

February 14, 2008

EA-08-025

COL Charles Kibben, Commander
Crane Army Ammunition Activity
300 Hwy. 361
Crane, IN 47522-5099

SUBJECT: NRC INSPECTION REPORT NO 030-14708/2007-001(DNMS) –
CRANE ARMY AMMUNITION ACTIVITY - NOTICE OF VIOLATION AND
EXERCISE OF ENFORCEMENT DISCRETION

Dear COL Kibben:

This refers to the inspection conducted on December 13, 2007, with continued in-office review through January 15, 2008, at your Crane, Indiana facility. Our in-office review consisted of a review of your radiography procedures and the Commission's requirements for wearing personnel monitoring during radiographic operations. At the conclusion of the inspection, the findings were discussed with you and members of your staff. The enclosed report (030-14708/2007-001) presents the results of this inspection.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, one violation of 10 CFR 34.47(a), for the failure of a radiographer to wear dosimetry (personnel monitoring badge and a direct reading pocket dosimeter) during radiographic operations occurred. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforcement-pol.html>.

The failure to wear dosimetry while performing radiographic operations is a significant concern because the personnel monitoring badge is used as the basis for assigning occupational dose to the radiographer to ensure compliance with dose limits. In addition, the pocket dosimeter provides an indication of immediate radiation exposure. A violation of this type is usually characterized at Severity Level III in accordance with Supplement VI.C.6 of the Enforcement Policy. However, the NRC may refrain from citing a Severity Level III violation in accordance with Section VII.B.6 of the Enforcement Policy. In this case, the NRC has concluded that the following factors warrant the NRC using discretion to mitigate the normal sanction: (1) your radiographer self-identified that he was not wearing dosimetry before entering the permanent radiographic installation; (2) the consequences and potential consequences were considered to be low because the radiography is only performed within the permanent radiographic installation with redundant means of determining that the radioactive source is properly shielded and the radiographer normally is in a low-dose control area; (3) you took prompt and comprehensive

corrective actions, including relieving the radiographer of his radiography duties until he completed a scheduled training session and discussing this issue during a radiographer's re-certification training session held during the week of December 17, 2007 (the training session included discussions emphasizing the importance of wearing personnel monitoring at all times during radiography operations); and (4) the incident appeared isolated. Therefore, in consultation with the Regional Administrator and the Director, Office of Enforcement, I have determined that this violation should be characterized as a Severity Level IV violation. However, significant violations in the future could result in escalated enforcement action. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence is already adequately addressed on the docket in Inspection Report No. 030-14708/2007-001(DNMS). Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. 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 the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, 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.

Sincerely,

/RA by K. O'Brien Acting for/

Steven A. Reynolds, Director
Division of Nuclear Materials Safety

Docket No. 030-14708
License No. 13-18235-01

Enclosures:

1. Notice of Violation
2. Inspection Report No. 030-14708/2007-001(DNMS)

cc w/encls: State of Indiana

DISTRIBUTION:

See next page

Letter to COL Charles Kibben from Steven A. Reynolds dated February 14, 2008

SUBJECT: NRC SPECIAL INSPECTION REPORT NO 030-14708/2007-001(DNMS) –
CRANE ARMY AMMUNITION ACTIVITY - NOTICE OF VIOLATION AND
EXERCISE OF ENFORCEMENT DISCRETION

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NOTICE OF VIOLATION

Crane Army Ammunitions Activity
Crane, Indiana

Docket No. 030-14708
License No. 13-18235-01

During an NRC inspection conducted on December 13, 2007, with continued in-office review through January 15, 2008, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," the violation is listed below:

10 CFR 34.47(a) requires, in part, that the licensee may not permit any individual to act as a radiographer unless, at all times during radiographic operations, each individual wears, on the trunk of the body, a direct reading dosimeter and a personnel dosimeter. Radiographic operations is defined in 10 CFR 34.3 as all activities associated with the presence of radioactive sources in a radiographic exposure device during the use of the device or transport to include surveys to confirm the adequacy of boundaries, setting up equipment and any activity inside restricted area boundaries.

Contrary to the above, on December 13, 2007, at Crane Army Ammunition Activity, while performing demonstrations of the daily safety checks on the radiography equipment, a radiographer employed by the licensee did not wear a direct reading dosimeter and a personnel dosimeter on the trunk of the body, during these radiographic operations.

This is a Severity Level IV Violation (Supplement VI).

The NRC has concluded that information regarding the reason 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 in NRC Inspection Report 030-14708/2007-001. 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, DC 20555 with a copy to the Regional Administrator and the Enforcement Officer, Region III, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

If you choose to respond, your response will be made available 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>. Therefore, to the extent possible, the response should not include any personal, privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

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

Dated this 14th day of February 2008

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No. 030-14708

License No. 13-18235-01

Report: 030-14708/2007-001(DNMS)

Licensee: Crane Army Ammunition Activity

Locations Inspected: 300 Hwy. 361
Crane, Indiana

Date: December 13, 2007

Exit Meeting: January 15, 2008

Inspector: Deborah A. Piskura, Health Physicist

Approved by: John R. Madera, Chief
Materials Inspection Branch

EXECUTIVE SUMMARY

Crane Army Ammunition Activity Crane, Indiana NRC Inspection Report 030-14708/2007-001 (DNMS)

This was a routine inspection conducted on December 13, 2007, with continued in-office review through January 15, 2008. During the inspection, the inspector observed a radiographer conduct daily safety checks on the various safety components of the permanent radiographic installation. Upon completion of these tests, the radiographer identified that he was not wearing his assigned personnel monitoring equipment. The inspector identified an apparent violation of Title 10 Code of Federal Regulations (CFR) Part 34.47(a) associated with radiographers failure to wear, on the trunk of the body, a personnel dosimeter and a direct-reading dosimeter at all times during radiographic operations.

The inspector concluded that the root cause of the apparent violation was an isolated event when the radiographer forgot that he removed his dosimetry and left them in a building where he was previously performing non-destructive testing using x-ray producing equipment. The licensee's proposed corrective actions included: (1) relieving the radiographer of his radiography duties until he completed a scheduled training session; (2) discussing this issue during a radiographer's re-certification training session to be held during the week of December 17, 2007 (the training session included discussions emphasizing the importance of wearing personnel monitoring at all times during radiography operations); (3) reminding all radiographers that all personnel monitoring equipment; i.e., pocket dosimeters and TLD badges must be worn at all times, and failure to comply with the safety procedures will result in disciplinary action; and (4) including a notation/check off on the daily safety check list to include a reminder to radiographers to ensure they are wearing their assigned dosimetry.

The inspection included a review of other radiation safety program areas including survey instrument calibration, radiation surveys, maintenance of the exposure device, depleted uranium contamination tests, and sealed source leak tests. No apparent violations of NRC regulatory requirements were identified for these program areas.

Report Details

1 Program Scope and Inspection History

The Crane Army Ammunitions Activity, Crane, Indiana (licensee), is a large military installation that possesses a Picker 590 C "Cyclops" radiography exposure device containing a cobalt-60 source. The licensee utilized its exposure device for non-destructive testing of munitions. Four radiographers used the exposure device on a weekly basis. All radiographic operations were performed within an approved permanent radiographic installation.

An inspection of the Increased Controls (Inspection Report 030-14708/2007-002) was conducted concurrent with the routine safety inspection. Two apparent violations were identified (EA-08-001) for the licensee's failure to implement a program to monitor and immediately detect, assess and respond and the licensee's failure to establish a response plan with the local law enforcement agency (the Navy Activity). No violations of NRC requirements were identified during the previous two routine inspections conducted on October 15, 2005, and April 9, 2003.

2 Conduct of Radiographic Operations and Personnel Monitoring

2.1 Inspection Scope

The inspector reviewed the licensee's conduct of radiographic operations by interviewing the Radiation Safety Officer (RSO) and select radiographers, observing selected licensed activities, and reviewing selected licensee records.

2.2 Observations and Findings

The Picker 590C unit was located within a permanent radiographic installation (PRI). Keys to the console and the PRI were kept by the radiographers. The licensee informed the inspector that the PRI and the console were locked at all times when not under the direct surveillance by a radiographer. The inspector determined that the licensee's facilities observed during the inspection were the same as those described in the licensee's NRC license renewal application and supporting material.

Safety checks on the various PRI systems were performed by the radiographers each day of use. During this inspection, the inspector observed a radiographer perform checks on the PRI door, interlocks, console interlocks, and the radiation monitor to verify the following:

1. Source returned to the shielded position when the door opened
2. Source would not expose if the door was open
3. All lights were operational on the console and the radiation monitor
4. Cyclops console was inoperable without the key
5. Radiation alarms were operational and tested each day of use
6. Audible signals sounded on attempted entry while the source was exposed

All these items were found to be operational by the inspector for the exposure room. The licensee indicated that the radiation alarm system had not experienced any malfunctions or problems since the previous inspection.

Upon completion of the safety checks, listed above, in preparation to enter the PRI, the radiographer indicated to the inspector that he was not wearing his assigned personnel monitoring badge or a pocket dosimeter. The inspector terminated further demonstrations of the safety checks upon discovery that the radiographer was not wearing his dosimetry. (Note that the radiographer did not enter the PRI during these demonstrations.) The radiographer recalled that he left his monitoring devices at another building where he had previously performed x-ray non-destructive testing and forgot to bring his dosimetry.

Title 10 Code of Federal Regulations (CFR) Part 34.47(a) requires that the licensee may not permit a radiographer to conduct radiography operations unless at all times the individual wears on the trunk of his body a personnel dosimeter and a direct reading dosimeter. The inspector determined that the radiographer's failure to wear a personnel dosimeter badge on the trunk of his body while performing radiography operations is a violation of 10 CFR Part 34.47(a).

The health and safety consequences of the violation were minimal. The year-to-date 2007 and 2006 maximum total effective dose equivalent to a radiographer was reported as "0" millirem. Radiography was conducted within a shielded room, equipped with audible and visual alarms, which met the regulatory requirements of a permanent radiographic installation. The radiation levels at the control console and in the unrestricted areas outside the exposure room, where the radiographer was performing the daily safety checks, were indistinguishable from background, < 0.01 milliroentgen per hour. All reports for the safety checks on the PRI and quarterly maintenance checks on the radiography unit indicated that all equipment was in working order. The radiographers further confirmed that there had been no problems, malfunctions with their radiography device and the safety mechanisms of the PRI.

The licensee's proposed corrective actions included: (1) relieving the radiographer of his radiography duties until he completed a scheduled training session; (2) discussing this issue during a radiographer's re-certification training session held during the week of December 17, 2007 (the training session included discussions emphasizing the importance of wearing personnel monitoring at all times during radiography operations); (3) reminding all radiographers that all personnel monitoring equipment (pocket dosimeters and personnel monitoring badges) must be worn at all times, and failure to comply with the safety procedures will result in disciplinary action; and (4) including a notation/check off on the daily safety check list to include a reminder to radiographers to ensure they are wearing their assigned dosimetry.

2.3 Conclusions

The inspector identified a violation of 10 CFR 34.47(a) involving the radiographer's failure to wear a personnel dosimeter badge on the trunk of his body while performing radiography operations. The licensee implemented corrective actions in response to the apparent violation. The licensee's safety checks of the Picker 590C unit and PRI

indicated that all systems were operational. No radiation alarm system malfunctions or problems were experienced by the licensee since the previous inspection.

3 Other areas inspected

3.1 Inspection Scope

The inspector interviewed the RSO and selected radiography personnel and reviewed selected records for other aspects of the radiation safety program. The inspection included review of other radiation safety program areas including, survey instrument calibration; radiation surveys; maintenance of the exposure device; depleted uranium contamination tests and sealed source leak tests.

3.2 Observations and Findings

At the time of this inspection, the licensee possessed several survey meters (range 0-1 Roentgens per hour), calibrated every 6 months by an authorized service company. The licensee maintained copies of the calibration certificates on file. The inspector found a sampling of these survey meters to be calibrated within the required frequency and operable.

A copy of the Picker 590C unit's operating and emergency procedures was maintained at the console to the device. The inspector found these procedures to be the same as those referenced in the license renewal application. The licensee confirmed that during exposures, the radiographers are physically present at the console. At the conclusion of each exposure, the radiographer entered the room and surveyed the area to ensure that the source returned to the shielded position.

The inspector reviewed selected daily safety check records and quarterly inspection records for the exposure device. The licensee found no problems with the Picker 590C unit or the radiation monitoring equipment for the PRI. The inspector reviewed the specific items that are to be examined during the quarterly maintenance checks with the licensee. Review of 2007 quarterly inspection records and confirmation with the RSO indicated that the licensee had not experienced any source/equipment malfunctions or repairs.

The radiography source was leak tested every 6 months. The last leak test was conducted on September 11, 2007, and the results were less than 0.005 μCi . The inspector reviewed a sampling of leak test records for 2006 and 2007 and found that the sources were tested at the appropriate frequency. The leak tests for the exposure device were noted to include depleted uranium contamination tests.

3.3 Conclusions

No apparent violations of NRC regulatory requirements were identified for the above program areas.

4 Exit Meeting Summary

The inspector discussed the preliminary conclusions, as described in this report, with licensee management during the exit meeting conducted at the licensee's facility on December 13, 2007. The inspector also discussed the apparent violation with the RSO during a final telephone exit conference on January 15, 2008. The inspector discussed the activities reviewed, the inspection findings, and the apparent violation. The licensee did not identify any information reviewed during the inspection and proposed for inclusion in the inspection report as proprietary in nature.

List of Personnel Contacted

Kevin Bachynski, Physical Security Specialist, Security Manager
*John Boling, Civilian Executive Assistant
Judy Brown, Physical Security Specialist
*Leah Clinton, Crane Army Ammunition Activity Security Officer
Tommy Davis, Radiographer
*Bob Gillis, Assistant RSO and Safety Engineer
*Richard W. Murphy, Radiographer
*Walter F. Shearin, Radiation Safety Officer
Jon M. Thomas, Emergency Management Officer
Norman Thomas, Chief of Staff

*Individuals present during exit meeting