



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

February 23, 2010

EA-08-204

Mr. R. P. Cochrane
General Manager
Babcock and Wilcox
Nuclear Operations Group, Inc.
P. O. Box 785
Lynchburg, VA 24505-0785

**SUBJECT: NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY -
\$32,500 (NRC INSPECTION REPORT NO. 70-27/2008-002)**

Dear Mr. Cochrane:

This refers to your letter dated November 14, 2008, in response to the Notice of Violation and Proposed Imposition of Civil Penalty (Notice) sent as an enclosure to our letter dated October 20, 2008. A civil penalty in the amount of \$32,500 was proposed. The letter and Notice described a violation identified during an NRC inspection covering the period March 23 through June 21, 2008 at your Babcock and Wilcox (B&W) Nuclear Operations Group facility in Lynchburg, VA. In summary, the violation involved the failure to ensure that engineered and/or administrative controls were available and adequate to prevent an acute chemical exposure from a hazardous chemical produced from licensed material as required by 10 CFR Part 70.61(c). As a result, on April 28, 2008, a process operator received an ocular exposure to hydrofluoric acid (HF) while trying to neutralize an HF spill, which could have led to irreversible or other serious, long-lasting health effects.

In your response, you denied that a violation occurred based on your review of the cited regulation (10 CFR 70.61(c)) and a review of the NRC's evaluation of the incident as addressed in the cover letter transmitting the Notice.

The NRC staff performed a detailed review of your response and we have concluded that the previously cited violation of 10 CFR 70.61 should be retracted. Because the chemical exposure was from hydrofluoric acid that leaked from a tank prior to process addition to licensed material and was not known to be commingled with licensed material, it was not a "hazardous chemical produced from licensed material" as defined in 10 CFR 70.4 and used in 10 CFR 70.61(c)(4). Therefore the previously issued Notice and \$32,500 civil penalty is withdrawn and our records will be amended to reflect this change.

However, because the spill occurred on a floor within the radiologically controlled area of the facility, it was likely that radioactive materials could have been commingled in the spilled liquid. Consequently, this performance issue remains under NRC's regulatory purview. A more

appropriate violation involving the failure to adhere to the terms of your license is warranted; specifically the failure to develop and implement a formalized procedure to neutralize a spill involving hydrofluoric acid. The violation is cited in the enclosed Notice. It references the requirements of Safety Condition No. S-1 of Special Nuclear Material License No. 42 and sections from Chapters 6 and 11 of the license application. In this case, the NRC concluded that failure to have written instructions and procedures for neutralizing a hydrofluoric acid spill resulted in a process operator taking inappropriate actions to neutralize the spill when Sodium Hydroxide (NaOH), a strong base, was added to the acid on the floor and reacted violently. As a result, on April 28, 2008, while trying to neutralize the spill a process operator received an ocular exposure of HF that could have led to irreversible or other serious, long-lasting health effects from the splash of HF. As stated in the NRC's letter of October 20, 2008, the NRC obtained the services of a contract medical doctor to provide an independent assessment of the effects of the HF incident to the operator. Although the NRC contracted medical doctor reached a similar conclusion to B&W's regarding the tangible value of the prompt response to the incident and the effect of programmatic mitigators (onsite medical care provided by co-workers and the B&W emergency response team) in preventing vision loss as a result of this incident, the NRC considers the potential consequences of this incident to be significant. Under different circumstances, this event could have resulted in a more severe consequence to the operator. Notwithstanding the emergency and medical response by B&W Nuclear Operations Group staff, the NRC considers the potential consequences of injury to the operator to be a significant matter. Based on the above and in accordance with the NRC Enforcement Policy, the NRC has concluded the significance of the violation should be characterized at Severity Level III.

In accordance with the Enforcement Policy, a base civil penalty in the amount of \$32,500 is considered for each Severity Level III violation. Because B&W has been the subject of escalated enforcement within the past two years¹, the NRC considered whether credit was warranted for *Identification* and *Corrective Action* in accordance with the civil penalty assessment process in Section VI.C.2 of the Enforcement Policy.

This issue was identified as a result of an event involving the spill of liquid HF. As such, credit is not warranted for the factor of *Identification*.

B&W's immediate and long-term corrective actions in response to the incident were initially reviewed during the NRC's inspection and follow-up discussions, as well as in B&W's written response of August 29, 2008. These actions included: (1) the initiation of a root cause investigation to determine causal factors and long-term corrective actions; (2) the proper sealing and labeling of drums containing chemical agents; (3) communication of the details of the incident with all uranium recovery personnel; (4) the development of a site-wide procedure for responding to chemical spills, including area-specific information (i.e. Uranium Recovery), and appropriate procedural training; (5) an inventory of chemicals in work areas, disposal of obsolete chemicals and the initiation of actions to ensure that secondary containers are properly labeled; (6) the establishment of detailed guidance regarding the use of a face shield, the establishment of spill response kits, and appropriate personnel training on use of these kits; (7) revision to Safety Analysis Reports and applicable license chapters to properly document the severity of consequences and to appropriately describe the application of programmatic mitigators (personnel protective equipment (PPE), spill response procedures, etc.) present at the facility; and (8) the establishment of recurring training, on an annual basis, which addresses hazards associated with acids, use of spill kits, and proper PPE. Based on the above, credit is

¹ A Severity Level III violation was issued on January 24, 2008, involving a Raschig ring-filled vacuum cleaner (RRVC) that spilled a solution bearing special nuclear material (EA-07-240). A Severity Level III Problem consisting of three violations was issued on August 8, 2008, involving an RRVC that contained an inadequate level of Raschig rings (EA-08-171).

warranted for the factor of *Corrective Action*.

Therefore, to encourage prompt identification of violations, and in recognition of prompt and comprehensive corrective actions, 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 \$32,500. Please be advised that issuance of this Notice constitutes escalated enforcement action that may subject you to increased inspection effort.

The immediate and long term corrective actions discussed above were sufficient to allow the NRC to make an informed civil penalty assessment decision regarding the factor of *Corrective Action*. Your root cause investigation identified the factors which contributed to the event. Therefore, the NRC has concluded that the corrective actions planned and completed would correct the violation and prevent recurrence. As such, you are not required to respond to this letter unless the description above does not accurately reflect your corrective actions, or you contest this violation or its significance. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

In accordance with 10 CFR 2.390 of NRC's "Rules of Practice," a copy of this letter and its enclosures will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agency-Wide Document Access and Management System (ADAMS) on the Internet at <http://www.nrc.gov/reading-rm/adams.html>. The NRC also includes significant enforcement actions on its Web site at www.nrc.gov; select What We Do, Enforcement, then Significant Enforcement Actions. 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.

Sincerely,

/RA/

Luis A. Reyes
Regional Administrator

Docket No. 70-27
License No. SNM-42

Enclosures:

1. Notice of Violation and Proposed Imposition of Civil Penalty
2. NUREG/BR-0254

cc w/encls: (See page 4)

cc w/encls: Barry L. Cole, Manager
Licensing and Safety Analysis
Babcock and Wilcox Nuclear Operations Group
P.O. Box 785
Lynchburg, VA 24505-0785

Leslie P. Foldesi, Director
Bureau of Radiological Health
Division of Health Hazards Control
Department of Health
1500 East Main Street, Room 240
Richmond, VA 23219

Distribution w/encls: (See page 5)

Distribution w/encls:

R. Borchardt, OEDO
 M. Weber, NMSS
 C. Scott, OGC
 R. Zimmerman, 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
 K. Ramsey, NMSS
 M. Baker, NMSS
 L. Reyes, RII
 V. McCree, RII
 J. Shea, RII
 E. Cobey, RII
 C. Evans, RII
 S. Sparks, RII
 C. Payne, RII
 A. Gooden, RII
 S. Subosits, RII
 R. Hannah, RII
 J. Ledford, RII
 R. Trojanowski, RII
 OEMAIL
 PUBLIC

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
 ADAMS: Yes ACCESSION NUMBER: _____ SUNSI REVIEW COMPLETE

OFFICE	RII:DFFI	RII:DFFI	RII:EICS	OE	OGC	NMSS	RII:ORA
SIGNATURE	/RA/	/RA/	/RA by SS via Email/	/RA via Email/	/RA via Email/	/RA via Email/	/RA/
NAME	CPayne	JShea	CEvans	JWray	CScott	PHabighorst	VMcCree
DATE	2/5/2010	2/5/2010	2/23/2010	2/16/2010	2/16/2010	2/16/2010	2/22/2010
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME:

NOTICE OF VIOLATION
AND
PROPOSED IMPOSITION OF CIVIL PENALTY

Babcock and Wilcox
Nuclear Operations Group, Inc.
Lynchburg, VA

Docket No. 70-27
License No. SNM-42
EA-08-204

During an NRC Inspection conducted March 23 through June 21, 2008, a violation of NRC requirements was 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 violation and associated civil penalty is set forth below:

Safety Condition No. S-1 of Special Nuclear Material License No. 42 authorizes the use of nuclear material in accordance with Chapters 1-11 of the license application, submitted on October 24, 2006, and supplements thereto.

Chapter 6, "Chemical Safety Process", Section 6.1.2, "Procedures", of the license application states, in part, that the program shall be implemented as described in Chapter 11. Procedures will be implemented that establish requirements to minimize and control chemical safety risk resulting in: (a) radiation risk produced by licensed material; (b) chemical risk produced by licensed material; and (c) plant conditions that may have affect the safety of licensed material and thus present a radiation risk to workers, the public or the environment.

Chapter 11, "Management Measures", Section 11.4, "Procedures", of the license application states, in part, that activities at the Nuclear Operations Group Site involving licensed material shall be conducted in accordance with written and approved procedures.

Contrary to the above, Operations Procedure OP-0061167, "Spill and Leak Handling Emergency Procedure", failed to include instructions regarding how to neutralize acid spills. As a result, on April 28, 2008, a process operator took inappropriate actions to neutralize the spill by adding Sodium Hydroxide (NaOH), a strong base, which reacted violently with liquid hydrogen fluoride (HF) acid and which could have led to irreversible or other serious, long-lasting health effects to the process operator.

This is a Severity Level III violation (EA-08-204, Supplement VI).
Civil penalty - \$32,500.

The NRC has concluded that information regarding the reasons for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance will be achieved, is already adequately addressed on the docket. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-001, and the NRC Senior Resident Inspector at your facility within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

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: Roy Zimmerman, 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.

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

Dated this 23rd day of February 2010

Enclosure 1