

February 13, 2007

US Nuclear Regulatory Commission  
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Washington, DC 20555  
Subject: Radiation Incident – 30 Day Report  
NRC License 12-16559-02

CONAM Inspection had recently experienced an incident at a customer site involving its Trainer, PA personnel and, in accordance with 10 CFR Part 20.2203(a), we are providing this thirty (30) day report. The occurrence revolved around an individual radiographer, on a three (3) man crew, performing radiography at a refinery. This veteran contract employee previously received training and was tested through various nationally recognized and licensed inspection company programs including Conam Inspection's radiation safety program, specifically in the proper use of dosimetry and survey equipment and, through on-site audits, his understanding of and ability to use dosimetry and survey instrumentation was verified.

This being said, the radiographer, during the performance of his duties and with the source exposed, became distracted when approached by a customer elevator operator. Upon completion of the conversation, the radiographer approached the camera with a survey meter and finalized the set up for the last shot. As was the case, the source was still in the exposed position during the setup process and that became evident to the radiographer upon his attempt to "unlock " camera and when he subsequently "cranked" the source "out" and found it was actually a source retraction.

This incident had initially caused ALL NDE operations to cease at the customer's multiple PA sites and required CONAM to make a provisional twenty four (24) hour regulatory report involving an alleged radiation over exposure in accordance with 10 CFR Part 20.2202 (b)(iii). More importantly, the radiographer was required to undergo numerous observatory tests to determine the extent of any physical consequences occurring from the alleged over exposure. To his benefit, the radiographer experienced no acute physical disorders.

We have investigated this occurrence and discussed it with our regulator and have made our final determinations as regards Timelines, Apparent Violations, Root Cause, Contributing Factors, Corrective Actions and Dose received.

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**Timeline:**

- January 20, 2007 :  
12AM Shot Window - Supervisor performed a safety audit – All dosimetry was available and functioning – Same with survey meters. Later the radiographer returned to truck and dropped his ARM, but was unaware it was missing.
- 4AM Shot Window – 3 personnel set up for 4 shots @ 6.5 Min each
- Radiographer and assistant checked operability of survey meter, battery was at the low side of the range. The radiographer continued to perform radiography. First assistant was on the lower elevation watching ropes, second assistant and radiographer were at the weld elevation.
- Radiographer made three exposures and was interrupted by an elevator operator prior to the third retraction. Radiographer did not realize the source had not been retracted, approached the camera with his survey meter, but was unaware of any abnormal readings and proceeded to complete the fourth set-up.
- Radiographer removed & replaced film, slid the collimator around to the spot opposite the unexposed film, aligned the collimator, picked up his survey meter and left the area. In doing so he viewed the slide bar of the lock to be in the armed position.
- He returned to the crank handle and attempted an exposure, finding that the source was already exposed, so he retracted it into the camera. He found his dosimeter off-scale, reset the camera to expose and cranked out the source. He completed the exposure, retracted the source and, once complete, he contacted supervision to report the incident.

**Root Cause:**

Failure to follow written safety practices

Failure to properly survey

Failure to properly use assigned personal protective equipment

**Contributing Factors:**

- Lack of understanding on the part of the elevator operator as to when to come to the elevation, thus causing a distraction for the operator.
- No periodic review by the personnel for the availability of dosimetry (peer check).

**Corrective Actions Taken:**

- Immediate cessation of radiography at all customer refinery sites.
- Review/recitation of the occurrence and reinforcement through retraining of all Trainer, PA radiographic personnel of the need to follow all safety practices.
- Establishment of revised protocol for performing radiography at Trainer temporary RT job sites. Job Safety Assessment (JSA) forms were amended to include a vehicle for documenting visible, verbal and physical confirmations by both the radiographer and the assistant that the source is properly retracted (tension check at the crank to show that the source can not be physically cranked out), that the camera is in the locked position (rotate the selector and depress the plunger) and that physical surveys have been performed and that the source is properly secured.
- Dissemination of this letter to all Conam Inspection operations offices to be used by management to train personnel on the hazards of violating radiation safety program requirements and of the need to constantly perform proper surveys.

**Subsequent Corrective Actions:**

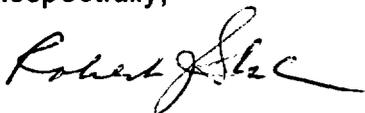
- Investigate new and /or additional safety technology to augment the resources currently supplied by CONAM for the safety of the radiographic personnel.
- Consider making those in charge (responsible) of radiographic operations more readily visibly recognizable and address specific duties to each individual prior to commencement of radiography.
- Make dosimetry more visible and position it more to the front of the personnel (possibly a mesh vest or sash to hold and display all required dosimetry)

**Dose Amounts (Evidenced and Concluded)**

During this incident, a single radiographer experienced a recorded whole body dose for the month of January 2007 of **628 mrem** as determined by processing his Luxel badge minus prior recorded daily whole body dose of 31 mrem for a total of **597 mrem**. Dose to the eye was **637 mrem** by Luxel badge reading minus prior recorded daily dose of 31 mrem for a total of and **606 mrem**. Dose to the left hand was **4.449 rem** and dose to the right hand was **2.929 rem** as calculated by our third party consultant, IEM.

While none of these doses exceed regulatory limits, this is to provide a final report on the reported incident and the associated doses received in compliance with 10 CFR Part 20.2203(a).

Respectfully,



Robert J. Slack  
Director of Regulatory Affairs

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