



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

August 13, 2008

EA-08-123
EA-08-187

Ms. Lisa M. Price
Chief Executive Officer and Facility Manager
Global Nuclear Fuel - Americas, L.L.C.
P.O. Box 780
Wilmington, NC 28402

**SUBJECT: NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY -
\$16,250 (NRC INSPECTION REPORT NO. 70-1113/2008-004)**

Dear Ms. Price:

This letter refers to the special inspection team (SIT) inspection activities conducted from January 31 through February 4, 2008, at your Global Nuclear Fuel – Americas, L.L.C. (GNF-A) facility; our subsequent in-office review of your root cause evaluation dated February 6, 2008; and teleconferences with members of your staff conducted on March 7, March 20, and April 7, 2008. The purpose of the SIT was to review the circumstances surrounding the introduction of moisture into the Dry Conversion Process (DCP) Line-2 cooling hopper 'A' (L-2A), and the associated activities which resulted in your declaration of an "Alert" event on January 30, 2008. The results of our review of this matter, including the identification of four apparent violations, were documented in NRC SIT Report No. 70-1113/2008-002, dated April 22, 2008. Three apparent violations were associated with the introduction of moisture into the DCP L-2A hopper containing uranium dioxide powder, while the fourth apparent violation involved an incorrect emergency action level declaration.

On May 19, 2008, a predecisional enforcement conference was conducted at NRC's Region II office with members of your staff to discuss the significance and the root causes of the apparent violations and your corrective actions. At the conference, you acknowledged that three violations, all associated with the introduction of moisture into the DCP L-2A hopper containing uranium dioxide powder, occurred as stated. GNF-A disagreed with NRC's characterization of the emergency action level classification as incorrect. GNF-A provided additional information regarding its investigation of the incident and discussed only its corrective actions taken to preclude reoccurrence of the event associated with the introduction of moisture into the DCP L-2A hopper containing uranium dioxide powder.

Based on the information developed during the inspection and the information that you provided during the conference, the NRC has determined that four violations of NRC requirements occurred. The violations are cited in the enclosed Notice of Violation (Notice) and the

circumstances surrounding them are described in detail in NRC's report of April 22, 2008. The violations involve: (A) the failure to maintain double contingency during a maintenance activity on the DCP L2-A hatch valves, in that sufficient margins of safety were not incorporated into process designs required by the license and license application such that during the event, a criticality accident was possible with only one change in process conditions for DCP L2-A; (B) failure to establish an adequate criticality safety program in that GNF-A conducted DCP Line-2 maintenance activities, involving the handling of enriched uranium, that were not assessed for normal and credible abnormal conditions, as required by the license and license application; (C) failure to conduct licensed material processing in accordance with properly issued and approved practices and procedures, as required by Safety Condition No. S-1 of Special Nuclear Materials License No. 1097 and Section 3.9 of the license application. In this case, GNF-A did not have procedures for performing maintenance on an Item Relied on For Safety (the powder outlet hatch valve system), while fissile material was present or reasonably available in the DCP cooling hoppers; and (D) GNF-A's failure to make an "Alert" declaration, as required by the license and GNF-A's Radiological Contingency & Emergency Plan (RC&EP).

Regarding violations A, B, and C, no actual consequences resulted from these issues because the incident of January 29 and 30, 2008, did not result in a nuclear criticality accident. However, the NRC views the potential consequences associated with these issues to be significant. During the conference, the licensee stated that with the available mass of fissile material and moderator present during this event, a criticality accident could not have occurred. The licensee further emphasized that a criticality event was not possible due to the moisture control interlock, which remained operational during the event and prevented excess moderator from entering the cooling hopper. The licensee also emphasized that the system was not in operation, but was undergoing post maintenance testing with steam applied for a limited period of time while being actively monitored by operators.

With the exception of its conclusion related to the possibility of an accident, the NRC concurs in the balance of the licensee's determinations. The NRC's view is that the possibility of criticality is determined by the following factors: (1) the licensee's analytical determination that criticality is credible in the system; (2) the reasonable availability of a critical mass of fissile material during an upset; and (3) the loss of all but one criticality control during the upset. During maintenance at GNF-A, no controls were available to limit the quantity of fissile material remaining in the system. In fact, quantities of material in excess of a critical mass were routinely left in the system during past maintenance and testing activities. Therefore, the NRC concluded that a critical mass was reasonably available. During the post-maintenance testing in progress during this event, moderator in the form of steam was available. Although monitored by operators, no controls were available to limit the supply of moderator. One criticality safety control remained i.e., the moisture interlock. The NRC acknowledges that process design and operational considerations made the probability of an accidental criticality remote. However, due to the licensee's inadequate procedural controls for the conduct of maintenance on the DCP Line-2 hatch valves while fissile material was reasonably available, and with only one criticality safety control remaining, the NRC concluded that a nuclear criticality accident was possible. Based on the above and because these three violations are related to the incident of January 29 and 30, 2008, the significance of these violations has been characterized collectively as a Severity Level III problem, in accordance with the NRC Enforcement Policy.

With respect to violation (D), during the conference, GNF-A provided the bases for its conclusion that a violation did not occur involving the "Alert" declaration. In summary, GNF-A stated that at the time the Emergency Response Organization (ERO) was activated, there had

been no determination that an unsafe mass of uranium oxide powder existed. The licensee stated that at the time the ERO was assembled, the mass and moisture conditions were uncertain, and therefore the ERO was assembled to bring together the best technical expertise to assess the concern. The licensee stated that during the short period of time that elapsed from the sounding of the "four ones" alarm (i.e., calling ERO personnel to assemble at the Emergency Control Center (ECC)) to the declaration of the "Alert", GNF-A personnel were actively assessing the concern, relocating ERO personnel to the ECC, activating the ECC, and conducting additional monitoring and assessment activities. GNF-A also viewed its "Alert" declaration at 6:30 p.m., as a conservative decision, made by the primary Emergency Director assuming worst case moisture and mass conditions. Upon review of the incident, GNF-A also determined that, in fact, the safe mass limit for uranium oxide was not exceeded, and that normal moisture conditions existed during the incident. Based on the above, GNF-A concluded that its "Alert" declaration at 6:30 p.m., on January 30, 2008, was prompt and conservative.

NRC inspectors were able to respond to the plant site and proceeded to the ECC when it was activated to observe the licensee's response to the event. NRC staff found that the licensee recognized the abnormal condition at 5:30 p.m., and evaluated the condition until 6:19 p.m., when the ECC was manned, and an emergency plan classification level of "Off-Normal Condition" was declared. NRC staff also found that the ECC was manned due to the recognition of the potential for criticality from an unsafe critical mass, with unknown moisture content, and noted that the RC&EP required a declaration of "Alert" rather than "Off-Normal Condition." The information provided by GNF-A at the conference was carefully reviewed, and on the basis of this review, the NRC concludes that the emergency plan classification level of "Off-Normal Condition" was incorrect. Based on the information available at the time, the Emergency Director (ED) should have declared an "Alert." The "Alert" declaration was subsequently made upon the arrival of a more senior ED at the ECC.

In this case, no actual consequences occurred as a result of the incorrect emergency action level declaration because a criticality did not occur. However, the potential consequences of an incorrect declaration could have been significant. Prompt assessment of potentially unsafe conditions and correct emergency action level declarations are essential to protecting the health and safety of plant workers and the public. Inaccurate assessment of an emergency condition undermines the ability of local, state, and federal emergency response organizations to enact emergency protective measures. Based on the above, NRC has characterized this violation at Severity Level III, in accordance with the NRC Enforcement Policy.

In accordance with the Enforcement Policy, a base civil penalty in the amount of \$16,250 is considered for each Severity Level III violation or problem. Because GNF-A has not been the subject of escalated enforcement within the past two years, NRC considered whether credit was warranted for *Corrective Action* in accordance with the civil penalty assessment process in Section VI.C.2 of the Enforcement Policy.

As presented at the conference, GNF-A's corrective actions for the three violations (Violations A, B, and C) characterized as an SL III problem included: (1) immediately securing all fissile material movement; (2) notifying and updating the agency on the event as appropriate; (3) suspension of DCP conversion operations pending completion of a root cause analysis; (4) revision of DCP operating procedures and hatch valve maintenance cleanout requirements; (5) issuance of generic criticality safety requirements to ensure proper cleanout of adjoining equipment prior to maintenance activities; and (6) planned redesign of the valve stem indicator

to visually show valve position. GNF-A also presented additional immediate, short and long term corrective actions at the conference. Based on the above, credit is warranted for the factor of *Corrective Action* for the three violations associated with the SL III problem.

With respect to corrective actions for violation (D) involving the incorrect emergency action level declaration, at the conference GNF-A offered no substantive corrective actions that NRC could credit as prompt or comprehensive. As such, *Corrective Action* credit is not warranted for this violation.

Therefore, to emphasize the importance of correct emergency action level declarations to public safety and the necessity of implementing prompt and comprehensive corrective actions for violations, I have been authorized, after consultation with the Director, Office of Enforcement, to issue the enclosed Notice of Violation and Proposed Imposition of Civil Penalty (Notice) in the base amount of \$16,250 for violation (D). Because the corrective actions for violations A, B, and C were prompt and comprehensive, a civil penalty will not be assessed for these violations. Please be advised that issuance of this Notice constitutes escalated enforcement action that may subject you to increased inspection effort.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

For administrative purposes, this letter is issued as a separate NRC Inspection Report, 70-1113/2008-004, and the above violations are identified as VIO 70-1113/2008-004-01, Failure to maintain double contingency control for the DCP Line 2 cooling hoppers; VIO 70-1113/2008-004-02, Failure of the criticality safety function to assess maintenance activities; VIO 70-1113/2008-004-03, Failure to have a properly issued and approved management control procedure for conducting maintenance activities; and VIO 70-1113/2008-004-04, Failure to declare an "Alert" in accordance with the RC&EP. Accordingly, apparent violations 70-1113/2008-002-01, 02, 03, and 04 are closed.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such information, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). NRC also includes significant enforcement actions on its Web site at (<http://www.nrc.gov/reading-rm/doc-collections/enforcement/actions/>).

L. Price

5

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

Sincerely,

/RA/

Luis A. Reyes
Regional Administrator

Docket No. 70-1113
License No. SNM-1097

Enclosures

1. Notice of Violation and Proposed
Imposition of Civil Penalty
2. NUREG/BR-0254 Payment Methods (Licensee only)

cc w/encls:

Scott Murray, Manager
Facility Licensing
Global Nuclear Fuel - Americas, L.L.C.
Electronic Mail Distribution

Beverly Hall, Chief
Radiation Protection Section
N.C. Department of Environmental
Commerce & Natural Resources
Electronic Mail Distribution

Distribution w/encls: (See page 6)

L. Price

6

Distribution w/encls:

W. Borchardt, OEDO
M. Weber, NMSS
C. Marco, OGC
C. Carpenter, OE
E. Julian, SECY
B. Keeling, OCA
Enforcement Coordinators
RI, RIII, RIV
E. Hayden, OPA
G. Caputo, OI
H. Bell, OIG
J. Wray, OE
P. Habighorst, NMSS
N. Baker, NMSS
R. Lukes, NMSS
D. Morey, NMSS
V. McCree, RII
J. Shea, RII
M. Layton, RII
C. Evans, RII
S. Sparks, RII
D. Rich, RII
R. Gibson, RII
K. Clark, RII
R. Hannah, RII
R. Trojanowski, RII
OEMAIL
PUBLIC

* see previous

X PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE X NON-SENSITIVE

ADAMS: X Yes ACCESSION NUMBER: ML_____

OFFICE	RIILDFFI	RII:DFFI	RII:EICS	RII:ORA	OGC	OE	NMSS
SIGNATURE	/RA/ *	*/RA/	*/RA/		Electronic Concurrence	Via email to RII	Electronic Concurrence
NAME	DRich	JShea	CEvans	VMcCree	MClark	CCarpenter	DDorman
DATE	7/25/08	7/29/08	7/28/08		8/7/08	8/8/08	8/7/08
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES	YES	YES

OFFICIAL RECORD COPY

NOTICE OF VIOLATION
AND
PROPOSED IMPOSITION OF CIVIL PENALTY

Global Nuclear Fuel - Americas, L.L.C
Wilmington, NC

Docket No. 70-1113
License No. SNM-1097
EA-08-123
EA-08-187

During an NRC inspection conducted from January 31, through February 4, 2008, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the NRC 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

- A. Safety Condition No. S-1 of Special Nuclear Material License No. 1097 requires that material be used in accordance with the statements, representations, and conditions of the application dated June 5, 1997, and December 7, 1999; and supplements thereto.

License application Section 6.1.1, Nuclear Criticality Design Philosophy, states that process designs will incorporate sufficient margins of safety to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible. For each significant portion of the process, a defense of one or more system parameters is documented in the criticality safety analysis, which is reviewed and enforced.

Contrary to the above, on or before January 30, 2008, the licensee failed to incorporate sufficient margins of safety into the process design to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible. Specifically, with fissile material present or reasonably available, the licensee conducted maintenance activities on the Dry Conversion Process (DCP) Line 2-A (L2-A) cooling hopper hatch valves. Such maintenance activities permitted the possibility of a criticality accident with only one change in process conditions. In addition, the acceptability of such maintenance activity with fissile material present or reasonably available was not documented in the criticality safety analysis, and as such was not reviewed by qualified criticality safety personnel.

- B. Safety Condition No. S-1 of Special Nuclear Material License No. 1097 requires that material be used in accordance with the statements, representations, and conditions of the application dated June 5, 1997, and December 7, 1999; and supplements thereto.

License application Section 6.1.2.2, Role of the Criticality Safety Function, specifies that responsibilities of the criticality safety function are described in Chapter 2 of the application.

License application Section 2.2.1.4, Criticality Safety Function, specifies that the criticality safety function is administratively independent of production responsibilities and includes establishment of a criticality safety program including design criteria, procedures, and training; criticality safety support for integrated safety analysis and configuration control; assessment of normal and credible abnormal conditions; and determination of criticality safety limits for controlled parameters.

Contrary to the above, on or before January 30, 2008, the licensee failed to establish an adequate criticality safety program including appropriate procedures that assessed normal and credible abnormal conditions. Specifically, the licensee conducted DCP L2-A outlet hatch valve maintenance without the development of adequate procedures, without determining criticality safety limits for controlled parameters, and without an assessment of normal and credible abnormal conditions.

- C. Safety Condition No. S-1 of Special Nuclear Material License No. 1097 requires that material be used in accordance with the statements, representations, and conditions of the application dated June 5, 1997, and December 7, 1999; and supplements thereto.

License application Section 3.9, Procedures, states, in part, that licensed material processing or activities will be conducted in accordance with properly issued and approved practices and procedures, plant practices or operating procedures.

Contrary to the above, on or before January 30, 2008, the licensee was involved in licensed material processing or activities on DCP L2-A without a properly issued and approved practice or procedure. Specifically, the licensee did not have a procedure for performing maintenance on the DCP outlet hatch valve system, a system designated as an Item Relied on For Safety, while uranium oxide powder remained in the DCP cooling hoppers.

This is a Severity Level III problem (EA-08-123, Supplement VI).

II. Violation Assessed a Civil Penalty

- D. Safety Condition No. S-3 of Special Nuclear Material License No. 1097 requires, in part, that the licensee maintain and execute the response measures in the Radiological Contingency & Emergency Plan (RC&EP) and any revision made by the licensee consistent with 10 CFR 70.32(i).

RC&EP Section 5.1, Activation of Emergency Response Organization, specifies, in part, that a summary of the provisions in the plan for the activation and alerting of the emergency organizations for the various emergency classifications is set forth within the emergency procedures. RC&EP implementing procedure No. 5-0, Criticality Coordination Summary, specifies that an "Alert" emergency classification level is to be declared when the potential for criticality exists from unsafe critical mass.

Contrary to the above, on January 30, 2008, the licensee declared an "Off-Normal Condition" after identifying that the potential for criticality existed from an unsafe critical mass of uranium oxide powder in the DCP Line-2A cooling hopper. Specifically, the licensee identified indications that the Line-2A cooling hopper contained more than the

GNF-A Safe Mass Limit and an unknown moisture content, which was indicated by the activation of the cooling hopper moisture interlock. The licensee recognized that the potential for criticality existed from an unsafe critical mass, but classified the event as an "Off-Normal Condition" instead of declaring an "Alert."

This is a Severity Level III violation (Supplement VIII).
Civil Penalty - \$16,250 (EA-08-187).

Pursuant to the provisions of 10 CFR 2.201, Global Nuclear Fuel - Americas, L.L.C. (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; (EA-08-123 and EA-08-187)" 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 basis for denying the validity of the violation; (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.

Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, the NRC may issue an order or a Demand for Information requiring you to explain why your license should not be modified, suspended, or revoked or why the NRC should not take other action as may be proper. Consideration may be given to extending the response time for good cause shown.

Within the same time provided for the response required under 10 CFR 2.201, the Licensee may pay the civil penalty proposed above in accordance with NUREG/BR-0254 and by submitting to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, a statement indicating when and by what method payment was made, 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 30 days of the date of this Notice, the NRC will issue an order imposing the civil penalty. 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 violation 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 response should address the factors addressed in Section VI.C.2, "Civil Penalty Assessment," of the Enforcement Policy. Any written answer addressing these factors pursuant to 10 CFR 2.205, should be set forth separately from the statement or explanation provided 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 which subsequently has been determined in accordance with the applicable provisions of 10 CFR 2.205 to be due, 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 responses noted above, i.e., Reply to Notice of Violation, Statement as to payment of civil penalty, and Answer to a Notice of Violation, should be addressed to: Cynthia Carpenter, Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852-2738, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region II, and to the resident inspector at the facility that is subject to this Notice.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, classified or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material is withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 13th day of August 2008