

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

May 30, 1985

IE INFORMATION NOTICE NO. 85-43: RADIOGRAPHY EVENTS AT POWER REACTORS

Addressees:

All nuclear power reactor facilities holding an operating license (OL) or a construction permit (CP).

Purpose:

This information notice is provided to alert licensees to three events that occurred at nuclear power plants in the preoperational phase. No significant personnel exposures resulted from these events; however, such events indicate a potential for significant exposures. Licensee corrective actions and lessons learned from the events are discussed.

It is expected that recipients will review this information for applicability to their facilities and consider actions, if appropriate, to preclude similar problems at their facilities. However, suggestions contained in this notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

A brief description of each of the three events is provided in Attachment 1. In each event, the responsible radiographers failed to maintain a high radiation area (created by radiographing) clear of unauthorized personnel. In each case, the radiographer did not use all reasonable means to ensure the affected "shot" area was evacuated. In two of the events, bullhorns (voice amplifiers) were either unavailable, in disrepair, or simply not effectively used, even though required by local procedures. In highly congested areas, such as BWR drywells, visual-only searches for clearing/warning personnel simply are not effective. In one case, the radiographer left his watch area during the exposure. In all the events, the radiographers promptly retrieved and stored the sources when they discovered unauthorized personnel in the affected area.

Discussion:


10 CFR 34 establishes licensing and radiation safety requirements for radiographers. Part 34 specifically requires certain precautionary procedures, making the radiographer responsible for ensuring worker safety by maintaining proper access controls for areas affected by radiographic operations. However, each power plant licensee can help increase worker awareness of radiography operations. Power plant licensees can help increase overall worker safety by cooperating with and augmenting the radiographer's control actions, where appropriate.

Appropriate enforcement actions against the radiographers as a result of the events either have been taken or are under consideration.

In an effort to improve control and increase their oversight during radiographing, power plant licensees have taken the following corrective actions as a result of their review and lessons learned from the three events.

1. Plant control procedures for radiographing have been strengthened by clearly defining specific plant actions to provide additional oversight measures to augment the radiographers control efforts.
2. Plant worker awareness of on-going radiography was increased by training opportunities offered by routine plant safety meetings. The importance of remaining vigilant and obeying all radiological warning postings was reemphasized.
3. Appropriate plant health physics coverage is provided for radiographic operations.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the Regional Administrator of the appropriate regional office or this office.

  
Edward L. Jordan, Director  
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and Engineering Response  
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Attachments:

1. Event Summaries
2. List of Recently Issued IE Information Notices

Event Summaries

Perry Nuclear Power Plant, Unit 1

Event Date: 6/16/84

While radiographing in the drywell using a 200 curie Ir-192 source, radiographers noticed two workers leaving the controlled shot high radiation area. These workers had been working near the reactor vessel, about 15 feet from the source (on a lower elevation) while a full radiographic exposure (13 min.) and an abbreviated (2 min.) exposure had occurred. According to the radiographers, a visual search was made, radiation warning signs and barriers erected, but no bullhorn was used to warn personnel. The bullhorn normally used had been inoperable for several weeks. The NRC inspector noted that the workers' location was shielded from view in most directions by piping, components, and scaffolding. Based on a reenactment of the incident (exposing dosimeters in the location that had been occupied by the workers), a maximum dose reading of 15 mrem was observed.

Clinton Power Station, Unit 1

Event Date: 1/5/85

While radiographing the biological shield on the 737-foot elevation in the drywell, a radiographer noticed two workers descending a ladder approximately 20 feet from the exposed 76-curie Ir-192 sealed source. Although bullhorn and public address system warnings were given (but none on the elevation where the workers had been located), workers on the 755-foot elevation reportedly could not hear warnings. Based on a reenactment of the incident, workers were each assigned 20 mrem from their stay in the high radiation area (maximum exposure rate of 600mR/hr).

Hope Creek Nuclear Generating Station, Unit 1

Event Date: 3/21/85

While radiographing a piping weld inside the control building, a radiographer noticed a worker inside the no-access area. Contrary to the surveillance requirements for a high radiation area, the radiographer had left his watch area when the 53 curie Ir-192 source was exposed; upon returning, he noticed the apparent inadvertant entry. Further search found a second worker in the affected area. Based on the licensee's worst-case evaluation, it is unlikely that any worker received a dose greater than 12 mrem.

LIST OF RECENTLY ISSUED  
 IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
85-42	Loose Phosphor In Panasonic 800 Series Badge Thermo-Luminescent Dosimeter (TLD) Elements	5/29/85	All power reactor facilities holding an OL or CP
85-41	Scheduling Of Pre-Licensing Emergency Preparedness Exercises	5/24/85	All power reactor facilities holding a CP
85-40	Deficiencies In Equipment Qualification Testing And Certification Process	5/22/85	All power reactor facilities holding an OL or CP
85-39	Auditability of Electrical Equipment Qualification Records At Licensees' Facilities	5/22/85	All power reactor facilities holding an OL or CP
85-38	Loose Parts Obstruct Control Rod Drive Mechanism	5/21/85	All PWR facilities designed by B&W holding an OL or CP
85-37	Chemical Cleaning Of Steam Generator At Milestone 2	5/14/85	All pressure water reactor facilities holding an OL or CP
84-55 Sup. 1	Seal Table Leaks At PWRs	5/14/85	All power reactor facilities holding an OL or CP
85-20 Sup. 1	Motor-Operated Valve Failures Due To Hammering Effect	5/14/85	All power reactor facilities holding an OL or CP
85-36	Malfunction Of A Dry-Storage, Panoramic, Gamma Exposure Irradiator	5/9/85	All licensees possessing gamma irradiators

OL = Operating License  
 CP = Construction Permit