UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

JAN 2 9 1992

Docket No. 70-143
License No. SNM-124
EA 91-186

Nuclear Fuel Services, Inc.
ATTN: Mr. Charles R. Johnson
President
Post Office Box 337, MS 123
Erwin, Tennessee 37650

Gentlemen:

SUBJECT: NOTICE OF VIOLATION (NRC INSPECTION REPORT NO. 70-143/91-31)

This refers to the Nuclear Regulatory Commission (NRC) inspection conducted by Mr. S. Burris on October 26 - December 4, 1991, at the Nuclear Fuel Services facility located in Erwin, Tennessee. The inspection included a review of the facts and circumstances related to an event that occurred on November 8, 1991, and involved the transfer of a raffinate solution containing uranium from a favorable to an unfavorable geometry vessel without verifying that the uranium concentration of the raffinate solution was safe for such a transfer. The report documenting this inspection was sent to you by letter dated December 20, 1991. As a result of this inspection, a violation of NRC requirements was identified. An enforcement conference was held on January 3, 1992, in the NRC Region II office to discuss the violation, its cause, and your corrective action to preclude recurrence. The letter summarizing this conference was sent to you on January 15, 1992.

The violation described in the enclosed Notice of Violation (Notice) involved the inadvertent transfer of a raffinate solution containing a higher than normal concentration of uranium from raffinate columns to a storage tank and subsequently to the Waste Water Treatment Facility (WWTF) on November 8, 1991. An accountability sample result found that the value of the raffinate solution that was transferred on November 8, 1991, was 0.0324 gU/l which exceeded the established administrative limit of 0.03 gU/l.

The safety significance of this event is based on the fact that administrative nuclear safety controls failed. The administrative nuclear safety controls in this case consisted of two required independent verifications of the laboratory analysis results for the raffinate solution which would permit the transfer to the WWTF if the solution was within the required limits. The procedure required both the operator and the supervisor to independently review the analysis to determine if the solution met the limits for discharge to an unfavorable geometry vessel. In this particular event the wrong sample number was inadvertently selected and reviewed by the operator and subsequently verified by the supervisor. Sample number 899500, the sample number for a previous raffinate solution batch that had been analyzed and found to be within discharge limits on November 7, 1991, was inadvertently reviewed instead of sample number 899950 which was the sample number for the raffinate solution

being processed for discharge on November 8, 1991. The analysis for sample number 899950 indicated that the solution exceeded the control limit of 0.03 gU/l for transfer to an unfavorable geometry vessel, whereas the analysis for sample number 899500 was within the control limit. Both the operator and supervisor verified the analysis for sample number 899500 as being within control limits, and the solution represented by sample number 899950 was subsequently discharged to the WWTF after drawing an accountability sample. A subsequent review of that accountability sample revealed that the raffinate solution discharged on November 8, 1991, exceeded the control limit of 0.03 gU/l.

The root cause of this event was the design of the system used by operations personnel in calling up and verifying sample numbers. This event clearly highlights a system deficiency in that sample results were called up on the system computer screen by sample number but there was no requirement to cross-match sample numbers to information regarding a specific raffinate solution being processed. In this case, both the operator and supervisor relied only on the wrong sample number called up on the computer screen without checking against actual log sheets which provided additional identifying information relative to the raffinate solution and its assigned sample number. Although the concentration and quantity of uranium transferred in this event were well below the levels necessary to initiate a criticality, the fact remains that a solution with an unverified concentration of uranium was transferred to an unfavorable geometry vessel. Therefore, this violation has been categorized at Severity Level III because of the failure of the administrative nuclear safety controls that were relied upon to prevent a nuclear criticality event.

In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy) 10 CFR Part 2, Appendix C (1991), a civil penalty is considered for a Severity Level III violation. However, after consultation with the Director, Office of Enforcement, and the Deputy Executive Director for Nuclear Materials Safety, Safeguards, and Operations Support, I have decided that a civil penalty will not be proposed in this case. Full mitigation was appropriate for your identification of the event and reporting of the violation. Full mitigation was also warranted for your corrective action to prevent recurrence, including your immediate actions to initiate an investigation and evaluation of the event, reinstructing personnel relative to the importance of ensuring proper verification of sample numbers, a review of other operational systems to determine whether similar problems could occur, and corrective actions to systems with the potential for a similar problem. In addition, consideration was also given to your proposed long term corrective actions that include installation of in-line monitors, human factors evaluations, procedural improvements, and computer hardware and software enhancements. Neither escalation nor mitigation was warranted for the factor of past performance. Two escalated enforcement actions, EA 90-124 and EA 91-004, were issued on March 20, 1991. These escalated enforcement actions addressed two events, the first of which occurred on March 29, 1990, and involved the transfer of a solution containing a high concentration of uranium to a waste collection tank. The second event occurred on November 28, 1990, and involved the transfer of a solution containing a high concentration of uranium to an unfavorable geometry

adequate reply is not received within the time specified in this Notice, an order or demand for information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Dated at Atlanta, Georgia
this 29th day of January 1992

NOTICE OF VIOLATION

Nuclear Fuel Services, Inc.
Erwin, Tennessee

Docket No. 70-143
License No. SNM-124
EA 91-186

During an NRC inspection conducted on October 26 - December 4, 1991, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1991), the violation is listed below:

> Condition 9 of Special Nuclear Material License No. 124 (SNM-124), requires that licensed materials be used in accordance with statements, representations, and conditions contained in Section 100 through 500, 700, and 1000 of the application dated August 30, 1976, and supplements thereto.
>
> Section 300, Subsection 376.01, specifies that "Solutions in which it is credible that critical concentrations may accumulate and thus are confined to safe geometry or fixed-poisoned vessels may be released to vessels of unsafe geometry and volume only if: (a) safe concentration is verified by analysis of a representative sample; or (b) the safe geometry is a secondary criticality control and at least two separate stages function between the potential source of fissile material and the unsafe vessel to remove the fissile material."
>
> Section 300, Subsection 376.02, specifies that "It is the foreman's responsibility to ascertain that the concentration is safe before authorizing release to the unsafe geometry and volume."
>
> Contrary to the above, on November 8, 1991, the licensee transferred the contents of raffinate columns T-11, 12, and 13 (safe geometry vessels where it is credible that critical concentations may accumulate) to Tank T-3 (unsafe geometry vessel) without ascertaining that the raffinate contained a safe concentration that was verified by analysis of a representative sample. Safe geometry was the primary, not secondary criticality control.
>
> This is a Severity Level III violation (Supplement VI).

Pursuant to the provisions of 10 CFR 2.201, Nuclear Fuel Services, Inc. is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, Region II, and a copy to the NFS-Erwin NRC Resident Inspector, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. If an

tank. Escalation, which is normally considered for previous escalated enforcement actions, was offset because of the significant overall program improvements that have been made at your facility. Specifically, the reconfiguration of the piping system that was accomplished after the November 28, 1990 event which was effective in limiting the potential consequences of the recent event in that the reconfiguration eliminated potential pathways for solutions with high concentrations of uranium to enter unfavorable geometry tanks. Other actions which have resulted from the Performance Improvement Program and have improved criticality safety, including installation of in-line monitors, improved operations and maintenance performance, and recent completion of selective Management Oversight Risk Tree (MORT) analyses, were also considered. The other adjustment factors in the Enforcement Policy were considered, and no further adjustments were appropriate.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. In your response, you should document the specific actions taken and any additional actions you plan to prevent recurrence. After reviewing your response to this Notice, including your proposed corrective actions and the results of future inspections, the NRC will determine whether further NRC enforcement action is necessary to ensure compliance with NRC regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

The responses directed by this letter and the enclosed Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, Pub. L. No. 96-511.

Should you have any questions concerning this letter, please contact us.

Sincerely,

Stewart D. Ebneter

Stewart D. Ebneter
Regional Administrator

Enclosure:
Notice of Violation

cc w/encl:
State of Tennessee

d. Lafayette Clinic and the Michigan Department of Mental Health, acting on behalf of Lafayette Clinic, agree to waive any rights that still may be extant to seek a hearing on or otherwise contest the matters raised in the Order and the Notice.

e. The NRC staff agrees that, in consideration of the civil penalty paid by the Michigan Department of Mental Health, acting on behalf of Lafayette Clinic, the NRC staff will take no further enforcement actions against Lafayette Clinic regarding the facts and circumstances identified in the Order and the Notice.

U. S. NUCLEAR REGULATORY COMMISSION

James Lieberman, Director
Office of Enforcement

Dec 22, 1992
DATE

MICHIGAN DEPARTMENT OF MENTAL HEALTH
ACTING ON BEHALF OF LAFAYETTE CLINIC

Dec 11, 1992
DATE