



Department of Energy
National Nuclear Security Administration
Washington, DC 20585

May 16, 2005

OFFICE OF THE ADMINISTRATOR

Mr. Michael B. Mallory
[]
BWXT Pantex L.L.C.
FM 2373 US Highway 60
P.O. Box 30020
Amarillo, TX 79120

EA-2005-02

Subject: Preliminary Notice of Violation and Proposed Imposition of Civil Penalty
\$123,750

Dear Mr. Mallory:

The Department of Energy's (DOE) Office of Price-Anderson Enforcement's (OE) investigated the facts and circumstances surrounding BWXT Pantex's identification of high explosive (HE) cracking during the disassembly of a retired nuclear weapon, and the subsequent recovery actions. An investigation summary report describing the results of this investigation was provided to you on December 22, 2004. An enforcement conference was held with you and members of your staff on February 9, 2005, to discuss the investigation findings. A summary of the conference is enclosed with this letter. Furthermore, your staff provided supplemental information in a letter dated March 11, 2005, in response to questions that were asked during the enforcement conference. This information was taken into account in arriving at this enforcement decision.

The National Nuclear Security Administration (NNSA) has concluded that violations of 10 CFR Part 830, "Nuclear Safety Management," Subpart A, "Quality Assurance Requirements," and Subpart B, "Safety Basis Requirements," have occurred. The violations are described in the enclosed Preliminary Notice of Violation (PNOV).

Parts A and B of the PNOV identify contain safety basis violations. These pertain to the failure to fully understand and perform work consistent with the approved safety basis for the dismantlement recovery operations, and the repeated failure to apply the unreviewed safety question (USQ) process in accordance with BWXT Pantex's approved USQ procedure.

Part C identifies work process and training violations. These violations are related to the development of a recovery procedure, in response to the cracked HE, that

contained insufficient instructions to perform the work. Contributing to the inadequate procedure was the failure to perform the necessary and required procedure validation reviews. Finally, the pre-job training performed for the first recovery operation was inadequate. The lack of clarity in the procedure and the inadequate pre-job training resulted in the failure of the initial recovery process activities, exacerbating the HE cracking.

Part D sets forth a quality improvement violation. This violation addresses the failure to identify significant deficiencies with safety-significant tooling used in the dismantlement process. The tooling design was not adequate in that it deformed during the loading process, thereby creating an unintended gap between the tooling and HE. This gap imposed an impact load on the HE that had not been previously analyzed. This gap and the accompanying noise it caused were well known by the workers. However, it was not anticipated in the safety basis and tool design, and it existed for several years until it was disclosed to management during BWXT Pantex's investigation of the event.

In accordance with 10 CFR Part 820, Appendix A, "General Statement of Enforcement Policy," each of the violations described in the PNOV have been categorized as Severity Level II. In determining the severity level, NNSA evaluated the actual and potential safety significance. In this event, NNSA concluded that the potential for an unintended consequence was significant since both high explosives and nuclear material were involved. The weapon's safety basis documents identified specific controls to prevent conditions that could lead to HE detonation. However, initial recovery work was performed when some of the necessary controls were not fully utilized and new conditions were not fully analyzed. This was compounded by multiple breakdowns that occurred in the fundamental processes that were necessary to ensure that the initial recovery work was safely performed. These breakdowns included the failure to understand the safety basis, the failure to recognize and evaluate potential new hazards, the failure to develop adequate work instructions, and the failure to ensure that the production technicians had sufficient knowledge to correctly perform the work.

In order to emphasize the importance of safety basis compliance, USQ processes, and ensuring that workers are fully prepared to perform work, I have determined that a proposed civil penalty of \$123,750 is warranted. This amount reflects a 50 percent mitigation of the \$55,000 base civil penalty for parts A, B, and C. The timeliness of management's response to the HE cracking event as well as the comprehensive corrective actions taken resulted in NNSA's allowance of the maximum amount of penalty mitigation available. Consistent with the Enforcement Policy, only 25 percent mitigation of the \$55,000 base civil penalty is warranted for the quality improvement violation described in part D, again based on the corrective actions. Further mitigation of this violation is not warranted because the tooling problems were long standing and the identification of the tooling problem occurred only after the cracked HE event.

NNSA is also concerned about the lack of formality relating to the exchange of information with the design agency regarding the weapon's response. Though OE's

investigation did not cite a specific violation, it was concluded that BWXT Pantex's actions were not consistent with the intent of the NNSA Development and Production Manual and NNSA's expectations that the weapon response process identified in the Manual be used when new or different hazards are encountered.

While the events that resulted in the PNOV were unfortunate, NNSA is encouraged by your proactive response to it. The additional emphasis you have placed on improving performance assessment processes is also encouraging, and should yield significant benefits in finding precursor issues that will prevent future events.

You are required to respond to this letter and to follow the instructions specified in the enclosed PNOV when preparing your response. Your response should document any additional specific corrective actions taken to date. Corrective actions will be tracked in DOE's Noncompliance Tracking System (NTS). You should enter into NTS (1) any additional actions you plan to take to prevent recurrence and (2) the anticipated completion dates of such actions.

After reviewing your response to the PNOV, including any proposed corrective actions entered into the NTS, NNSA will determine whether further enforcement action is necessary to ensure compliance with DOE nuclear safety requirements.

Sincerely,



Linton F. Brooks
Administrator
National Nuclear Security Administration

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Enclosures:
Preliminary Notice of Violation
Enforcement Conference Summary
List of Attendees

cc: J. Mangeno, NA-1
D. Minnema, PAAA Coordinator, NA-1
J. Shaw, EH-1
R. Shearer, EH-1 A.
Patterson, EH-1 M.
Zacchero, EH-1
L. Young, EH-1
S. Sohinki, EH-6
S. Zobel, EH-6
Docket Clerk, EH-6
R. Loesch, EH-31
D. Glenn, PXSO
K. Waltzer, PAAA Coordinator, PXSO
S. Filipowicz, PAAA Coordinator, BWXT Pantex
R. Azzaro, DNFSB

**Preliminary Notice of Violation
and
Proposed Imposition of Civil Penalty**

BWXT Pantex LLC
Pantex Site

EA-2005-02

As a result of the Department of Energy's (DOE) Office of Price -Anderson Enforcement's investigation of the events that occurred between January 8 and 13, 2004, related to the cracking of a high explosive component during the disassembly of a retired nuclear weapon and the subsequent recovery activities, violations of nuclear safety requirements were identified. In accordance with 10 CFR 820, Appendix A, "General Statement of Enforcement Policy," the violations are listed below.

A. Safety Basis Deficiency

10 CFR 830.201 requires that the contractor "...perform work in accordance with the safety basis for a hazard category 1, 2, or 3 DOE nuclear facility and, in particular, with the hazard controls that ensure adequate protection of workers, the public, and the environment."

Contrary to the above, BWXT Pantex performed work during the dismantlement of a retired nuclear weapon, in a hazard category 2 DOE nuclear facility, that was not in accordance with the approved safety basis and hazard controls. Specifically, on January 8, 2004, during disassembly operations, the cracking of a high explosive (HE) component occurred. On January 13, 2004, BWXT Pantex initiated an operation to complete the removal of the cracked HE. The operation was outside the DOE-approved Hazard Analysis Report (HAR), RPT-HAR-255442, in that operations involving cracked HE were not addressed by the HAR. The existing approved HAR stated that controls were in place during dismantlement operations such that cracking would not occur. This was not the case for the subject disassembly procedure. This is a significant safety concern since the initial recovery operation for the cracked HE was not authorized by the safety basis and this operation may have increased the risk of an adverse event.

This violation constitutes a Severity Level II problem.
Civil Penalty \$27,500

B. Unreviewed Safety Question Deficiencies

10 CFR 830.203(a) requires that the contractor responsible for "...a hazard category 1, 2, or 3 DOE nuclear facility must establish, implement, and take actions consistent with a USQ process that meets the requirements of this section."

Contrary to the above, BWXT Pantex did not perform a USQ evaluation consistent with its DOE-approved USQ program, established by STD-3014, issue 17, "Pantex Plant Unreviewed Safety Question Program," and the resultant deficiencies in the USQ evaluation of the initial recovery procedure for the cracked HE were significant. This resulted in the failure to perform the necessary safety reviews prior to attempting the removal of the cracked HE. This USQ evaluation was not based upon a review of the relevant hazards described in the HAR, contained numerous errors, and included a less than adequate independent review. The specific violations are as follows:

1. STD-3014, section 2.0, requires that a USQ evaluation, using form PX-2360 part III, be performed when a potentially inadequate safety analysis (PISA) is apparent. A PISA exists when the existing safety analysis may not be bounding or may otherwise be inadequate.

Contrary to this requirement, on January 8, 2004, BWXT Pantex determined that HE cracking had occurred, but failed to recognize that cracked HE was not analyzed as a hazard in the DOE-approved HAR for this weapon. Therefore, the cracked HE condition was not bounded by the HAR. The failure by BWXT Pantex to understand the existing safety basis resulted in the failure to perform the required USQ evaluation for a PISA.

2. STD-3014, section 3.6.1(a)(3), requires a positive USQ determination if the subject issue (e.g., the cracked HE) increases the probability of a malfunction of systems, structures, or components previously evaluated explicitly or implicitly in the accident analysis.

Contrary to this requirement, BWXT Pantex performed the USQ determination in support of the proposed recovery procedure and incorrectly concluded that the USQ was negative. In performing this review, BWXT Pantex failed to evaluate a potential increase in the probability of a malfunction of a system, structure, or component in that the HAR credited the tooling as a control only for preventing an accidental drop of the HE and only if the HE was an intact component. The potential for the tooling to contain cracked HE was not evaluated by way of a USQ form PX-2630 part III evaluation. Any potential for the failure of the tooling to safely contain cracked HE could have increased the probability of an inadvertent detonation and, therefore, should have resulted in a positive USQ determination.

3. The USQ evaluation of the recovery procedure was not adequately performed and its associated documentation contained a number of errors. The evaluation referenced several accident scenarios as the basis for concluding that the probability of a HE detonation was not increased. However, these scenarios were for different operations with significantly different working area configurations than the one where the affected nuclear weapon resided. Therefore, these accident scenarios were not applicable. No scenarios were included in the USQ evaluation that addressed the actual configuration that existed when the cracked HE was discovered. The evaluation also incorrectly assumed that the controls described within the HAR would mitigate the possible dropping of part of a cracked HE component in the work area. However, no such controls were included in the HAR. All of the controls assessed by the HAR were to prevent the dropping of an intact HE component. Finally, the USQ included information that was not applicable to this event because an electronic version of an unrelated USQ evaluation was used as a template and all nonapplicable information was not removed.
4. STD-3014, section 3.7.2(a), required a peer reviewer to perform a technical review of the part III USQ documentation to assure the USQ process was adequately applied.

A peer reviewer did approve the part III USQ evaluation thereby indicating that the USQ evaluation was adequate. However, the USQ evaluation was not adequate as the peer reviewer failed to identify the incorrect scenarios used to justify a negative USQ determination and the other errors in the USQ documentation, as discussed above. The BWXT investigation found that the peer reviewer had failed to perform the necessary independent technical review.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty \$27,500

C. Procedural and Training Compliance Deficiencies

10 CFR 830.122(b)(1) requires that a contractor "...train and qualify personnel to be capable of performing their assigned work."

10 CFR 830.122(e)(1) requires that a contractor "...perform work consistent with technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements, using approved instructions, procedures, or other appropriate means."

Contrary to the above, for the initial cracked HE recovery operation, BWXT Pantex failed to develop a recovery procedure that provided instructions directing the intended work sequence which were readily understandable by the workers. The development of this procedure also failed to include a validation review required by the contractor's own procedures. The training of the workers on this procedure failed to adequately clarify the procedure's instructions. These deficiencies are significant in that they contributed

to the workers incorrectly performing the intended work sequence, thereby aggravating the HE cracking. In addition, despite the unclear instructions and training of the workers, this work was initiated without a person supervising the work who was knowledgeable about the intended recovery process. The specific training and procedural violations are listed below:

1. Level 2 training was identified as the necessary level of training on form PX-4864 for the recovery procedure. STD-0147, section 3.8.3(a)(5), requires that the Level 2 training be "...conducted by a knowledgeable individual on the particular activity."

Contrary to this requirement, a shift manager who was not knowledgeable of the specific process conducted the training. During the training, the workers were confused by the procedure instructions and asked questions. The questions were referred, by telephone, to a backup project engineer who also was not familiar with the instructions. The end result was that the workers incorrectly performed the recovery procedure and aggravated the HE cracking.

2. STD-0147, section 3.8.4(a)(2), requires, under certain circumstances, a validation review of a procedure when a change adds a new step.

Contrary to this requirement, a validation review was not performed as follows: The recovery procedure for removing the cracked HE added new steps to the dismantlement operating procedure; these new steps met the criteria that required a validation review. The review, required by section 3.8.5, is to "...exercise the procedure to determine accuracy, clarity, conciseness, and usability." The failure to perform a validation of the recovery procedure allowed the unclear and insufficient instructions to remain unchanged, which resulted in actions by the workers that aggravated the HE cracking.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty \$27,500

D. Quality Improvement Deficiency

10 CFR 830.122(c)(2) requires a contractor to "...identify, control, and correct items, services, and processes that do not meet established requirements."

Contrary to this requirement, BWXT Pantex did not have in place a process to identify, control, or correct the significant deviation from the intended operation of the tooling used to separate and contain HE from the type of weapon involved in the January 2004 event, a situation that existed for nearly two years. The deviation was discovered by the contractor's investigation team during interviews with the workers involved in the disassembly operations. This investigation determined that the cracking most likely occurred during the process of separating the HE from the weapon. It was also discovered that an unintended gap occurred between the tooling and the HE when a separation load was applied. Upon separation of an HE component, the release of

energy in the tooling, as it returned to pre-load conditions, created an impact force on the remaining HE that was also accompanied by a noise. This condition was not anticipated in the design of the tooling or discovered during its testing. Though the workers performing the disassembly were knowledgeable of the resulting tooling deformation and noise, BWXT Pantex management and the design personnel were not aware of it, despite the fact it had been occurring over a period of nearly two years. The failure to insure that significant deviations from the safety significant equipment design and operation were identified to the appropriate level of management in a timely manner and analyzed for acceptability resulted in continuing disassembly operations with increased risk of an adverse event.

This violation constitutes a Severity Level II problem.
Civil Penalty \$41,250

Pursuant to the provisions of 10 CFR 820.24, BWXT Pantex is hereby required, within 30 days of the date of this Preliminary Notice of Violation (PNOV), to submit a written reply by overnight carrier to the following address:

Director, Office of Price -Anderson Enforcement
Attention: Office of the Docketing Clerk EH-6, 270
Corporate Square Building
U.S. Department of Energy
19901 Germantown Road
Germantown, MD 20874-1290

Copies should also be sent to the Pantex Site Office Manager. This reply should be clearly marked as a "Reply to a Preliminary Notice of Violation" and should include the following for each violation: (1) admission or denial of the alleged violations; (2) any facts set forth which are asserted to be incorrect; and (3) the reasons for the violations if admitted, or if denied, the basis for the denial. Corrective actions that have been or will be taken to avoid further violations should be delineated with target and completion dates in DOE's Noncompliance Tracking System. In the event the violations set forth in this PNOV are admitted, this PNOV will constitute a Final Order in compliance with the requirements of 10 CFR 820.24.

Any request for remission or further mitigation of civil penalty must be accompanied by a substantive justification demonstrating extenuating circumstances or other reasons why the assessed penalty should not be paid in full. Should additional mitigation of the proposed civil penalty be requested, BWXT Pantex should address the adjustment factors described in section IX of 10 CFR 820, Appendix A. Within 30 days after the issuance of the PNOV and proposed civil penalty, unless the violations are denied, or remission or additional mitigation is requested, BWXT Pantex shall pay the civil penalty of \$123,750 imposed under section 234a of the Atomic Energy Act by check, draft, or money order payable to the Treasurer of the United States (Account 891099) and mailed to the Director, Office of Price -Anderson Enforcement, Attention: Office of the

Docketing Clerk, at the above address. BWXT Pantex will be issued an order imposing the civil penalty if it should fail to answer within the time specified.



Linton F. Brooks
Administrator
National Nuclear Security Administration

Dated at Washington, DC
this 16th day of May 2005

Enforcement Conference Summary

BWXT Pantex
Pantex Site
Weapon Component Cracking Event
(NTS-ALO -AO-BWXP-PANTEX-2004-0001)

On February 9, 2005, the Office of Price-Anderson Enforcement (OE) held an enforcement conference in Germantown, Maryland, with BWXT Pantex concerning an event at the Pantex site. The meeting was called to discuss the facts, circumstances, and corrective actions pertaining to nuclear safety issues associated with the cracking of a nuclear weapon component that occurred on January 8, 2004, and the recovery activities that followed.

Mr. Stephen M. Sohinki, Director of the Office of Price-Anderson Enforcement, called the meeting to order. Mr. Sohinki stated that OE had convened the meeting to (1) address the issues noted in the December 22, 2004, investigation summary report, (2) discuss corrective actions taken to prevent recurrence, and (3) discuss mitigation factors for OE consideration. Information and key areas discussed at the conference are summarized below, and material provided by BWXT Pantex during the conference was incorporated into the docket.

Mr. Michael Mallory, BWXT Pantex General Manager, started his presentation saying that there were no serious consequences stemming from the high explosive cracking, and that there was no reasonable possibility that one would have occurred. Nonetheless, BWXT Pantex considered the event significant and had conducted a rigorous review of its circumstances.

Mr. Mallory reviewed the event-related deficiencies described in the investigation summary report and discussed the company's remedial actions for them. Unreviewed safety questions (USQ) evaluations for the past 12 months were reviewed and no other significant errors were discovered. Furthermore, USQ documentation and validation guidelines were developed, and a management review was added to the USQ process. Conduct of operations procedures were strengthened, and all anomaly reports are now screened by senior managers to facilitate their awareness of off-normal situations. The tooling used had been designed in the late 1990s and had been used in hundreds of dismantlements without anyone recognizing the tooling's deflection as anomalous. Though there were no unintended consequences, the tooling has been revised to

eliminate any unintended deflection; this effort took nine months for the redesign and reauthorization process.

Mr. Mallory explained that that Nuclear Safety and Nuclear Explosive Safety groups have been taken out of the Engineering Division and placed in Environment, Safety and Health in order to avoid any conflicts of interest. Overall, BWXT Pantex initiated 165 corrective actions as a result of the January 2004 event. These actions have all been completed and will be reviewed in late 2005 to assess their effectiveness.

Mr. Stephen Filipowicz, BWXT Pantex PAAA Coordinator, concluded the presentation by providing arguments for mitigation and the exercise of enforcement discretion.

Mr. Sohinki stated that OE would consider the information presented by BWXT Pantex together with the entire record when OE undertakes its enforcement deliberations. Mr. Sohinki then adjourned the conference. A list of conference attendees is attached.

**Enforcement Conference Attendees
February 9, 2005**

Weapon Component Cracking Event

DOE – Office of Price-Anderson Enforcement

Stephen Sohinki, Director
Howard Wilchins, Senior Litigator
Steven Zobel, Enforcement Specialist
Steven Hosford, Technical Advisor

DOE – National Nuclear Security Administration

Martin Schoenbauer, Director – Military Application and Stockpile
Douglas Minnema, PAAA Coordinator Carl Sykes, Engineer

DOE – Pantex Site Office

Clinton Fitts, General Counsel
Michael Reaka, Technical Advisor

BWXT Pantex

Michael Mallory, General Manager Dan
Swaim, Deputy General Manager John
Jones, Chief Counsel
Stephen Filipowicz, PAAA Coordinator