer's July 9, 2003, Order to Show Cause would remain in effect. On July 17, 2003 the State filed its Objection and

Show of Harm to Fansteel Inc.'s Withdrawal of Decommissioning Plan. On July 24 and 25, 2003, Fansteel and Staff filed a Response. Also, on July 24, 2003, Fansteel submitted a request for license amendment to approve the site DP submitted on January 14, 2003, as amended by letter dated May 8, 2003. In addition to Fansteel's NRC filing, on July 24, 2003, Fansteel filed its Re-Organization Plan and Disclosure Statement with the United States Bankruptcy Court in the District of Delaware. The State filed a Motion for Leave to Reply based on the re-submission of the DP and its supplements and the filings in the Bankruptcy Court. Leave to file a reply was granted by the Presiding Officer on July 31, 2003. The State filed its Reply on August 7, 2003.

On August 11, 2003, NRC caused to be published in the *Federal Register* its Notice of Consideration of an Amendment Request for the Fansteel Facility in Muskogee, Oklahoma and Opportunity for a Hearing (the "Notice"). On September 10, 2003, the State filed its Request for Hearing. Fansteel and Staff filed responses to the State's Request. The State responded to Staff and Fansteel's Responses on November 3, 2003. Later that day, the State's Request for Hearing was granted by the Presiding Officer.

On November 7, 2003, the Staff published in the *Federal Register* a "Notice of Availability of Environmental Assessment and Finding of No Significant Impact ("FONSI") for License Amendment for Fansteel, Inc. – Muskogee, Oklahoma License No. SMB-911 ("EA Notice") 68 Fed. Reg. 63134 (2003). On December 4, 2003, the Staff approved Fansteel's request for a license amendment authorizing decommissioning of the Muskogee site. Letter to G. Tessitore from D. Gillen, December 4, 2003 (ADAMS,

Accession No. ML033240018) On December 8, 2003, Oklahoma filed its Objection to the Issuance of the FONSI. On December 18, 2003, NRC responded to the State's Objection, based on the argument that the issues were simple and should have been responded to in a more timely fashion, Fansteel also responded to the Oklahoma's Objection. The Presiding Officer granted Oklahoma the opportunity to respond, Oklahoma did so on January 8, 2004. The Presiding Officer issued an order dismissing Oklahoma's objection to the issuance of the FONSI, however, it agreed that certain concerns should be addressed in Oklahoma's Written Presentation.

On February 3, 2004, the State filed its written presentation. On March 4, 2004, Fansteel and the NRC filed written presentations in response.

## **II. ARGUMENT:**

### **A. Errors and Misleading Statements in the NRC and Fansteel Responses Undermine the Proposition that FRMI's DP meets the Necessary Requirements for Approval.**

Fansteel makes the statement that Oklahoma's comments on the Remediation Assessment Work Plan were "incorporated into the final July 1992 Work Plan that was submitted to the NRC for approval." Fansteel @ 17. Conspicuously absent from this written response is a formal comment resolution log that summarizes comments received from various individuals and agencies, Fansteel's assessment of the comments, and how Fansteel dispensed with the comments (i.e., rejected or incorporated into work plan). Without the comment resolution log, it is not possible to readily verify that all of

Oklahoma's comments were, in fact, "incorporated."

Fansteel states that the 1993 Remediation Assessment "represents the worst case of site contamination." Id @ 17. This statement is misleading and may be false because it assumes that the spatial extent of contamination is static. Reality is that contamination continues to spread with the flow of groundwater. It is also true that the rigor and cost of clean-up is more a function of the volume of contaminated media than the concentration of contamination in the media. Consequently, in the absence of remediation, the contamination clean-up requirements continue to grow and the "worst case" for site contamination has yet to be realized.

Fansteel contends that the principal reason for performing additional sampling is to gather "further information regarding the extent of contamination of soil beneath the ponds." Id. This statement is misleading because some of the additional sampling sought by Oklahoma would be outside the geographic limits of the ponds. In fact, the principal reason for additional sampling is to ascertain the horizontal and vertical extent of migration of contamination, not just the vertical extent implied by the Fansteel response.

Fansteel acknowledges that it will not seek termination of its license until groundwater has been "satisfactorily remediated." Id. @ 22. The term "satisfactorily" has not been given technical definition in the form of quantitative clean-up standards (i.e., pCi/liter of various radionuclides, and ug/liter of chemical contaminants).

The description of Fansteel's As-Low-As-Reasonably-Achievable (ALARA) program provided on pages 24 and 25 indicates that Fansteel's optimization process

takes into account only cost-effectiveness. This is contrary to the principles of ALARA practiced universally in the nuclear industry. These principles compel the inclusion of societal, environmental, technological, economic, practical, and public policy considerations into the optimization process. Clearly, Fansteel's program does not include this universe of considerations. As a result, it is reasonable to conclude that Fansteel's ALARA program does not measure up to recognized industry best practices.

On page 31 of its written response, Fansteel presents information that appears to conflict with its own DP. Section 2.1.2.2 of the DP requires Fansteel to use several treatment methods, "including aeration, metals precipitation, microfiltration, and air stripping...to remove heavy metals, ammonia, fluoride, MIBK, and radionuclides.." and the affidavit of Mr. Tourdot implies a variety of groundwater treatment technologies have been installed to remediate heavy metals, ammonia, fluoride, MIBK, and radionuclides. However the available record suggests that only one technology, precipitation/flocculation, has been installed.

It should further be noted that the use of aeration would result in the transfer of contamination from groundwater to air. In this instance, Fansteel would be expected to have some sort of air pollution abatement system in place and to conduct air dispersion modeling and multi-pathway risk analysis to verify that emissions of MIBK and ammonia were not harmful to human health and the environment. There is nothing in the record to suggest that such engineering and administrative controls are in place.

On page 22, Fansteel states that it will continue to operate its existing

groundwater treatment program until the groundwater is satisfactorily remediated.

However, neutralization/flocculation is a recognized technique for treating metals and some radionuclides but is totally ineffective for treating ammonia and MIBK . This statement is an admission that Fansteel does not intend to clean up MIBK and ammonia in its groundwater.

Information provided in the 2<sup>nd</sup> paragraph on Page 54 is misleading. Specifically, Fansteel states that it did not sample surface water and sediments in the Arkansas River because of the significant dilution factor. While this argument would hold in a steady-state ecosystem, where the full mass of contaminant discharged into the river flows down the river without accumulation anywhere in the river system (mass in equals mass out), real-life experience and science suggest otherwise. The reality of contamination in any environmental media, especially river sediments, is that it accumulates. Radionuclides, heavy metals, and MIBK, among others, are contaminants that have an affinity for river bottom sediments. This is the reason that virtually every Superfund project involves surface water and sediment sampling and every nuclear power station does some surface water and sediment sampling as part of its normal environmental monitoring program.

It should also be noted that Fansteel has grossly underestimated contaminated groundwater releases to the river and overestimated the dilution factor. Fansteel claims that the release of 100,000 liters of groundwater into the river is “highly unlikely.” Id. @ 71. According to Fansteel’s drawing no.OMF-GRNDS-011, August 2, 2002 the interceptor trench is approximately 3,000 feet long. The State in its written presentation

demonstrated the average groundwater flow rate is 183.1 feet per year. State @ 30.

Assuming only a 2-foot thick saturated zone, the potential groundwater flow to the river is thus:

$(3,000 \text{ feet}) \times (2 \text{ feet}) \times (183.1 \text{ feet per year}) \times (28.3 \text{ liters per cubic foot}) = 31,090,380 \text{ liters}$  per year. Using this conservative assumption, the above calculation shows that contaminated groundwater discharges totaling more than 31 million liters annually are possible. This volume is two orders of magnitude greater than the release that Fansteel claims to be "highly unlikely." The corresponding dose to users of the river may, thus, be two orders of magnitude greater than that implied by Fansteel in its written response.

Fansteel indicates it cannot install groundwater monitoring wells downgradient from the interceptor trench to validate the efficacy of its groundwater collection and treatment program because of "erosion by the Arkansas River." Id. @ 66. If, as Fansteel contends, the riverbank is severely eroded, there most certainly are groundwater seeps along the riverbank that could easily be monitored to validate treatment efficacy. In spite of this fact, Fansteel does not appear to routinely sample and analyze discharges from these seeps. Moreover, the written record does not explain why Fansteel doesn't sample the seeps and why the NRC hasn't included requirements for sampling seeps in the DP or as a license condition. It is, thus, reasonable to conclude that readily available and necessary steps to ensure the efficacy of treatment have neither been taken voluntarily by Fansteel, in the spirit of environmental stewardship, nor required by NRC, as part of its responsibility to ensure protection of human and the environment.

Fansteel states that the “drinking water pathway can be excluded from consideration.” Id. @ 76. This is untrue. As stated in the NRC’s written response, License Condition 35 requires Fansteel to “account for radiological exposure from groundwater...”.

Finally, the NRC attempts to rebut the State’s claim that the DP is incomplete by pointing out that Fansteel will follow a phased approach to decommissioning. Under this approach, initial efforts will focus on remediating known contamination and future efforts will be scoped on the basis of additional, presently undefined, characterization. However, by acknowledging that future work has not been fully scoped, this same position undermines NRC’s stated belief that the DP and cost estimate are technically complete and accurate. NRC contends that it cannot rely on guidance to formulate DP and license requirements, however, Fansteel acknowledges that requirements of NUREG-1757 have been incorporated into a license condition. This fact tends to technically undermine the overarching argument made by Fansteel and the NRC that guidance is not legally binding.

As a result of the errors and misleading statements contained in the DP, and the written responses provided by Fansteel and the NRC, the confidence in the proposed DP is severely undermined. Too many questions and concerns remain unanswered to be confident that the DP proposed by Fansteel, and at this point tacitly approved by the NRC, will achieve the clean up standards for remediation of the Fansteel, Muskogee site. Fansteel should be required to submit the necessary information and analysis to properly characterize and remediate this site.

**B. The Analysis Establishing the Industrial Worker as the Critical Group is Flawed and the Default Critical Group Should be Required.**

Fansteel's response suggests that the State's argument regarding the appropriate critical group is not valid because the site will be limited to industrial use in the future and License Condition 35 requires Fansteel to clean-up the groundwater. The Fansteel position is flawed as discussed below:

First, no calculations have been provided to show that radiation exposures to the industrial worker group will exceed exposures to other populations, including recreational river users and users of drinking water derived from the Arkansas River. This omission is particularly troubling, given the errors (two orders of magnitude) Fansteel made in calculating potential volumes of groundwater discharges to the river and dilution factors. The calculation presented calls into question the supposition that the industrial worker is the critical group for dose assessment and strongly suggests that Fansteel should produce quantitative dose calculations to prove that doses to the industrial worker group will be greater than doses to other populations, particularly those that intersect the river (recreational river users and users of drinking water from down river intakes). Without accurate calculations, the designation of the industrial worker as the critical group will remain suspect and the derivation of clean-up limits based on this critical group is technically indefensible.

Second, Fansteel took a short cut in its analysis and assumed the industrial worker was the critical group and thereby excluded off-site populations from consideration.

Fansteel rationalizes this short-cut by relying on attenuation (shielding) effects attributable to time and distance separation between off-site populations and the source term of contamination (contaminated soils on the site). The reliance on time and distance separation, however, is a fatally flawed assertion for the following reasons. Evidence provided in the Remediation Assessment shows that contaminants are mobile and have been discharged to the Arkansas River, an environmental media that directly impacts off-site populations. The exposure pathways considered in the dose assessment were limited to direct radiation and contaminated soils inhalation/ingestion when other credible exposure pathways should have been considered.

Contemporary environmental risk assessment and dose assessment methodologies compel Fansteel to consider other exposure pathways in the designation of the critical group and discount the attenuation effects of the physical separation between off-site populations and source terms. In particular, these methodologies suggest that Fansteel should expand its consideration of exposure pathways.

Third, Fansteel failed to perform the necessary steps to determine the proper critical group. Fansteel's designation, and NRC's acceptance, of the industrial worker as the critical group are arbitrary and capricious. The designation of the critical group should have proceeded as follows:

1. A conceptual model of the site is developed.
2. Clean-up standards and residual radioactivity levels are hypothesized.
3. Residual source terms and environmental migration pathways are

identified and evaluated.

4. Human and ecological receptors and exposure pathways are developed.
5. Screening level dose assessments are performed to:
  - a. Identify the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity (critical group).
  - b. Validate proposed clean-up standards.
6. The five-step process is repeated iteratively, as necessary.

In the instant case, there is no written evidence to suggest that Steps 1 through 4 have been fully completed. The written record, for example, does not describe the conceptual model. Beyond this, as previously discussed in this document, all exposure pathways have not been adequately considered in the designation of the critical group. By not conducting the proper analysis or documenting the considerations discussed above Fansteel has failed to prove that the industrial user is the critical group and that the clean-up limits derived from the use of the industrial user in dose assessment will be protective of human health and the environment. Additionally, Mr. Tourdot, in his affidavit, states that NRC requires groundwater remediation and that Fansteel has “already committed to continue its existing groundwater treatment program until groundwater is satisfactorily remediated.” These facts belie Fansteel’s repeated contention that the groundwater pathway creates no exposure to the critical group.

Fourth, Mr. Thaggard in his affidavit makes the misleading statement that land-use in the immediate vicinity of the site is limited to industrial purposes. In risk analysis

and dose assessment vernacular, the term “land-use” is not restricted to dry land but, rather, encompasses adjacent surface waters. The river, which is adjacent to the Fansteel property, has uses other than industrial; as described in the State’s Written Presentation. It is also noteworthy that common nuclear industry practice restricts the application of the Industrial Use Scenario to situations in which all surrounding property is in industrial use. The Fansteel site does not conform to this scenario because it is surrounded on three sides by industrial land uses and one side by the river that has multiple uses.

In addition to the errors committed by Fansteel, NRC has misinterpreted its own definition of critical group by adding the following qualifier: “... while using the site”. NRC @ 12. 10 CFR 20.1003 defines critical group as follows:

*Critical Group means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.*

Note that the regulatory definition does not limit the critical group to users or occupants of the site. The addition by NRC of the aforementioned qualifier to the regulatory definition of the Fansteel critical group results in a limitation of the factors to be considered when establishing the critical group. More importantly, however, it is used as rationale by both Fansteel and NRC to limit populations considered for the critical group to on-site workers. As a result, other reasonable populations have been overlooked and the designation of the industrial worker as the critical group is, at best, premature.

Fansteel should have produced written evidence of its conceptual model and objective consideration of migration and exposure pathways to justify its designation of the industrial worker as the critical group for this site. Because of the flaws in the analysis conducted and in the absence of the calculations and supporting data to validate the critical group designation, there can be no certainty that the existing DP is protective of human health and the environment. Therefore, the residential farmer should be considered the appropriate critical to ensure the health and safety of the citizens of Oklahoma and the environment.

**C. The Groundwater Treatment Plan is Incomplete and Will Not Address All Contamination at the Site.**

Although Fansteel acknowledges that it will not seek termination of its license until groundwater has been “satisfactorily remediated.” no technical definition in the form of quantitative clean-up standards (i.e., pCi/liter of various radionuclides, and ug/liter of chemical contaminants) has been established. In the absence of quantitative clean-up standards, it is not possible to ascertain the technical feasibility of the proposed clean-up or determine if the proposed clean-up technologies are appropriate or validate the associated cost and schedule for groundwater clean-up. In turn, it is not possible to conclude with certainty that the DP is complete and technically adequate or whether NRC’s approval of the DP and subsequent amendment of the license is protective of human health and the environment.

The DP and License Condition 35 require Fansteel to use a variety of technologies

to treat groundwater for heavy metals, radionuclides, ammonia, fluoride, and MIBK. Fansteel should be required to install and operate all of the treatment systems listed in the DP and License Condition 35. Fansteel states that it will continue to operate its existing groundwater treatment program until the groundwater is satisfactorily remediated, however, the written record suggests that Fansteel is only using one of these technologies, precipitation/flocculation. This technology is a recognized technique for treating metals and some radionuclides but is totally ineffective for treating ammonia and MIBK. This statement is an admission that Fansteel does not intend to clean up MIBK and ammonia in its groundwater. NRC also admits on Page 9, Item B that the license amendment will not address one of the State's primary concerns, MIBK contamination in groundwater.

Based on the incomplete and misleading information provided by Fansteel regarding the groundwater treatment plan ("GTP"), Fansteel should be required to submit a license amendment request to the NRC for approval of its GTP. Such a GTP would include development of a conceptual model of the site that accounts for groundwater contaminants, including organics, metals, and radionuclides and all reasonably foreseeable exposure pathways and receptor populations, including recreational river users and industrial workers exposed to groundwater through direct ingestion and dermal contact. The GTP should document a quantitative analysis of the conceptual model discussed above using deterministic models that are generally accepted by the environmental remediation business community to identify an appropriate critical group from the alternatives and the GTP should contain groundwater clean-up standards that

satisfy primary drinking water standards and reduce excess lifetime cancer risk to the critical group to a probability less than E-6.

Further, a new Environmental Assessment should be performed that considers the groundwater uses, as well as, additional exposure pathways to include, at a minimum: Dermal contact and ingestion of contaminated river water by recreational river users, dermal contact and ingestion of river sediment by recreational river users, ingestion of fish by recreational river users and ingestion of drinking water from downstream river intakes by off-site populations because the contaminants of concern at this site accumulate in sediments and fish, the dose assessment modeling should also account for bio-accumulation.

## **CONCLUSION**

Fansteel should be required to provide the necessary analysis, information and financial resources to ensure the proper remediation of the Fansteel, Muskogee site pursuant to the rules, regulations and guidance of the NRC. The State of Oklahoma should feel confident that the property contaminated by Fansteel will be as it is supposed to be at the termination of Fansteel's license.

The State requests that the Fansteel DP be revised to reflect the residential farmer as the critical group, that Fansteel be required to submit a license amendment request for approval of its groundwater treatment plan and that an Environmental Assessment be performed to properly considers the groundwater uses and the exposure pathways for the applicable set of circumstances.

Respectfully Submitted,

**W.A. DREW EDMONDSON  
ATTORNEY GENERAL OF OKLAHOMA**

A handwritten signature in cursive script, reading "Sarah E. Penn", written over a horizontal line.

**SARAH E. PENN  
ASSISTANT ATTORNEY GENERAL  
ENVIRONMENTAL PROTECTION UNIT  
4545 N. Lincoln Blvd., Suite 260  
Oklahoma City, Oklahoma 73105  
Telephone: (405) 522-4413  
Telefax: (405) 528-1867**

## CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the 1st day April, 2004, a true and correct copy of the foregoing, State of Oklahoma's Response to Fansteel, Inc. and NRC Response to State of Oklahoma's Written Presentation, was served upon the persons listed below by U.S. mail, first class, postage prepaid, and by electronic mail where indicated with a single asterisk. A copy was also sent by facsimile transmission to the Office of the Secretary.

Alan S. Rosenthal\*  
Administrative Judge  
Presiding Officer  
Atomic Safety and Licensing Board Panel  
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