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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

In the Matter of	)	
	)	Docket No. 40-7580-MLA-3
FANSTEEL, INC.	)	
	)	ASLBP No. 04-816-01-MLA
(Muskogee, OK Facility)	)	

NRC STAFF RESPONSE TO STATE OF OKLAHOMA'S WRITTEN PRESENTATION

INTRODUCTION

The U.S. Nuclear Regulatory Commission Staff (Staff) hereby responds to the "State of Oklahoma's Written Presentation" of January 30, 2004 (Written Presentation),[1] regarding the adequacy of Fansteel's "Decommissioning Plan" (DP) for its Muskogee, Oklahoma site of operations.[2] The Staff submits that the DP, as supplemented by license conditions, provides adequate assurance that the site will be remediated to the NRC's regulatory standards. *See* attached affidavits of Mark Thaggard, James Shepherd, and Thomas Fredrichs, marked as Staff Exhibits 1, 2, and 3, respectively.

BACKGROUND

Fansteel is the holder of Materials License No. SMB-911, authorizing possession of source material consisting of up to 400 tons of natural uranium and thorium in any form at its Muskogee facility, pursuant to 10 C.F.R. Part 40. At the Muskogee site, Fansteel operated a rare metal extraction facility until 1989. As a result of those operations, the Muskogee site currently contains

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[1] All cites herein to the Written Presentation are to the unsigned copy attached to Oklahoma's cover letter dated January 30, 2004. Staff counsel has reason to believe that the page numbers of the signed copy may differ slightly from those in the unsigned copy.

[2] Although all of Fansteel's assets at this site have now been transferred to FMRI Inc. (*see* letter from licensee's counsel dated January 29, 2004), for ease of reference herein the licensee will be referred to as "Fansteel."

contaminated material in the form of uranium, thorium, radium, and decay-chain products in process equipment and buildings, soil, sludge, and groundwater.

On January 15, 2002, Fansteel notified the NRC that it had filed a petition for bankruptcy pursuant to Chapter 11 of Title 11 of the United States Code. Letter to E. Merschoff from G. Tessitore, Jan. 15, 2002 (ADAMS Accession No. ML 020290385). On January 14, 2003, Fansteel's DP was submitted for the NRC staff's review. Letter to J. Shepherd from G. Tessitore, Jan. 14, 2003 (ADAMS Accession No. ML030280438). Fansteel proposed to remove the contaminated materials in the soil and groundwater to meet the unrestricted release requirements of the Radiological Criteria for License Termination rule (10 C.F.R. Part 20, Subpart E). Fansteel stated in its January 14, 2003, letter that the amount and type of financial assurance to be provided in connection with the DP would be set forth in a plan of reorganization that it intended to file with the Bankruptcy Court. In addition, Fansteel indicated that it would be filing an alternative schedule for completion of decommissioning as well as a request for exemption from the regulatory funding requirements in 10 C.F.R. § 40.36(d) and (e) to support the terms and conditions of the reorganization plan.

By letter dated April 28, 2003, the Staff informed Fansteel that the DP did not contain sufficient information to conduct a detailed review. Letter to G. Tessitore from D. Gillen, April 28, 2003 (ADAMS Accession No. ML031040079). Also attached to the letter were the Staff's detailed comments on the DP submittal. April 28, 2003 Letter, Enclosure 1, Comments on Fansteel Decommissioning Plan of January 2003 (ADAMS Accession No. ML031040081).

In a letter dated May 8, 2003, Fansteel supplemented its DP with additional information. In the May 8, 2003, letter, Fansteel indicated that upon emergence from Chapter 11 bankruptcy and in accordance with the terms and conditions of a confirmed plan of reorganization (which would include the transfer of the license to a new wholly-owned subsidiary of the "revised" Fansteel, "MRI"), MRI would undertake a four-phased approach to decommissioning the Muskogee site. *Id.*

Based on the information provided in the May 8, 2003, letter, the Staff determined that Fansteel had submitted sufficient information to proceed with the detailed technical review of the DP. Letter to G. Tessitore from D. Gillen, May 9, 2003 (ADAMS Accession No. ML031290264). Following a request for hearing filed by the State of Oklahoma, Fansteel withdrew its DP. Letter to J. Shepherd from G. Tessitore, June 26, 2003 (ADAMS Accession No. ML032100546).

On July 24, 2003, Fansteel resubmitted the DP, and requested that the NRC reinitiate its review of the plan. Letter to D. Gillen from G. Tessitore, July 24, 2003 (ADAMS Accession No. ML032100530). Fansteel also requested that the NRC take the following licensing actions: (1) amend Materials License No. SMB-911 to reflect approval of the DP; (2) approve an alternate decommissioning schedule pursuant to 10 C.F.R. § 40.42(i); and (3) grant an exemption from the financial assurance requirements of 10 C.F.R. § 40.36(e). In Attachment 1 (ML032100558) to the letter, Fansteel submitted a supplement to the DP outlining the means by which Fansteel proposed to provide financial assurance for decommissioning.

Upon review of Fansteel's requests, the Staff determined that additional information and commitments were necessary before approval could be granted. With regard to the DP, the Staff determined that certain license conditions were necessary in order for the plan to be acceptable. Specifically, with regard to funding for the DP, the Staff determined that the financial instruments Fansteel proposed to use -- while different than those specified in the regulations -- would nevertheless be adequate to ensure that sufficient funding would be available for decommissioning, and that a sufficient basis existed for exempting Fansteel from the financial assurance regulations. Accordingly, the Staff informed Fansteel that if certain prerequisites relating to the implementation of the proposed financial instruments were met, Fansteel would be issued an amendment approving, among other things, the DP and an exemption from the 10 C.F.R. § 40.46(e) financial assurance requirements. Letter from D. Gillen to G. Tessitore, November 7, 2003 (ADAMS Accession No. ML033140262).

As part of its review, the Staff also conducted an environmental assessment to determine the environmental effects of implementing the DP and releasing the site for unrestricted use. Based on its review, the Staff concluded that the proposed amendment would not result in any significant environmental impacts, and that the proposed amendment did not warrant the preparation of an environmental impact statement. Accordingly, the Staff determined that a finding of no significant impact was appropriate. *See* "Environmental Assessment, Finding of No Significant Impact," dated October 31, 2003 (EA) (ADAMS Accession No. ML033040204).

On December 4, 2003, the Staff approved a license amendment authorizing decommissioning of the Muskogee site. Letter from D. Gillen to G. Tessitore, December 4, 2003 (ML033240015). The Staff's approval was contingent on certain license conditions which were included in amended Materials License No. SMB-911, and was supported by a "Safety Evaluation Report For License Amendment Application to Approve Decommissioning Dated July 24, 2003" (SER), issued on December 4, 2003 (ML033080188).

DISCUSSION

I. Legal Standards and Requirements

When a license amendment is at issue in an adjudicatory proceeding, the ultimate burden of demonstrating that the amendment should be granted is on the licensee, who must make this showing by a preponderance of the evidence.[3] In assessing the evidence to make this

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[3] *See Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), ALAB-819, 22 NRC 681, 720 (1985); *In the Matter of Hydro Resources, Inc.*, LBP-99-30, 50 NRC 77, 110 (1999), *petition for review denied*, CLI-00-12, 52 NRC 1 (2000).

determination, the Presiding Officer is not required to do independent research or conduct a *de novo* review, but may rely on uncontroverted Staff and licensee evidence.[4]

In materials license amendment proceedings held pursuant to Subpart L of 10 C.F.R. Part 2,[5] the intervenor's written presentation is governed by 10 C.F.R. § 2.1233(c). Thus, Oklahoma's Written Presentation must include detailed descriptions of any purported deficiencies or omissions in the license amendment application, with adequate citation to such deficiencies or omissions; a detailed statement of reasons why the cited sections are deficient, or why omissions are material; and the relief sought with respect to each deficiency or omission. *See* 10 C.F.R. § 2.1233(c).

In reviewing Oklahoma's Written Presentation, it is clear that much of it is simply a restatement of the concerns Oklahoma advanced earlier in the proceeding, and that, for the most part, Oklahoma relies on NRC regulatory guidance documents and purported inadequacies in the Staff's DP review.

For example, regarding Oklahoma's claims pertaining to the Staff's technical review of the DP, the State asks that the Staff be directed to conduct additional reviews and analyses in accordance with NRC guidance. These claims demonstrate a fundamental misunderstanding of the Presiding Officer's adjudicatory role, and of NRC administrative adjudications in general. The only matter at issue in this proceeding is whether the DP, as amended and approved by the Staff, meets the applicable regulatory requirements. These requirements are set forth in 10 C.F.R. § 40.42, which states in part that a DP shall be approved upon a demonstration that the

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[4] *See Consumer Power Co.* (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 334-35 (1973). In this regard, the Staff notes that Oklahoma has provided no expert opinions which support its stated concerns. Oklahoma's Written Presentation should thus be given little if any weight by the Presiding Officer in comparing it with the evidence supporting the DP presented by the Staff in Exhibits 1-3, attached hereto.

[5] A revised 10 C.F.R. Part 2 became effective on February 13, 2004. However, these new hearing procedures apply only to proceedings initiated on or after February 13, 2004. *See* 69 Fed. Reg. 2182 (Jan. 14, 2004). Accordingly, all citations herein to 10 C.F.R. Part 2 provisions are to those as published in the January 1, 2003 edition of 10 C.F.R., Parts 1 to 50.

decommissioning will be completed as soon as practicable and that the health and safety of workers and the public will be adequately protected. *See* 10 C.F.R. § 40.42(g)(5). In short, the matter to be adjudicated here is whether Fansteel's DP meets regulatory requirements, not the Staff's review of the plan. Licensing boards and presiding officers lack authority to direct how the NRC Staff performs its regulatory reviews[6] -- which, as here, have taken place in parallel to this adjudicatory proceeding. Thus, Oklahoma's arguments concerning the adequacy of the Staff's DP review, and its related requests for relief, must be rejected.

Oklahoma also misapprehends the nature and purpose of NRC guidance documents, which only provide guidance to licensees. Oklahoma's heavy reliance on guidance documents[7] runs counter to the NRC's longstanding position that only "statutes, regulations, orders, and license conditions can impose requirements" upon licensees, and that because guidance documents do not establish enforceable requirements "nonconformance with such guides does not equate to noncompliance" with the NRC's regulations. *In the Matter of the Curators of the University of Missouri,*[8] CLI-95-1, 41 NRC 71, 98 (1995), *petition for reconsideration granted,* CLI-95-8, 41 NRC 386 (1995).[9] While an NRC guidance document sets forth one way a licensee may comply with an applicable requirement, other approaches may be found equally acceptable. *See* CLI-95-1, 41 NRC at 100. In accordance with the above, NUREG-1757 states that it describes an approach

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[6] *See Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-06, slip op. at 11 and n.23 (2004), *citing Baltimore Gas & Elec. Co.* (Calvert Cliffs Nuclear Power Plant, Units 1 and 2), CLI-98-25, 48 NRC 325, 349 (1998), and *Curators of the University of Missouri*, CLI-95-1, 41 NRC 71, 121 (1995).

[7] *See* Oklahoma's Written Presentation, at 11-13, *citing* NUREG 1757, "Consolidated NMSS Decommissioning Guidance"; and Oklahoma's Written Presentation, at 13-20, *citing* NUREG 1727, "NMSS Decommissioning Standard Review Plan" (September 2000).

[8] Therein, the Commission approved requests to amend 10 C.F.R. Part 30 and 70 materials licenses in a Subpart L proceeding.

[9] In reconsidering CLI-95-1, the Commission affirmed its ruling that NUREGs do not impose legal requirements. *See* CLI-95-8, 41 NRC at 397.

acceptable to NRC Staff, but that it "is not a substitute for NRC regulations, and compliance with this document is not required." NUREG-1757, at p. xvi. *See also* NUREG-1727, at pp. 0.2 - 0.3. Oklahoma's claim that any noncompliance with regulatory guidance must be remedied is therefore misplaced. Furthermore, as discussed below, Oklahoma fails to state any basis for concluding that the DP, as approved by the Staff, does not provide reasonable assurance that the decommissioning of the site will be performed in compliance with the Commission's regulations.

II. Site Characterization Issues

A. Adequacy of Site Characterization

Oklahoma challenges the DP by arguing that it is based on an inaccurate and incomplete site characterization, and that the DP thus fails to adequately address all of the existing contamination at the site. *See* Written Presentation, at 11-36. The regulations provide that a proposed DP include, among other things, "a description of the conditions of the site ... sufficient to evaluate the acceptability of the plan," as required by 10 C.F.R. § 40.42(g)(4)(i).[10] Approval of the plan by the Commission must in turn be based on a determination of whether the information contained in the plan will ensure adequate protection of workers and the public. *See* 10 C.F.R. § 40.42(g)(5).

As explained in the Shepherd Affidavit, attached hereto as Staff Exhibit 2, the Staff determined that the characterization data contained in Fansteel's DP does not provide complete information regarding the amount of current contamination at the Muskogee site. However, the nature and bounds of this contamination are sufficiently well known to start the decommissioning process. To address the present lack of complete information, and recognizing that characterization is an expensive process and that the funds available for decommissioning will be

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[10] *See* Fansteel's Answer to Hearing Request, at 17; and Oklahoma's Written Presentation, at 11 (where Oklahoma misquotes 10 C.F.R. § 40.42(g)(4)(i) by replacing "acceptability" with "accuracy").

provided over time, Fansteel proposed a phased approach which the Staff has approved. Under the approved DP, known existing contamination will be remediated first, after which additional characterization and remediation would be performed as necessary. The Staff found this approach acceptable based on a determination that the DP, when fully implemented, would ensure sufficient remediation of the site to comply with the criteria for unrestricted release. *See* Shepherd Affidavit, at ¶ 6. To ensure that the phased approach proposed by Fansteel will be implemented properly and on a timely basis, license conditions requiring that the additional characterization and remediation activities be performed within certain time constraints were added to Fansteel's license. *See* Shepherd Affidavit, at ¶¶ 10-11. For these reasons, the Staff concluded that the DP, as amended by Fansteel's May 8, 2003 letter (setting forth a 4-phased approach), and as supplemented by the license conditions added to Fansteel's license in December 2003, met the requirements of 10 C.F.R. § 40.42(g). *See* Shepherd Affidavit, at ¶ 18.

Oklahoma discusses neither the DP's 4-phased approach, nor the December 2003 license conditions, and provides no basis to conclude that the DP, as supplemented, will fail to adequately protect public health and safety. Oklahoma also ignores the 10 C.F.R. Part 40 provisions stating that a DP will be approved if the information therein shows that the decommissioning "will be completed <u>as soon as practicable</u> and that the health and safety of workers and the public will be adequately protected." 10 C.F.R. § 40.42(g)(5) (emphasis added). As this regulation recognizes, often times the decommissioning of a site cannot be completed within a short period of time, as was found to be the case at Fansteel's Muskogee site. The Staff found that the DP's 4-phased approach is a reasonable one, as it will focus the initial remediation efforts on the areas of greatest

contamination. *See* Shepherd Affidavit, at ¶¶ 6, and 10-11. Oklahoma has identified no information calling into question the adequacy of the approved DP. [11]

Accordingly, for the reasons set forth in the Shepherd Affidavit, and given the legal shortcomings of Oklahoma's Written Presentation as discussed above, the Presiding Officer should reject Oklahoma's concern that the DP inadequately addresses the radiological contamination at the Muskogee site.

B. MIBK Contamination

Oklahoma claims that methyl isobutyl ketone (MIBK) is among the hazardous materials that have migrated from Fansteel's site into the Arkansas River. *See* Oklahoma's Written Presentation, at 29.[12] To the extent that Oklahoma continues to base its areas of concern on MIBK contamination, or other such non-radiological hazards, the Presiding Officer should not accept such statements as supporting bases for the areas of concern. The Presiding Officer has already established the law of this case to be that non-radiological hazards are irrelevant here, and are outside the scope of this proceeding.[13]

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[11] Oklahoma references "findings by the NRC staff that the DP as submitted does not comply with 10 C.F.R. § 40.42." Written Presentation, at 20. On the contrary, the Staff never made any such "findings." Rather, in April 2003, the Staff provided comments to Fansteel regarding Fansteel's January 2003 DP. This DP has since been amended by Fansteel's May 8, 2003 letter (setting forth a 4-phased approach), and was further supplemented by the December 2003 license conditions added to Fansteel's license. Moreover, the April 2003 comments contain no references to 10 C.F.R. § 40.42. Similarly, Oklahoma has failed to advance its previously-stated concern that the site characterization is incomplete. Instead, in several instances, Oklahoma has simply repeated its explanation of this concern in verbatim fashion without providing additional specific bases to support its concern. The Presiding Officer should accordingly find that such repetition fails to meet the 10 C.F.R. § 2.1233(c) requirement for Oklahoma to provide in its initial written presentation a detailed statement of reasons why the DP is deficient, or why any claimed DP omissions are material.

[12] *See also* Oklahoma's Written Presentation, at 35-36 (claiming that Fansteel improperly concluded that MIBK contamination can be disregarded).

[13] *See* LBP-03-22, 58 NRC 363, 370 (2003).

Based on the above discussion and the technical evaluation set forth in the Shepherd Affidavit, the Staff requests the Presiding Officer to find that the site characterization concerns stated in Oklahoma's Written Presentation, at 11-36, are unfounded, and do not undermine the approved DP.

III. NRC Staff Review Process

In Section I(d), Oklahoma charges that in reviewing and approving the DP, the NRC Staff did not follow the proper process. *See* Written Presentation, at 36-38. For the reasons discussed below, the Staff requests the Presiding Officer to reject this part of Oklahoma's Written Presentation.

To the extent this concern is premised on NRC guidance documents (*see* Oklahoma's Written Presentation, at 36-37), the concern lacks a legal basis for the reasons discussed in Section I above. Additionally, as also stated in Section I above, the Presiding Officer lacks authority to direct how the NRC Staff performs its regulatory reviews.[14]

Moreover, apart from the Presiding Officer's lack of jurisdiction over concerns about whether the NRC Staff followed the proper review process, Oklahoma's charges in this regard are without merit. The basis for the charge that Oklahoma's concerns over the DP were "effectively sidestepped" (Oklahoma's Written Presentation, at 38) is not explained. After receiving Fansteel's July 24, 2003 license amendment request seeking DP approval, the NRC Staff duly published a notice of opportunity for hearing,[15] which led to this Subpart L hearing on Oklahoma's DP concerns. This is standard procedure for requested materials license amendments, and cannot fairly be characterized as a case of the NRC Staff having "picked sides" in order to force Oklahoma into "an

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[14] *See, e.g., Baltimore Gas & Elec. Co.* (Calvert Cliffs Nuclear Power Plant, Units 1 and 2), CLI-98-25, 48 NRC 325, 349 (1998); and *Curators of the University of Missouri*, CLI-95-1, 41 NRC 71, 121 (1995).

[15] *See* 68 Fed. Reg. 47621 (Aug. 11, 2003).

adversarial process." Oklahoma's Written Presentation, at 38. Similarly, the charge that the DP would have been rejected if the Staff had "properly followed" its review process (*id.*) is unsupported. The Staff's review process was an open one in which Oklahoma's counsel was kept informed about the Staff's planned licensing actions.[16] Accordingly, the Presiding Officer should reject the review process arguments set forth in Oklahoma's Written Presentation, at 36-38.

IV. Application of the Industrial Use Scenario

Oklahoma claims that the DP inappropriately relies upon the industrial use scenario for dose modeling purposes, and therefore does not take into account all potential pathways for radiation exposure. *See* Written Presentation, at 38-41.[17] For the reasons discussed below, the Presiding Officer should reject this area of concern.

The DP states that after decommissioning, the site will be released for unrestricted use by the public. For sites to be released to the public without restriction, the applicable radiological criteria for license termination are set forth in 10 C.F.R. Part 20, Subpart E. Those provisions provide that the residual radioactivity that is distinguishable from background radiation may not result in a total effective dose equivalent (TEDE) to an average member of the "critical group" which

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[16] *See* Staff's letter to Fansteel dated September 15, 2003 (ML032590658), regarding the plan to forgo the filing of additional requests for information in favor of adding new conditions to Fansteel's license. Oklahoma's counsel was copied on this September 15 letter. *See also* Staff's letter to Fansteel dated November 7, 2003 (ML 033140262), which included in an enclosure the draft conditions to be added to License No. SMB-911 as part of the then-proposed approval of the DP. Oklahoma's counsel was copied on this November 7 letter and its enclosures.

[17] This purported DP defect is said to prevent a finding that compliance with the criteria set forth in 10 C.F.R. Part 20 for unrestricted release of the site would be achieved. In support of this claim, the State cites portions of NUREG -1757 which allegedly prohibit the use of the industrial scenario when groundwater is shallow enough (1) to be used either for irrigation or to provide drinking water; or (2) to intercept and connect to a fish pond. In this regard, Oklahoma states that since the DP shows that groundwater depth is between 20 and 40 feet, the scenario cannot be used for the Muskogee site. Additionally, the State argues that reliance on industrial use is not appropriate because the site could reasonably be used for recreational purposes and agriculture. Accordingly, the State claims that these land use scenarios must be taken into account in calculating potential radiation dose to the public. *See* Written Presentation, at 38-41.

exceeds 25 mrem per year. 10 C.F.R. § 20.1402. The term "critical group" is defined by the regulations as meaning "the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances." 10 C.F.R. § 20.1003. The circumstances -- or scenario -- under which exposure to radiation occurs determines the environmental pathways (*e.g.*, ingestion of water, inhalation of air, exposure to direct radiation) by which an individual would be expected to receive radiation while using the site. *See* Thaggard Affidavit, attached hereto as Staff Exhibit 1, at ¶ 4.

The Commission established the 25 mrem TEDE limit to provide a sufficient and ample margin of safety, as this would minimize the likelihood that any individual would be exposed to radiation from multiple sources with cumulative doses of 100 mrem/year, the radiation dose limit for individual members of the public. 10 C.F.R. § 20.1301(a)(1); 62 *Federal Register* 39058, 39064 (July 21, 1997). As explained by the Commission, calculating radiation dose at a particular site for the purpose of determining compliance with the regulation is based on an analysis of the dose received by a set of exposure pathways under an assumed scenario. The two limiting scenarios considered were the full time resident farmer scenario and the industrial worker scenario. These are considered limiting scenarios because they are intended to overstate dose and to be mutually exclusive, so that if one is used it is highly unlikely that any individual engaged in normal living activities would receive cumulative radiation exposure approaching 100 mrem/year. 62 *Federal Register* at 39065. Thus, it was the Commission's expectation that dose calculated by using a limiting scenario would be sufficiently conservative to more than account for exposure from other uses of the site, such as recreation.

In its DP, Fansteel relied upon an industrial use scenario to calculate derived site specific concentration levels (DCGL's) for the allowable amount of residual radioactivity that may remain at the time the site is released for unrestricted use. The DCGL's represent the maximum allowable level of radiation for specific nuclides, to ensure that the total radiation exposure to a member of

the critical group would not exceed 25 mrem per year at the time the site is released for unrestricted use. Fansteel's reliance on an industrial use scenario was based on a determination that its Muskogee site would be used for industrial purposes after release. This finding is based on the fact that the site is located in an area zoned for industrial use, and is surrounded by other industrial sites. *See* DP, at Sections 5.2.1.2.1 and 5.2.1.2.2. The "critical group" for calculating radiation dose was determined to be industrial workers. *Id.*

The Staff, in its review of the DP, determined that the industrial use scenario was appropriate given the likely use of the site for the foreseeable future. *See* Thaggard Affidavit, at ¶¶ 5-6. This approach was recently endorsed by the Commission in a Staff Requirements Memorandum (SRM-SECY-03-0069, dated November 17, 2003), which approved a Staff recommendation to develop guidance to explain that when determining the scenario, or set of circumstances, on which to base the dose modeling, the reasonably foreseeable land use of the site should be considered. Using this approach, land use scenarios are determined by making reasonable predictions based on physical and geologic characteristics, uses of the land considering historical information, current use, and likely use of the land over the next few decades to around one hundred years. *See* SECY-03-0069, Attachment 6 at p.9. While the Staff will analyze alternative scenarios to assess the conservatism in the analysis under the guidance, compliance would be based on the scenario determined to be reasonably foreseeable. *Id.*

While Oklahoma argues that Fansteel should be required to use a resident farmer scenario, it has provided no information on which to conclude that farming at the Muskogee site is likely or foreseeable. Rather, given the fact that the area is currently zoned for industrial use and is surrounded by industrial areas, it would be counterintuitive to assume that the site would revert to a farming area any time in the foreseeable future. With regard to Oklahoma's arguments that Fansteel fails to account for radiological exposure to recreational users, the use of the industrial worker scenario is intended to be bounding, as explained above. In other words, use of the

industrial worker scenario would account for more radiological exposure to the critical group -- workers at the site -- than one would expect any recreational user to receive.

Oklahoma's argument that Staff guidance requires the use of a resident farmer scenario here due to the availability of groundwater is premised upon a misapplication of the guidance. *See* Thaggard Affidavit, at ¶ 9. The guidance referenced by Oklahoma merely states that when groundwater is available it must be considered as a pathway for the purpose of calculating radiation exposure. Indeed, the Staff agrees with Oklahoma that groundwater is available as a radiation pathway at the Muskogee site. *See* Thaggard Affidavit, at ¶ 10. Accordingly, pursuant to License Condition 35, the Staff has required Fansteel to account for radiological exposure from groundwater due to the possibility that it may be used to supply drinking water to workers at the site.

Therefore, for all of the above reasons, the Presiding Officer should reject this area of concern. Oklahoma fails to adequately support its claim (*see* Written Presentation, at 38-41) that the DP inappropriately relies upon the industrial use scenario for dose modeling purposes. As discussed in the Thaggard Affidavit, the Staff has properly taken into account all potential pathways for radiation exposure at Fansteel's Muskogee site.

V. Financial Assurance

A. NRC Compliance with Financial Assurance Funding Mechanism

Oklahoma argues that the exemption to the decommissioning funding requirements granted by the Staff should be revoked, because the Staff is not permitted to grant such an exemption under the guidance in NUREG-1556. *See* Written Presentation, at 42-43.[18] For the reasons discussed below, the Presiding Officer should reject this area of concern.

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[18] Additionally, Oklahoma questions whether the Staff followed its published guidance by convening a bankruptcy review team, and obtaining original signed financial instruments from Fansteel. *See* Written Presentation, at 42-43.

Oklahoma fails to acknowledge the exemption authority set forth in 10 C.F.R. § 40.14(a), and fails to show that the Staff's use of this authority here was improper. The regulation states, in pertinent part, that exemptions from the 10 C.F.R. Part 40 requirements may be granted based on a finding that the exemption is "authorized by law and will not endanger life or property or the common defense and security and [is] otherwise in the public interest." 10 C.F.R. § 40.14(a). The circumstances of Fansteel's bankruptcy and the adequacy of the alternative funding arrangement proposed by Fansteel were carefully considered before the exemption was granted. *See* Fredrichs Affidavit, attached hereto as Staff Exhibit 3, at ¶¶ 5, 8-10, 16, and 27. Oklahoma proffers no evidence that the Staff misused its 10 C.F.R. § 40.14(a) exemption authority.

Moreover, the State's arguments regarding the process used by the Staff in reviewing and approving the exemption request must be rejected as improper in this forum. As discussed above in Section I, the Commission has made it clear that the actions of the Staff in conducting its regulatory reviews are not matters which are subject to review in NRC adjudications.[19]

Apart from the Presiding Officer's lack of jurisdiction over concerns about whether the NRC Staff followed the proper review process, Oklahoma's concerns in this regard are without merit. The Staff did, in fact, convene a bankruptcy review team for Fansteel. *See* Fredrichs Affidavit, at ¶ 28. The Staff also requested and received original financial instruments from Fansteel. *See* Fredrichs Affidavit, at ¶ 26. Therefore, for all of the above reasons, the Presiding Officer should reject this area of concern.

B. Cost Estimate for Decommissioning

Oklahoma argues that the cost estimate provided by Fansteel and accepted by the Staff is not reasonable, noting that it differs from the cost estimate obtained by the NRC from an

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[19] *See, e.g., Baltimore Gas & Elec. Co.* (Calvert Cliffs Nuclear Power Plant, Units 1 and 2), CLI-98-25, 48 NRC 325, 349 (1998); and *Curators of the University of Missouri*, CLI-95-1, 41 NRC 71, 121 (1995).

independent source. *See* Written Presentation, at 43-44.[20] As explained in the Fredrichs Affidavit, the Staff hired a contractor to provide an independent opinion regarding the cost of decommissioning the Muskogee site. The estimate provided by the contractor was higher than Fansteel's, primarily because the contractor estimated that a larger amount of soil would have to be remediated. Another component of the difference was that the contractor estimated higher costs for planning and the final status survey.

After reviewing and comparing the two estimates, the Staff determined that Fansteel's lower estimate for planning and the final status survey was more realistic. The Staff reached this conclusion because the contractor used a standard percentage to ascertain those costs. Use of the standard percentage tends to overstate the costs. Further, the nature of the Muskogee site is such that remediation will be fairly straightforward, and therefore will not require complex planning or surveys. *See* Fredrichs Affidavit, at ¶ 13. With regard to the amount of soil which will require remediation, the difference between the two estimates highlighted the potential uncertainty in the costs depending on what future characterization shows with regard to soil contamination. To address this uncertainty, the Staff accepted contingent financing which will cover any costs incurred over and above the Fansteel estimate. With this additional funding assurance, the Staff concluded that Fansteel had provided sufficient funding for decommission. *See* Fredrichs Affidavit, at ¶¶ 17-27.

Based on this determination, approval of the DP was appropriate. Given the reality of Fansteel's financial situation, having filed for bankruptcy protection, it was not possible for Fansteel to provide financial assurance as contemplated by the regulations. The only possible means to

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[20]Here, again, to the extent that Oklahoma relies on NUREG-1727, it confuses the guidance therein with Commission requirements. *See* discussion in Section I, above. NRC decommissioning decisions are based on whether the decommissioning will be completed as soon as practicable, and whether the health and safety of workers and the public will be adequately protected. *See* 10 C.F.R. §40.42(g)(5).

ensure that sufficient funding was in place, therefore, was to consider alternative financial mechanisms. Following a detailed and comprehensive review of the alternatives proposed by Fansteel, the Staff was satisfied that they provided reasonable assurance that the decommissioning of the site would be adequately funded. *See* Fredrichs Affidavit, at ¶¶ 17-27. If, as the State argues, the NRC had no alternative but to reject the DP because Fansteel could not comply with the funding mechanisms set forth by regulation, the likely outcome would have been liquidation of the company. As explained in the Fredrichs Affidavit, at ¶ 9, this would have resulted in, at most, $8.6 million dollars being available for decommissioning. This amount is nowhere near the cost of decommissioning, which Fansteel estimated to be $41.6 million dollars. *See* Fredrichs Affidavit, at ¶ 18.

Because Oklahoma has failed to adequately support its claim (*see* Written Presentation, at 43-44) that the Staff should not have accepted Fansteel's cost estimate, the Presiding Officer should reject this area of concern. As discussed in the Fredrichs Affidavit, the Staff carefully considered all of the relevant financial factors in granting Fansteel's exemption request.

VI. NEPA Issues

In its Section V (*see* Oklahoma's Written Presentation, at 44-48), Oklahoma largely repeats, in nearly verbatim fashion, concerns about the EA from a previous filing[21] which the Presiding Officer has already dismissed. *See* "Memorandum and Order" (unpublished), dated January 14, 2004, establishing the law of this case for EA issues. There, the Presiding Officer dismissed Oklahoma's Objection, but gave Oklahoma the opportunity to pursue its EA concerns within the context of either its industrial land use scenario concern, or its financial assurance concern.[22] The

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[21] *See* "State of Oklahoma's Objection to Issuance of Environmental Assessment and Finding of No Significant Impact," dated December 8, 2003 (Oklahoma's Objection), at pp. 3-5. *Cf.* Oklahoma's Written Presentation, at 44-47.

[22] *See* "Memorandum and Order" (unpublished), dated January 14, 2004, at 2.

State has not adequately done so. Section V's references to the industrial land use scenario (*see* Oklahoma's Written Presentation, at 45 and 47) do not identify what part of the DP the State takes issue with, thereby failing to meet 10 C.F.R. § 2.1233(c)'s requirements.[23]

Additionally, Oklahoma's charge that the NRC Staff "predetermined the outcome of the EA" (Oklahoma's Written Presentation, at 47) is without factual basis. *See* Shepherd Affidavit, at ¶ 19. For the reasons discussed above, the Presiding Officer should therefore reject the areas of concern set forth in Oklahoma's Written Presentation, at 44-48.

CONCLUSION

For the reasons stated above, the NRC Staff requests the Presiding Officer to reject all of the areas of concern identified by Oklahoma in its Written Presentation. The State has not identified any concerns calling into question the adequacy of the DP, as approved on December 4, 2003, when Materials License No. SMB-911 was amended.

Respectfully submitted,

John T. Hull
Counsel for NRC Staff

For Lisa B. Clark
Counsel for NRC Staff

Dated at Rockville, Maryland
this 4th day of March, 2004

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[23] Oklahoma's related references to "non-radiological contamination," and the cumulative impacts of "chemical contaminants" (Oklahoma's Written Presentation, at 47) are similarly defective. The Presiding Officer has already established the law of this case to be that such non-radiological hazards are outside the scope of this proceeding. *See* LBP-03-22, 58 NRC 363, 370 (2003).

NRC Staff Exhibit 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

In the Matter of	)	
	)	Docket No. 040-07580
FANSTEEL, INC.	)	
	)	
Muskogee Site	)	

AFFIDAVIT OF MARK THAGGARD

I, Mark Thaggard, being duly sworn, declare as follows:

1. I am competent to make this affidavit, and the statements herein are true and correct to the best of my knowledge, information, and belief. The opinions expressed herein are based on my best professional judgment.

2. I have a B.A. degree in Geology from the University of South Florida, a Masters Degree in Environmental Science from the University of South Florida, and a M.S. degree in Applied Mathematics from Johns Hopkins University. I am also currently completing a M.S. degree in Environmental Engineering from Johns Hopkins University. I have over 20 years of experience conducting environmental analyses, with over 12 years of experience conducting dose and performance assessment analyses for radioactive waste disposal facilities and sites undergoing decommissioning.

3. I was the lead technical reviewer of the dose assessment and development of derived concentration guideline levels (DCGLs) submitted as part of the Fansteel, Inc. decommissioning plan, and was responsible for preparing the portions of the SER relating to those subjects. In the course of my evaluation I reviewed the following documents: (a) Fansteel's Decommissioning Plan dated January 15, 2003 (ADAMS Accession No. ML033250083), (b) Staff Requirements - SECY-03-0069 - Results of the License Termination Rule Analysis, November 17,

2003, (c) SECY-03-0068, Results of the License Termination Rule Analysis, May 2, 2003, (d) Consolidated NMSS Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria, NUREG-1757, Vol. 2, (e) National Academy of Sciences paper, "Technical Bases for Yucca Mountain Standards," National Academy Press, Washington, D.C., 1995, and (f) Oklahoma's written presentation dated January 30, 2004 (Written Presentation).

4. Fansteel proposes to release the site for unrestricted use in accordance with the requirements of 10 C.F.R. § 20.1402. Under that standard, the residual radioactivity remaining at the site after remediation cannot result in a total effective dose equivalent (TEDE) to an average member of the critical group that exceeds 25 mrem/year. To demonstrate compliance with this regulation, licensees must consider scenarios that account for possible environmental pathways by which residual radioactivity may be transported, and routes by which someone using the site could be exposed to the residual radioactivity. These scenarios are expected to define a reasonable set of human activities that may occur at the site in the future. In most situations, there are numerous possible scenarios of how people could interact with residual radioactivity. However, the compliance criteria in Part 20 for decommissioning does not require an investigation of all (or many) possible scenarios. Instead, the focus should be on doses to members of the critical group. The critical group is defined (in 10 C.F.R. § 20.1003) as "...the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity..." This is not the same as evaluating the dose to the maximally exposed individual. Use of the critical group concept was an attempt by the Commission to emphasize the uncertainty in calculating potential future doses, and to limit boundless speculation on possible future exposure scenarios.

5. Scenarios are intended to include exposure routes and pathways that are consistent with how the land is expected to be used in the future. NUREG-1757 identifies three general approaches for developing land-use scenarios for use in dose analyses: (1) use of generic scenarios, (2) modification of generic scenarios, or (3) development of alternate scenarios.

Fansteel developed a light-industrial building occupancy scenario for establishing residual radioactivity levels for building surfaces, and for establishing residual radioactivity levels for soils and sediments.

6. I reviewed the scenario developed by Fansteel and the exposure pathways considered for the dose modeling. I determined that the industrial land-use scenario was an appropriate representation of how the land at the Muskogee site will likely be used in the future because: (1) the current land-use is for industrial purposes, (2) the area of the site is currently zoned for industrial use, (3) land-use in the immediate vicinity of the site is also used for industrial purposes, and (4) the site is expected to be used for industrial purposes for the foreseeable future, because the adjacent property is planned for industrial use as part of the Master Plan of Development for the Muskogee Port and Industrial Park, Muskogee City-County Port Authority. While the conversion of the land from industrial use to residential farming use cannot be completely ruled out, such land-use conversions are unusual. Further, a true scenario where someone in this country would grow a substantial portion of their own food, as assumed under the residential farmer scenario, is somewhat unusual even within a rural area.

7. In assessing the possible land-use scenario for the Muskogee site, I considered the expected land-use activities for the foreseeable future (*e.g.*, next several decades) consistent with the approach outlined by the Staff in a policy paper (SECY-03-0069) approved by the Commission on November 17, 2003 (SRM-SECY-03-0069). As explained by the Staff in the policy paper, dose analysis is a prospective analysis based on what is likely to occur at a site in the future. As has been noted by the National Research Council's National Academy of Sciences, in their 1995 "Technical Basis for Yucca Mountain Standards," forecasting human behavior (and, by extension, land use) over more than a few decades is impossible, and would have no technical basis. Therefore, the current approach used by the staff is to base the scenario on likely land uses expected in the foreseeable future. As previously noted, based on the available information

concerning current land use in the vicinity of the Muskogee site and current zoning, I considered use of the site for industrial purposes to be an appropriate scenario to assume for the foreseeable future.

8. As noted in the December 2003 Safety Evaluation Report (SER), as a bounding analysis, I also considered exposure under a residential farmer scenario. SER at section 5.3.2. This analysis indicated that the residual radioactivity levels remaining in the soils at the site would be roughly an order of magnitude less than those developed based on an industrial-use scenario. For example, the residual concentration of U-238 would need to be reduced from 14.1 pCi/g, as proposed by Fansteel, to roughly 1.4 pCi/g. Similarly, the residual concentration of Th-232 would need to be reduced from 10 pCi/g to roughly 1.0 pCi/g. This analysis is considered to represent a bounding estimate of potential exposures at the site, because it includes a wide range of potential exposure routes, including meat, milk, plant, and water ingestion. While a resident farmer scenario cannot be completely ruled out for the site, I consider it to be unlikely because of the current use of the site and the surrounding land. As previously noted, the critical group is defined as the group of individuals reasonably expected to receive the greatest exposure. Based on my conclusion that the reasonably foreseeable use of the site is industrial, I determined that the scenario defined within the Fansteel decommissioning plan was appropriate for evaluating likely exposures to residual radioactivity that will remain at the Muskogee site.

9. The approach used by Fansteel for developing its scenario is also consistent with current NRC guidance (NUREG-1757, Vol. 2). Contrary to the argument by the State in its Written Presentation, at p. 39, the industrial use scenario may be used in situations in which the ground water is not shallow enough to be pumped or to intercept a fish pond. The NRC's guidance in Appendix M NUREG-1757, Vol. 2, is intended to explain how pathways from the residential farmer scenario may be eliminated under certain circumstances. NUREG-1757 at Appendix M, p. M-2. As explained in the Appendix, groundwater may not be eliminated as a pathway if it is available for

use by the resident farmer. *See*, NUREG-1757 at M-9, M-34 to M-36. These guidelines are irrelevant with respect to developing an industrial-use scenario. As noted within the same section of the guidance (see Figure M.2 of NUREG-1757, Vol. 2), an industrial-use scenario can be developed as an alternate scenario.

10. With respect to the exposure pathways, I determined that the pathways used by Fansteel in its dose modeling analysis were appropriate with the exception of the exclusion of the drinking water obtained from groundwater. As I noted in the SER, even under an industrial land-use scenario it is possible that the ground water at the site could be used as a source of drinking water; therefore, ground water cannot be excluded as potential exposure route. To remedy this omission, a license condition (license condition no. 35, SMB-911, Amendment No. 12) was included in the amended license which requires that Fansteel remediate the site to residual radioactive levels to ensure that exposure to residual radiation in all media, including groundwater, from applicable pathways will not result in a TEDE exceeding 25 mrem/y.

11. The statements expressed above are true and correct to the best of my knowledge, information and belief.

Mark Thaggard

Subscribed and sworn to before me
this 3rd day of March, 2004

Circe (Ellen) Martin

CIRCE E. MARTIN NOTARY PUBLIC MONTGOMERY CO., MD.

My commission expires: March 1, 2007

CIRCE E. MARTIN
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires March 1, 2007

NRC Staff Exhibit 2

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

In the Matter of	)	
	)	Docket No. 040-07580
FANSTEEL, INC.	)	
	)	
Muskogee Site	)	

AFFIDAVIT OF JAMES SHEPHERD

I, James Shepherd, being duly sworn, declare as follows:

1. I am competent to make this affidavit, and the statements herein are true and correct to the best of my knowledge, information, and belief. The opinions expressed herein are based on my best professional judgment.

2. I am the NRC Project Manager (PM) overseeing the remediation of the Fansteel Muskogee Site. I have been the PM for the Fansteel site since March of 2002, when responsibility for the site was transferred from the Fuel Cycle Safety and Safeguards Division to the Division of Waste Management. As PM, I have evaluated the decommissioning plan (DP) submitted by Fansteel in January, 2003 (ML033250083), and the amendments thereto submitted last May (ML033250083) and July (ML033250083). During my DP review I identified its shortcomings, and specified license conditions to correct these shortcomings. The results of my review are documented in a safety evaluation report (ML033250083), in which the Staff recommended that the DP be approved, subject to incorporation of the specified license conditions. The license conditions were incorporated into Fansteel's license SMB-911 by amendment 11, issued on December 4, 2003, authorizing implementation of the DP (ML033250083). I also wrote the environmental assessment (EA) which concluded that remediation of the Muskogee site to the unrestricted use criteria specified in 10 C.F.R. § 20.1402 would not have a significant impact on

the human environment (68 Fed. Reg. 63134 (Nov. 7, 2003)). A summary of my educational training, professional experience, and employment history is attached hereto as Attachment A.

3. This affidavit reflects my previous familiarity with and/or recent review of the following documents: (a) Fansteel's DP, as submitted in January, 2003; (b) the amendments to the DP set forth in Fansteel's letter dated May 8, 2003 (May 8 Letter); (c) NUREG-1757, "Consolidated NMSS Decommissioning Guidance," Volumes 1-3; (d) NUREG-1727, "NMSS Decommissioning Standard Review Plan" (September 2000); (e) "Safety Evaluation Report For License Amendment Application To Approve Decommissioning Dated July 24, 2003," issued by the NRC staff in December 2003 (Decommissioning SER), and the related license conditions imposed on Fansteel; and (f) Oklahoma's written presentation dated January 30, 2004 (Written Presentation).

4. This affidavit will focus on the site characterization issues relevant to the concerns stated by Oklahoma at pages 11-36 of its Written Presentation. I first set forth some relevant background information. As part of an earlier effort to decommission its Muskogee site, Fansteel had a contractor collect site characterization data in 1993 (the DP is based on this data, which is discussed in the Decommissioning SER). In 1997, Fansteel requested authorization to reprocess what is called work in process (WIP) as part of remediating its Muskogee site. NRC approved this remediation in 1997.[1] In November 2001, Fansteel announced that it had suspended its effort to begin commercial processing of the WIP at the Muskogee site.[2]

5. Under the approved DP, after remediation of known radioactive contamination is complete, additional characterization, and further remediation, if necessary, of the Muskogee site

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[1] *See* letter from M.F. Weber (NRC) to J.J. Hunter (Fansteel) dated March 25, 1997 (NRC Accession #9704010082).

[2] *See* Fansteel Press Release, November 19, 2001 (ML040510027).

would be conducted. The same remedial criteria would apply throughout the decommissioning process, which is further summarized below.

6. Fansteel's DP, when fully implemented, will remediate the Muskogee site to "unrestricted use" conditions, as defined in 10 C.F.R. § 20.1402. A key to understanding how the approved DP will accomplish this result is the 4-phased approach to decommissioning the Muskogee site.[3] In Phase 1, the material with the highest radioactive concentrations (*i.e.*, the WIP residues in Pond Nos. two and three) will be removed. These pond materials have concentrations up to about 300 pCi/g in a sludge form. In Phase 2, the materials from Pond Nos. five[4] through nine will be removed. Pond Nos. six through nine are wet, and contain calcium fluoride (CaF) low-level radioactive waste in a very mobile form. The radioactive component of the CaF waste is 0.04 percent (by weight) radio nuclides. The staff team that I led has determined that the characterization of Pond Nos. 2-3 and 5-9 is sufficient for NRC to find that the proposed remediation of the WIP and CaF wastes in those ponds will be effective.[5] Remediation of these ponds in the DP's first two phases will -- in addition to reducing the on-site source term -- provide direct access to those parts of the subsurface currently covered by the ponds, thereby facilitating site characterization.

7. Because all of the above-referenced ponds (except Pond 5) contain liquids or sludge, any sampling through the pond liners before the contents were removed would introduce

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[3] In its May 8 Letter, Fansteel modified its DP by committing to use of a 4-phased approach to decommissioning.

[4] Pond No. 5 was designed and installed as an alkaline pond, but is now dry. It was used for various purposes during historical facility operations. In the past, Pond 5 accepted treated process water, typically handled in acidic ponds. Even though it is now dry, the approved DP groups Pond 5 with Ponds 6-9 because it is adjacent to them, and low-level radioactivity has been detected historically in samples collected within its boundary.

[5] *See* Decommissioning SER § 4.5.2 (Surface Water, Sediment, and Ponds Characterization) for further details.

a migration pathway for radioactive waste material that is now fully contained. This would significantly increase the potential for further environmental contamination. Other sampling techniques, such as directional drilling, are very expensive. In my opinion, the funds now available are better spent on remediating the known contamination in Pond Nos. 2-3, and 5-9, rather than on further studies (but see ¶ 11 below discussing additional characterization requirements imposed on Fansteel).

8. Less is known about what materials were kept in Pond Nos. 1 and 4, which no longer exist at the site. To address this uncertainty, License Condition 29 was imposed on Fansteel, stating in full as follows:

> 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.

9. In Phase 3 of the DP, the buildings, equipment and soils throughout the site -- which have varying amounts of radiological contamination in forms that would not readily cause a dose to the public -- would be remediated. Under the approved DP, Phases 1-3 will be done in sequence. Phase 4 of the DP -- groundwater remediation -- is currently ongoing and will continue until radioactive contaminants reach release limits. The Muskogee site's groundwater was most recently sampled and analyzed in the spring of 2002, at which time data was obtained from 19 of the 25 alluvial wells sampled in 1993. The 2002 sampling results are listed in Table 4-24 of the Decommissioning SER, and are discussed further in ¶ 12, below.

10. The 4-phased approach for decommissioning the Muskogee site is summarized in License Condition 37, which states in full as follows:

> 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:
>
> a. WIP (Phase 1) not later than August 2, 2004.
>
> b. CaF (Phase 2) not later than January 2, 2007.
>
> c. all contaminated soil, buildings and equipment not later than August 1, 2011.
>
> d. groundwater remediation (Phase 4) not later than January 5, 2012.

In my opinion, the approved 4-phased decommissioning of the Muskogee site is fully consistent with the NUREG-1757 guidance and the NRC's risk-informed approach to the decommissioning of materials facilities. The goal of this approach is to focus the resources of both the licensee and the NRC on those areas that have the most significant risk to the members of the public.

11. Although as discussed above the NRC staff in the Decommissioning SER found that the characterization of Pond Nos. 2-3 and 5-9 was adequate, we also determined that the present characterization of the balance of the Muskogee site is not adequate. License condition number 31 was therefore imposed, stating in full as follows:

> Licensee shall conduct an additional characterization of any additional contaminants at the site, 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.

12. Below, in ¶¶ 12-14, I address some of Oklahoma's specific concerns. Oklahoma discusses the 1993 and 2002 groundwater analyses referenced above, stating that because the data comparison shows that contamination in the groundwater is moving, the 1993 data is fatally flawed. *See* Written Presentation, at pages 34-35. I disagree. In comparison to the 1993 data, the individual gross alpha radioactivity concentration results were higher for ten of the wells sampled in 2002, and lower for nine of the wells sampled. The individual gross beta radioactivity concentration results were higher in seven of the wells sampled, and lower in 12 of the wells sampled. The 2002 group average analytical results declined from the corresponding 1993 values: the gross alpha concentration declined from 213 pCi/l to 146 pCi/l, and the gross beta concentration declined from 200 pCi/l to 173 pCi/L. In my opinion, these data differences simply reflect the facts that (1) uranium is soluble in water, and (2) contamination moves through alluvial groundwater over time.[6] It is my further opinion that the 2002 data is consistent with the Staff's SER finding that since 1993, except for groundwater transport of soluble radio nuclides, there have been no onsite activities which would significantly alter the distribution of the existing contamination. *See* Decommissioning SER Section 4, at page 9.

13. Oklahoma questions the effectiveness of the interceptor trench. *See* Written Presentation, at page 32. To address this concern, I first set forth the following background information. Pond No. 3 was designed and constructed as a total retention structure for residues from the WIP produced during the digestion and liquid-liquid exchange processes that occurred in the Chemical "C" Building. A single synthetic liner was installed at the base of the pond with the intent to retain all fluids and residues from the WIP placed in the structure. Materials stored in this pond include digested ores and slags containing low level radioactive species, and other non-

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[6] The rate at which this movement occurs is a function of the exact chemical composition of the uranium compounds present, and how rapidly the groundwater flows. The rate of such flow is influenced by infiltration from recent rainfall, the level of the regional groundwater table, and seasonal variations.

radioactive contaminates. As indicated in DP Section 2.3.5, the Pond No. 3 liner failure in 1989 created the need for a groundwater interception trench. Such trenches collect alluvial groundwater to prevent the further spread of contamination via the groundwater pathway. Interception trenches work in conjunction with sumps -- fabricated pits (most often steel or concrete) which capture and contain liquids. Sump pumps are placed in these pits to transfer the liquids to a processing facility or release point. Four sumps are located along Fansteel's trench, and are shown in DP Figure 2-1. The alluvial groundwater collected in the trench is pumped to Fansteel's waste water treatment plant (WWTP). From there, it is transferred to Pond Nos. 6 - 9 for solids precipitation, before eventual discharge through the NPDES outfall.[7] Oklahoma has presented no evidence that Fansteel's trench is failing to work as intended.

14. Oklahoma questions the Staff's reliance on a "dilution factor." Written Presentation, at page 35. Average flow in the Arkansas River near Muskogee is approximately 20,000 cubic feet per second (10 million gallons per minute (gpm)). Seasonal variations are ±5 million gpm *See* DP Table 3-5. Total ground water flow in the unconsolidated saturated material beneath Fansteel's Muskogee site is approximately 1.5 gpm *See* DP, at page 3-18. Given the large difference between these flow rates (seven orders of magnitude), in my opinion it is unlikely that any amount of contamination released from the Fansteel site into the Arkansas River through the groundwater pathway would have a negative impact on the water quality of the river.

15. During the review of the Fansteel DP, several issues were identified that required Fansteel to do further analyses or collect additional data. Because of the constraints of the bankruptcy, Fansteel could not expend the resources necessary to respond meaningfully to

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[7] Fansteel currently has an NPDES permit in place for four outfall locations (Permit No. OK0001643). Outfall 001 discharge consists of process wastewater from the processing operation, wastewater from site remediation activities, groundwater from the french drain system associated with Pond No. 3, and storm water runoff from the residue processing area.

requests for additional information (RAIs). Therefore, the staff added 26 license conditions (##26, 29 - 54) to Fansteel's license as part of the DP approval.

16. For example, one of the issues arising during the review of the Fansteel DP was whether or not the long-term contribution to dose from the site's groundwater should be considered. Because groundwater from the shallow alluvium is not used in the immediate area of Fansteel's site, and because wells in the Muskogee County area are typically about 400 feet deep, the site's groundwater does not presently contribute to dose. In my opinion, the site's groundwater would probably not contribute to dose in the future, either. Nevertheless, to be conservative, Fansteel must calculate the potential future contribution to dose from the site's groundwater, pursuant to License Condition number 35, and must conduct additional site remediation, if necessary, to reduce the calculated dose from all pathways to unrestricted use limits. License Condition number 35 states in full as follows:

> 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.

17. Oklahoma failed to address any of the license conditions in its Written Presentation. In my opinion, compliance with the license conditions will ensure adequate protection of public health and safety, and provide NRC with sufficient oversight to identify any potential issues that may arise as the decommissioning process continues.

18. For all of the reasons stated above in my affidavit, I therefore conclude that the approved DP meets the requirements of 10 C.F.R. § 40.42(g).

19. I address briefly Oklahoma's claim that the NRC staff "predetermined" the Decommissioning EA's outcome. *See* Written Presentation, at pages 47-48. I was the principal author of the Decommissioning EA, and, contrary to Oklahoma's claim, its outcome was not predetermined. Further, to the extent that Oklahoma's claim is based on correspondence exchanged between the staff and Fansteel in the April 28 - May 8, 2003 time frame, it ignores the fact that subsequent events delayed the time I even began working on the Decommissioning EA. As reflected in the August 11, 2003 *Federal Register* notice, Fansteel resubmitted the DP on July 24, 2003, and no related review work was performed during the prior weeks in which the DP had been withdrawn. Moreover, due to other work priorities, I did not begin working on the Decommissioning EA until September, 2003, after I began drafting the Decommissioning SER.

20. The statements expressed above are true and correct to the best of my knowledge, information and belief.

James Shepherd

Subscribed and sworn to before me
this 4th day of March, 2004

Circe E Martin
Circe (Ellen) Martin

CIRCE E. MARTIN
NOTARY PUBLIC
MONTGOMERY CO., MD.

My commission expires: March 1, 2007

CIRCE E. MARTIN
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires March 1, 2007

Attachment A

James C. Shepherd

MS T7 F27
United States Nuclear Regulatory Commission
Washington, DC 20555
301-415-6712

PROFESSIONAL EXPERIENCE

U.S. Nuclear Regulatory Commission, Rockville, Maryland 1991 - Present
PROJECT ENGINEER

NRC Project Manager for the decommissioning and remediation of the Fansteel facility in Oklahoma; reviewed application, determined final remediation criteria; developed license conditions necessary to meet those criteria, and wrote the safety evaluation report (SER) and the environmental assessment (EA) for approval of the decommissioning plan (DP)

NRC Project Manager for the decommissioning and remediation of the Sequoyah Fuels Corp. uranium conversion facility in Oklahoma; reviewed and managed an EIS to determine final remediation criteria; generated a Memoranda of Understanding with the Environmental Protection Agency that facilitated the regulatory control of the site.

NRC Project Manager for the decommissioning and remediation of the Big Rock Point nuclear reactor; review the license termination plan and issue requests for additional information (RAI); write the SER and the EA.

Evaluated proposed decommissioning plans for several parts of the Nuclear Fuel Services facility in Tennessee; analyzed and developed the remediation criteria; developed RAIs and evaluated responses; wrote SER and EA for approval of the plans; review final status surveys that are to demonstrate that residual contamination at the site is within limits for unrestricted use.

NRC Project Manager for the initial plans for the decommissioning and remediation of the West Valley, New York, nuclear fuel reprocessing facility

Team leader and author for NUREG-1757, Consolidated NMSS Decommissioning Guidance, Volume 1.

Participated in government hearings and provided expert opinions on technical issues as well as the implementation of NRC regulations.

Westinghouse Savannah River, Aiken South Carolina 1990 - 1991
PRINCIPAL ENGINEER

Conducted analyses on all aspects of risk analyses and management for reactor restart .

Battelle Memorial Institute, Columbus, Ohio 1986 - 1990
SENIOR ENGINEER

Analyzed and developed the remediation criteria for several nuclear processing facilities;

Analyzed the safety of chemical plants using HazOps, relative risk ranking, and quantitative methods, such as Dow & Mond Fire and Explosion Indices.

TAUGHT many short courses and seminars to foreign and domestic audiences ranging from senior managers to journeyman practitioners on all aspects of risk analyses and management, including courses on probabilistic risk assessment, relative risk ranking, Hazard and Operability Studies, and human performance. (Audiences included management of a foreign government nuclear safety committee, supervisors at the Kennedy Space Center, and international audiences at conferences in India. At the end of such courses, audiences demonstrated comprehensive knowledge of the material by effectively completing practical exercises.)

U.S. Nuclear Regulatory Commission, Rockville, Maryland 1985 - 1986
PROJECT MANAGER

Managed the comprehensive (Level 3) PRA for the LaSalle reactor facility.

EG&G, ID, Idaho Falls, Idaho 1976 - 1985
ENGINEER

Identified and resolved questions concerning the safety and reliability of nuclear systems for the Loss of Fluid Test facility and other test reactors;

Developed and implemented methods to evaluate alternatives for systems design and operation to enhance reactor safety.

Co-developer of computer based analysis for common cause failures.

EDUCATION

M.S., Nuclear Engineering, University of Washington, 1977;
B.S. & B.E., Science/Engineering, Seattle University, 1974;

Princeton Courses: Groundwater Pollution and Hydrology; Remediation

National Ground Water Association course: Natural Attenuation, Risk Assessment, and Risk-Based Corrective Action

MILITARY EXPERIENCE

Four years active duty, U.S. Army; job assignments included: Combat Advisor, ARVN Ranger Battalion, Company Commander, HQ (300 people); Company Commander, CSC (150 people); Brigade Assistant Intelligence Officer; Battalion Operations and Intelligence Officer, 1st Cav. Div.

COMPUTER SKILLS

Windows 98-NT, RESRAD, MEPAS, MSProject, Harvard Project Manager, PowerPoint, Corel Presentations, Excel, Quattro Pro, Paradox, SUN UNIX, EarthVision, IRRAS, COMCAN III, WordPerfect, Word, Norton, DOS

PROFESSIONAL AFFILIATIONS

National Ground Water Association

NRC Staff Exhibit 3

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

In the Matter of	)	
	)	Docket No. 040-07580
	)	
FANSTEEL, INC.	)	
Muskogee Site	)	

AFFIDAVIT OF THOMAS L. FREDRICHS

I, Thomas L. Fredrichs, being duly sworn, declare as follows:

1. I am competent to make this affidavit and the statements herein are true and correct to the best of my knowledge, information and belief. The opinion expressed herein are based on my best professional judgement.

2. My educational qualifications include a Bachelor of Science degree in chemical engineering from the University of Wisconsin, and a Master of Business Administration degree, specializing in Finance, from The University of Chicago.

3. My professional qualifications include: three years experience as Radwaste Engineer at Wisconsin Electric Power Company's Point Beach Nuclear Power Plant, with responsibility for processing and disposal of radioactive waste material, and ten years experience as Supervisor and Chemistry Manager at the Point Beach facility, responsible for, among other duties, monitoring and compliance with the Wisconsin Pollution Discharge Elimination System (WPDES). My experience also includes seven years with the US Nuclear Regulatory Commission (NRC); three years as Project Manager for the decommissioning of the Haddam Neck Nuclear Plant, and four years as Project Manager - Financial Analyst for decommissioning of materials licensees. My current position is Project Manager - Financial Analyst with NRC. In addition, I served as Team Leader for

the updated NRC guidance for financial assurance of decommissioning costs, NUREG-1757, Vol. 3., "Consolidated NMSS Decommissioning Guidance", published in September 2003.

4. On June 18, 2002, I visited the Muskogee site with an NRC contractor to collect information relevant to developing an independent decommissioning cost estimate for the site.

5. I was responsible for evaluating the decommissioning cost estimate submitted by Fansteel and the financial assurance mechanisms available for payment of the decommissioning costs and for preparing the portions of the SER relating to those subjects. In the course of my review I considered: (a) The cost estimates and Decommissioning Funding Plan submitted by Fansteel, Inc., for the decommissioning of the Muskogee site, submitted on January 14, 2003, (ADAMS Accession No. ML030270048), January 23, 2003 (ML030270032) July 24, 2003 (ADAMS Accession No. ML030270032) and October 15, 2003 (ADAMS Accession No. ML03295045), (b) the report prepared by the independent contractor, "Decommissioning Cost Estimate for Fansteel, Inc. Muskogee, OK" dated November 15, 2002. (ADAMS Accession No. ML0235100245), (c) Fansteel Inc.'s business plan for exiting bankruptcy, including its projections of sales, revenues, and expenses included in the Disclosure Statement, Section V, submitted to the Bankruptcy Court (ADAMS Accession No. ML032190239), (d) the liquidation analysis of Fansteel's assets performed by Fansteel and included in the Disclosure Statement, Exhibit B, submitted to the Bankruptcy Court (ADAMS Accession No. ML032190239), (e) Fansteel's Reorganization Plan submitted to the Bankruptcy Court (ADAMS Accession No. ML032100530), (f) Fansteel's Request for Exemption from the decommissioning funding requirements of 10 C.F.R. § 40.36(e) (ADAMS Accession No. ML032100530), and (g) Oklahoma's written presentation dated January 30, 2004.

6. A licensee under Part 40 of the Commission's regulations, like Fansteel, is required to submit a decommissioning cost estimate under 10 C.F.R. § 40.36(d), as well as financial instruments in an amount sufficient to cover the cost estimate under 10 C.F.R. § 40.36(e). With

its proposed DP, filed on January 14 , 2003, Fansteel submitted a decommissioning cost estimate of $41.6 million. Fansteel represented that it would be unable to provide the required financial instruments for that amount as a result of the fact that it was filing for bankruptcy.

7. In order to satisfy the requirements of 10 C.F.R. § 40.36(e), Fansteel would have to provide either 1) prepayment of the entire amount to a suitable account, 2) a third party guarantee to pay the full amount on Fansteel's behalf, in the form of a letter of credit, insurance, or other surety, or 3) an external sinking fund combined with a third party guarantee, provided that the total covered the cost estimate. If a third party guarantee was provided, Fansteel would additionally be required to provide a Standby Trust to receive the funds if the surety were required to make payment upon Fansteel's inability to fund the decommissioning project. Fansteel did not qualify to use the remaining two financial instruments permitted by 10 C.F.R. §§ 40.36(e)(4) and (e)(5) because it is not a government licensee and does not have an arrangement with a government entity to take custody and ownership of the site.

8. Fansteel filed for bankruptcy under Chapter 11 of the Bankruptcy Code on January 15, 2002. In support of that filing, Fansteel provided a business plan for exiting bankruptcy, including projections of sales, revenues and expenses, a liquidation analysis of Fansteel's assets, and a proposal for providing alternative means for funding decommissioning. From my review of this information relating to Fansteel's bankruptcy, I concluded that Fansteel would not be able to provide financial assurance in the form required by 10 C.F.R. § 40.36(e). Specifically, Fansteel could not provide prepayment or obtain a third party guarantee of payment because it did not have sufficient cash and/or credit. Consequently, I found that Fansteel required an exemption from the requirements of 10 C.F.R. § 40.36(e), due to the impossibility of Fansteel providing any of the types of financial instruments specified in this regulation.

9. I determined that because of Fansteel's bankruptcy it had two options for financing the decommissioning of the Muskogee site: 1) liquidate its assets and make partial payment on its obligations, which included creditors as well as environmental obligations, or 2) reorganize the company as necessary to exit bankruptcy and pay for decommissioning on a pay-as-you-go basis. The liquidation analysis indicated that approximately $8 million could be realized from the sale of the licensee's assets, after expenses and secured debt were satisfied, of which perhaps $2 million to $4 million might have been recovered by NRC for use in the Muskogee decommissioning. However, the amount was uncertain and could have been much less. Liquidation would not have provided sufficient cash to complete the decommissioning project. If the maximum liquidation recovery amount was added to the $4.6 million secured in the Standby Trust, the available cash would have been about $8.6 million, or less than a quarter of the licensee's cost estimate. Therefore, liquidation did not meet the intent of the financial assurance regulations, since it would not have provided sufficient cash to complete the decommissioning.

10. The second option available to Fansteel was to exit bankruptcy and use a pay-as-you-go method to finance the decommissioning project. In order to evaluate the second option, I considered the adequacy of the decommissioning cost estimate, the likelihood that Fansteel could pay the cost, and provisions for increasing the amount paid by Fansteel if the original estimate proved to be too low.

11. To assist in my evaluation of the adequacy of Fansteel's cost estimate, a contractor was hired to perform an independent cost estimate. The contractor estimated decommissioning costs would be approximately $85 million. The primary reason for the difference between the NRC contractor's and Fansteel's estimates was the assumed volume of contaminated soil that would need to be removed and disposed. Fansteel's estimate was based on removing only soil that was known to be contaminated from the site based on limited characterization data. In contrast, the

independent contractor based its cost estimate on a projection of the amount of soil that would be removed by assuming that contamination would be found in areas that had not yet been completely characterized. A secondary reason for the difference was that Fansteel estimated lower costs for planning and the final status survey, as compared to the NRC contractor's estimate.

12. The contractor supplemented the estimated cost of decommissioning by a 25% contingency factor. NRC guidance recommends this practice to account for the risk that actual costs will exceed estimated costs. "Consolidated NMSS Decommissioning Guidance," NUREG-1757, Vol. 3, Section A.3.1.2.3 However, as discussed below, the risk that unforeseen circumstances may cause a shortfall in funding by Fansteel is accounted for through the use of a Contingent Note which will provide additional funding if necessary to complete decommissioning. Therefore, I determined that adding a contingency factor into the cost estimate for the Muskogee site was not necessary.

13. With regard to the planning and final status survey costs, the NRC contractor applied a standard percentage to the disposal costs to arrive at its figure. The standard percentages were derived from cost studies of complex sites. Therefore, due to the straightforward nature of the Muskogee decommissioning project, I concluded that the standard percentage multipliers overstated the actual costs Fansteel will incur.

14. After reviewing the two estimates, I concluded that there was reasonable certainty that Fansteel's estimate was representative of decommissioning costs for removing the known amount of contaminated soil and pond contents. In addition, I concluded that the only means to resolve the issue of how much soil will need to be remediated at the site was to obtain additional site characterization.

15. However, due to Fansteel's limited funds, money spent on characterization would reduce the funds available for decommissioning. Furthermore, additional characterization was

unnecessary to address the costs of remediating the known contamination. I therefore concluded that the cost estimate was adequate for the following reasons: 1) it reasonably assessed the known costs of decommissioning the Muskogee site, and 2) if the cost estimate proves to be low, a mechanism is in place to provide additional funds in the future, as discussed in detail in ¶¶ 17 - 19, below.

16. I evaluated the likelihood that Fansteel would be able to pay the decommissioning costs by considering its business plan for exiting bankruptcy. The projected revenues of the licensee, if it restructured and exited bankruptcy under the proposed plan, indicated that it could provide $41.6 million dollars for decommissioning if it was allowed to pay over a period of about 23 years. The bulk of the amount ($36.9 million) would be paid by 2013. The licensee's revenue projections were reviewed by the Department of Justice, which concurred that the projections were reasonable. The projections were based on cost savings and increased efficiencies to be obtained from capital investment, and recovery of business lost during the bankruptcy. Among the largest revenue producers was a Mexican subsidiary which had recently renewed and enlarged its contract for diesel engine parts, which bolstered the reasonableness of the projections. I concluded that the pay-as-you-go alternative proposed by Fansteel met the intent of the financial assurance regulations since it provided reasonable assurance that funds would be available for decommissioning.

17. To address the uncertainty in the ultimate cost, Fansteel, Inc. provided a Contingent Note, which would be used to fund decommissioning costs not funded by the financial instruments already provided, if necessary. This approach was designed to maximize effective use of limited funds in the beginning of the project, when the material with the highest hazard will be removed and disposed of, by minimizing the duplication of work necessary to perform additional site characterization. Data collected during the course of work will be useful in performing the

additional characterization that will be needed to resolve the uncertainty in waste soil volume. In approximately 2011, the project will be reviewed and additional costs, if any, determined. At that time, Fansteel, Inc. will provide additional financial assurance, if necessary, using the Contingent Note.

18. I reviewed the alternative financial instruments Fansteel submitted to NRC for decommissioning financial assurance. Fansteel, Inc. proposed covering the decommissioning cost estimate using cash and a number of financial instruments, as listed below:

Projected spending at Muskogee before bankruptcy settlement	$2.2 million
Primary Note	$30.6 million
Secondary Note (groundwater only)	$4.2 million
Contingent Note	As necessary to complete decommissioning
Standby Trust	$4.6 million
Current Total	$41.6 million

19. The Notes are unsecured promissory notes from Fansteel, Inc. to FMRI, Inc., a wholly owned subsidiary of Fansteel created as part of the bankruptcy plan for the purpose of conducting the remediation of the Muskogee site. The Primary and Secondary Notes provide that Fansteel must make payments to FMRI, Inc. according to a schedule which specifies the dates of payment and the minimum payment required. Payments under the Primary Note will exceed the minimum when Fansteel's revenues exceed certain levels, which are defined by a formula. The amounts to be paid under the Contingent Note will be determined after site characterization is completed. The NRC is third party beneficiary to all the Notes. The NRC is also the beneficiary of the Standby Trust (ADAMS Accession No. ML033380547).

20. In addition to the cash and financial instruments, Fansteel provided a Pledge Agreement and Indemnity to guarantee that the promissory notes to FMRI will be paid, and that the

amounts paid will be used for decommissioning expenses at Muskogee. The Pledge Agreement provides that FMRI may not sell, assign, exchange, or otherwise dispose of its interests in the Notes, and may not create or suffer to exist any lien, security interest, or other encumbrance upon the proceeds of the Notes. The Indemnity Agreement provides that Fansteel will pay for the expenses of collection in the event that NRC must exercise its rights to collect under the Notes.

21. An Intergovernmental Agreement (ADAMS Accession No. ML040270571) provides that the State of Oklahoma shares equal rights with NRC to the proceeds of the Secondary Note, which provides for payments for groundwater remediation at Muskogee.

22. Payment of the notes will be over time, and the amount will vary with the actual revenues of the parent company, Fansteel, Inc. The Primary Note must be paid within ten years. Payments will vary between a minimum of $1.4 million and a maximum of $5.4 million per year. If additional funds are available from insurance or the sale of major assets, additional payments will be made, which may exceed the maximum. The Secondary Note will commence annual payments of $282,000 in 2009 and will mature in 2023, but payments will end sooner if the groundwater no longer requires remediation.

23. The minimum annual payment of $1.4 million is sufficient to maintain the site in a stable condition and fund decommissioning at a reduced level, as compared to the schedule and budget submitted by Fansteel. (ADAMS Accession No. ML030270048).

24. If Fansteel's revenues fall short of the projections, up to $2,000,000 may be borrowed from the Standby Trust to make up the shortfall, which will permit the decommissioning project to proceed according to the schedule submitted with the DP. If funds are borrowed from the Standby Trust, they must be replenished. Payments from Fansteel to FMRI used to replenish the Trust will not count as reduction of the principle amounts required under the Notes.

25. No stock dividends will be paid by Fansteel, Inc. during the term of the primary note, which extends until Fansteel, Inc. has paid $30.6 million (exclusive of payments made under the Secondary or Contingent Notes) to FMRI, Inc., or December 31, 2013, whichever occurs first.

26. Fansteel submitted the final signed original financial instruments to NRC on January 23, 2004, in accordance with the terms of the exemption and the Reorganization Plan approved by the Bankruptcy Court (ADAMS Accession Nos. ML040270571, ML040270565, ML040270557, ML04027055, ML0402705539, ML040270235).

27. Based on my review of the alternative financial instruments submitted by Fansteel and described above, I concluded that they provided reasonable assurance that funds would be available for decommissioning. On the basis of that conclusion, I prepared the evaluation and approval for the exemption included as part of the license amendment issued on December 4, 2003.

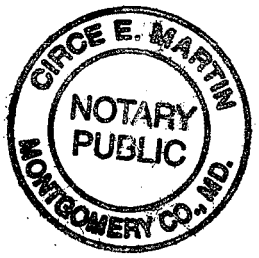
28. When Fansteel announced its intended bankruptcy filing (*see* Fanteel's November 19, 2001 press release (ML040510027)), the NRC formed a bankruptcy review team. The team issued a letter to Fansteel on November 29, 2001 (ML013370236), informing Fansteel that, pursuant to 10 C.F.R. § 40.41(f), Fansteel would be required to (1) formally notify the NRC when its bankruptcy filing was actually made; and (2) increase the amount of financial assurance to cover the increased cost of decommissioning. Additionally, Fansteel was informed that it would remain responsible for compliance with all NRC regulations. After Fansteel made formal notification of its bankruptcy filing, regulatory oversight of the Muskogee facility was transferred from the NRC's Division of Fuel Cycle Safety and Safeguards to the NRC's Division of Waste Management. Corresponding adjustments were made in the set of individuals comprising the NRC's bankruptcy review team.

29. The statements expressed above are true and correct to the best of my knowledge, information and belief.

Thomas L. Fredrichs

Subscribed and sworn to before me
this 3rd day of March, 2004

Circe E. Martin



My commission expires: March 1, 2007

CIRCE E. MARTIN
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires March 1, 2007

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

In the Matter of	)	
	)	Docket No. 40-7580-MLA-3
FANSTEEL, INC.	)	
	)	ASLBP No. 04-816-01-MLA
(Muskogee, Oklahoma Site)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "NRC STAFF RESPONSE TO STATE OF OKLAHOMA'S WRITTEN PRESENTATION," and Staff Exhibits 1-3 referenced therein, have been served upon the following persons this 4th day of March, 2004, by electronic mail, and by deposit into the United States mail, first class (or as indicated by an asterisk through the Nuclear Regulatory Commission's internal mail system).

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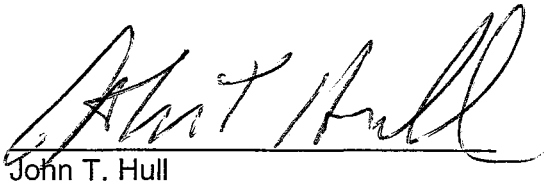

John T. Hull
Counsel for NRC Staff