



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

MAR 20 1991

Docket No. 70-143  
License No. SNM-124  
EAs 90-124 and 91-004

Nuclear Fuel Services, Inc.  
ATTN: Mr. Charles R. Johnson  
President  
205 Banner Hill Road  
Erwin, Tennessee 37650

Gentlemen:

SUBJECT: NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY - \$10,000  
(NRC INSPECTION REPORT NOS. 70-143/90-09 AND 70-143/90-30)

This letter refers to the results of two special Nuclear Regulatory Commission (NRC) inspections, the first conducted April 23-26 and May 29-June 1, and the second December 1-18, 1990, of events at the Nuclear Fuel Services Erwin facility. The first inspection included a review of the facts and circumstances of the March 29, 1990, event which involved introducing a high concentration of uranium solution from the 302 sump into the 704 waste collection tank. You identified and documented the event in an investigative report that was subsequently provided to the NRC. During this inspection, a violation of a regulatory requirement was identified and the report describing the details of inspection findings was sent to you by letter dated July 11, 1990. On July 18, 1990, an enforcement conference was conducted with your staff in the Region II Office to discuss the circumstances surrounding the violation, its cause, your corrective actions, and your actions to prevent recurrence. The letter summarizing this enforcement conference was sent to you on July 25, 1990.

The second inspection included a review of an event which involved the transfer of liquid containing a high concentration of uranium to a nonfavorable geometry tank on November 28, 1990. The report documenting this inspection was sent to you by letter dated January 14, 1991. As a result of this inspection, significant failures to comply with NRC regulatory requirements were identified. An Enforcement Conference was held in the Region II office on January 18, 1991 to discuss the violations, their cause, and your corrective actions to preclude recurrence. The letter summarizing this conference was sent to you by letter dated February 11, 1991.

The first violation (Violation I) described in the enclosed Notice of Violation and Proposed Imposition of Civil Penalty (Notice) resulted when the contents of one or more 11-liter cylinders containing non-product boildown solution, having inadequate labels, were mistakenly dumped into the 302 sump. The violation includes numerous examples identified in your investigation report of licensed material operations that were not performed in accordance with posted operating procedures. The wide range of these examples included failures in tamperproofing and recording 11-liter cylinders of non-product boildown solution, improper discarding of filtrate solution, and improper labeling of cylinders, all of which contributed to the occurrence of the event. Primary factors contributing

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to this event included a lack of adequate first line supervision of operations, a lack of management oversight, and inadequate audits of operational activity. Additional contributing factors included deficient operator knowledge of procedural requirements as a result of inadequate training.

This violation is significant because of the potential nuclear criticality consequences that could have resulted from this event. The procedures in place are intended to prevent a nuclear criticality accident, and failure to follow those procedures constitutes an unnecessary challenge to the nuclear criticality safety system. The NRC is concerned about the number of controls which failed and the resulting significant reduction in safety margin. Of particular concern is the apparent development and subsequent practice of a routine mode of operation wherein operational procedures are not adhered to. It is this lack of procedural adherence by individuals and operating crews that is of significant concern. Therefore, Violation I has been categorized at Severity Level III.

In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy) 10 CFR Part 2, Appendix C (1990), 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 because of the following considerations of the adjustment factors. Please note that additional action may be taken following completion of our investigation concerning the March 29, 1990 event.

Full mitigation was appropriate for your identification of the event and the significant corrective actions to prevent recurrence. Those corrective actions, which were prompt and extensive, included minimization of 11-liter cylinder use and certain administrative controls, establishing hard pipe installation and favorable geometry of vessels, and retraining of operators and supervisors in procedural requirements. In addition, your planned long term corrective actions include the evaluation of the application of the double contingency principle for the entire facility, and the performance of an audit of the nuclear criticality safety program by an independent external team. Though NRC Information Notice 89-24, dated March 6, 1989, provided prior notice of a similar event, escalation for this factor was offset by your overall good past performance in the area of procedure adherence, which is the focus of this violation. The other adjustment factors in the Policy were considered and no further adjustments were appropriate. After balancing these factors, a civil penalty was not deemed appropriate for the March event.

We note that you informed the resident inspector of this event, though you did not do so until approximately two weeks after the event occurred. While a citation is not being made to 10 CFR 70.9(b) in this case, in the future we would expect events such as this, which received considerable attention within the licensee's management as a result of its safety significance, to be provided the Commission in a more timely manner.

Violations II.A and B are associated with the second event which occurred when the extraction process liquid from raffinate storage rockets was transferred to

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the T-3 storage tank in the Scrap Recovery Facility (SRF) and then to a Waste Water Treatment Facility (WWTF) receiving tank on November 28, 1990. Violation II.A described in the enclosed Notice involves the failure to perform an adequate evaluation of equipment joined by piping for the possibility of siphoning or overflowing fissile solutions into a tank of nonfavorable geometry and provide a siphon break or other means of preventing the transfer of high uranium concentration solution to a nonfavorable geometry containment. An opportunity to preclude this problem was missed when, in late 1984 and early 1985, a series of modifications were made to the raffinate piping system. Although these modifications were reviewed and approved within the technical and managerial review system existing at the time, the reviews failed to identify the significant potential for fissile solutions to flow into a tank of nonfavorable geometry. Violation II.B described in the enclosed Notice involves the failure to adhere to the procedural limit of 350 grams of uranium per tank in the SRF T-3 tank and in the WWTF receiving tank. This condition resulted when procedural station limits for criticality control were inadvertently violated during the raffinate transfer of November 28, 1990 resulting in the transfer of 395 grams of uranium to the WWTF receiving tank. This incident had the potential for very serious consequences to public health and safety. Sufficient material was available and there was an existing pathway which, in combination, could have resulted in a criticality. Therefore, in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy) 10 CFR Part 2, Appendix C (1990), the violations are classified in the aggregate as a Severity Level II problem.

The staff recognizes that immediate corrective actions were taken to prevent a possible criticality accident when the incident was identified and that a facility investigation team was assembled to initiate an immediate review.

To emphasize the importance of maintaining control over plant modifications and ensuring adequate control and understanding of operational systems, I have been authorized, after consultation with the Director, Office of Enforcement, and the Deputy Executive Director for Nuclear Materials Safety, Safeguards, and Operations Support, to issue the enclosed Notice of Violation and Proposed Imposition of Civil Penalty in the amount of \$10,000 for the Severity Level II problem. The base value of a civil penalty for a Severity Level II problem is \$20,000. The escalation and mitigation factors in the Enforcement Policy were considered.

Mitigation of the base civil penalty by 50 percent was warranted for identification and reporting because the incident was identified by you through your internal accountability sampling program, and promptly reported. Mitigation of 50 percent was warranted for corrective actions. A facility investigation team was immediately formed to investigate the incident. The team subsequently issued a timely report of their findings which included identification of the most probable cause of the incident. In addition, corrective actions included reconfiguration of the piping system and long term follow-up through the Nuclear Criticality Safety (NCS) Performance Improvement Program. Escalation of 50 percent was warranted for past performance in the area of criticality safety based on the March 1990 event and the violation (see NRC Inspection Report 90-28, issued December 18, 1990) involving the inadequate review of engineering drawings by the Safety and Safeguards Review Council (SSRC) which led to the

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unevaluated removal of nuclear criticality safety monitors in Building 301 in July 1990. Further escalation for this factor was not applied because of the general improvement in your performance in other areas including radiological safety. The other adjustment factors in the Policy were considered and no further adjustment to the base civil penalty is considered appropriate. Therefore, based on the above, the base civil penalty has been decreased by 50 percent.

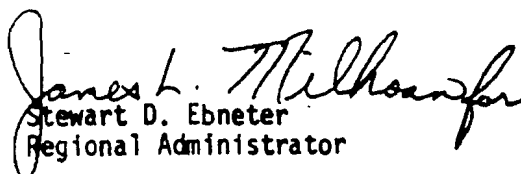
In addition to the civil penalty, pursuant to Section 182 of the Atomic Energy Act, as amended, you are required to provide this office a written report each month that describes the progress made under your NCS Performance Improvement Program (PIP) and any changes to the schedule or scope of PIP activities not previously described and the basis thereof. We emphasize the importance of effective PIP implementation for the protection of the public health and safety, including your employees. We intend to closely monitor your progress and if it appears that you are not effectively implementing the PIP, additional regulatory action will be considered.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice of Violation 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.

Sincerely,

  
Stewart D. Ebnetter  
Regional Administrator

Enclosure:  
Notice of Violation and  
Proposed Imposition of Civil Penalty

cc: State of Tennessee

NOTICE OF VIOLATION  
AND  
PROPOSED IMPOSITION OF CIVIL PENALTY

Nuclear Fuel Services, Inc.  
Erwin Facility  
Erwin, Tennessee

Docket No. 70-143  
License No. SNM-124  
EAs 90-124 and 91-004

During Nuclear Regulatory Commission (NRC) inspection conducted on April 23-26, May 29-June 1, and December 1-18, 1990, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1990), the Nuclear Regulatory Commission proposes to impose a civil penalty pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (Act), 42 U.S.C. 2282, and 10 CFR 2.205. The particular violations and associated civil penalty are set forth below:

I. Violations Not Assessed a Civil Penalty

Condition 9 of License No. SNM-124 requires that licensed material be used in accordance with statements, representations, and conditions contained in Section 100, 200, 300, 400, 500, 700, and 1000 of the licensee's application dated August 30, 1976; and supplement thereto.

Section 200, sub-section 260, "Operating Procedures," of the application states that all operations involving SNM shall be performed in accordance with posted operating procedures.

Contrary to the above, on and prior to March 29, 1990, operations were not performed in accordance with posted operating procedures as evidenced by the following examples:

1. 11-liter cylinders of non-product boildown solutions were not tamper safed and recorded on runsheet A-2 as required by procedures SOP 266 and NFS-ACC-10.
2. 11-liter cylinders of non-product boildown solution were moved without being tamper safed as required by procedure SOP 266.
3. Contents of 11-liter cylinders of filtrate solution were discarded to the 302 sump instead of the 303 sump as required by procedures SOP 266 and NFS-SEC-304.
4. Labels were not affixed to 11-liter cylinders as required by procedure SOP 266.
5. The contents of an 11-liter cylinder of lab waste solution were not transferred to another 11-liter cylinder as required by procedure SOP 266.
6. Contents of 11-liter cylinders of lab wastes were not diluted to less than 0.03 gu/l prior to discharge as required by procedure SOP 266 and NFS-CL-10.

7. Runsheets A-2 and A-5 were not filled out properly and completely as required by procedure SOP 266.

This is a Severity Level III violation (Supplement VI).

## II. Violations Assessed a Civil Penalty

- A. License Condition 9 of License No. SNM-124 requires the licensee to operate the facility in accordance with the statements, representations, and conditions contained in Sections 100, 200, 300, 400, 500, 700, and 1000 of the licensee's application dated August 30, 1976; and the various supplements approved since that date.

Section 300, Subsection 374 of the license application requires that when at least one [piece of equipment] may contain fissile solutions, equipment joined by piping will be evaluated for the possibility of siphoning or overflowing fissile solutions into an unsafe [nonfavorable geometry] tank or sump. If that possibility is significant or contingent upon a single incident, a siphon break or other means of preventing transfer of the solution to unsafe [nonfavorable geometry] containment will be provided.

Contrary to the above, the licensee failed to adequately evaluate the feed storage columns connection to the raffinate piping system manifold for the possibility of siphoning or overflowing fissile solutions into a nonfavorable geometry tank, which was a significant possibility and failed to provide a siphon break or other means of preventing transfer of highly concentrated solution to nonfavorable geometry containment on November 28, 1990. As a result, approximately 395 grams of uranium-235 (U-235) were transferred to nonfavorable geometry tanks in Building 233 and in the Waste Water Treatment Facility (WWTF).

- B. License Condition 14 of License No. SNM-124 requires that, for activities of the Department of Safety required by the license, the licensee shall establish, maintain, and follow Department of Safety procedures which have been reviewed and approved by Safety Department management.

Nuclear Criticality Safety Procedure (NCS) NFS-HS-CL-11, Station Limits for Criticality Control - Building 233, Revision 0, dated August 16, 1990, provides a station limit for the T-2 and T-3 tanks of up to 350 grams U-235 per tank. NCS Procedure NFS-HS-CL-15, Station Limits for Criticality Control - Building 330 WWTF, Revision 2, dated October 14, 1985, provides (in Attachment I) a station limit for the waste receiving tank of no more than 350 grams U-235 at any one time.

Contrary to the above, the licensee failed to adhere to the procedural limit of 350 grams U-235 per tank in the T-3 tank in Building 233 and in the waste receiving tank in Building 330 WWTF, in that on November 28, 1990, approximately 395 grams of uranium-235 was transferred to the T-3 tank and then to the WWTF waste receiving tank from favorable geometry containers in Building 233.

This is a Severity Level II problem (Supplement VI).

Cumulative Civil Penalty - \$10,000 (assessed equally between the two violations).

Pursuant to the provisions of 10 CFR 2.201, Nuclear Fuel Services, Inc. (Licensee) is hereby required to submit a written statement or explanation to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, within 30 days of the date of this Notice of Violation and Proposed Imposition of Civil Penalty (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each alleged violation: (1) admission or denial of the alleged violation, (2) the reasons for the violation if admitted, and if denied, the reasons why, (3) the corrective steps that have been taken and the results achieved, (4) the corrective steps that will be taken to avoid further violations, and (5) the date when full compliance will be achieved. If an adequate reply is not received within the time specified in this Notice, an order may be issued to show cause why the license should not be modified, suspended, or revoked or why such other action as may be proper should not be taken. Consideration may be given to extending the response time for good cause shown. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Within the same time as provided for the response required above under 10 CFR 2.201, the Licensee may pay the civil penalty by letter addressed to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, with a check, draft, money order, or electronic transfer payable to the Treasurer of the United States in the amount of the civil penalty proposed above, or may protest imposition of the civil penalty in whole or in part, by a written answer addressed to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission. Should the Licensee fail to answer within the time specified, an order imposing the civil penalty will be issued. Should the Licensee elect to file an answer in accordance with 10 CFR 2.205 protesting the civil penalty, in whole or in part, such answer should be clearly marked as an "Answer to a Notice of Violation" and may: (1) deny the violations listed in this Notice in whole or in part, (2) demonstrate extenuating circumstances, (3) show error in this Notice, or (4) show other reasons why the penalty should not be imposed. In addition to protesting the civil penalty in whole or in part, such answer may request remission or mitigation of the penalty.

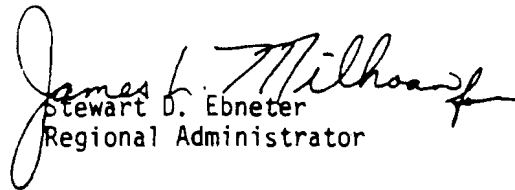
In requesting mitigation of the proposed penalty, the factors addressed in Section V.B of 10 CFR Part 2, Appendix C (1990), should be addressed. Any written answer in accordance with 10 CFR 2.205 should be set forth separately from the statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate parts of the 10 CFR 2.201 reply by specific reference (e.g., citing page and paragraph numbers) to avoid repetition. The attention of the Licensee is directed to the other provisions of 10 CFR 2.205, regarding the procedure for imposing a civil penalty.

Upon failure to pay any civil penalty due which subsequently has been determined in accordance with the applicable provisions of 10 CFR 2.205, this matter may be

referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Act, 42 U.S.C. 2282c.

The response noted above (Reply to Notice of Violation, letter with payment of civil penalty, and Answer to a Notice of Violation) should be addressed to: Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region II.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Stewart D. Ebnetter  
Regional Administrator

Dated at Atlanta, Georgia  
this ~~20~~ day of March 1991