

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

September 24, 1991

NRC INFORMATION NOTICE 91-60: FALSE ALARMS OF ALARM RATEMETERS
BECAUSE OF RADIOFREQUENCY INTERFERENCE

Addressees

All Nuclear Regulatory Commission (NRC) licensees authorized to use sealed sources for industrial radiography.

Purpose

This information notice is being issued to alert licensees to recently reported false alarms of alarm ratemeters. These false alarms reportedly occurred when the alarm ratemeters were exposed to radiofrequency interference (RFI) originating from different sources, including a variety of radar, welding machines, and hand-held radios. Except for permanent radiography facilities where other appropriate alarming or warning devices are in routine use, radiography personnel are required, by 10 CFR 34.33, to wear an alarm ratemeter when performing radiographic operations. It is expected that licensees will review this notice, distribute it to responsible staff, and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute any new NRC requirements, and no written response is required.

Description of Circumstances

An NRC licensee recently advised NRC of incidents in which alarm ratemeters alarmed because of apparent RFI, not because of ionizing radiation levels exceeding background. In one instance, alarm ratemeters worn by radiography personnel began to continuously alarm as the individuals climbed onto an open deck of a ship on their way to a work site. No radiographic operations were being conducted in the area. The individuals immediately surveyed their radiography equipment with their radiation survey instruments and did not detect high radiation levels.

The individuals' self-reading dosimeters also showed no apparent radiation exposure. Licensee investigation determined that the likely source was either shipboard radar or other RFI emitters. The licensee also reported that there had been several other instances of false alarms that occurred when alarm ratemeters were located: (1) within 20 feet of hand-held two-way radios operating at frequencies around 800 megahertz (MHz); (2) within 1 foot of portable radios operating on frequencies ranging upward from about 130 MHz; (3) near welding machines; (4) in the vicinity of various radar systems; and (5) near various pieces of electronic office equipment.

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ZA updated on 11/6/91

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One alarm ratemeter manufacturer indicated to NRC that other users have also reported RFI induced false alarms. These reports all appear to involve the same ratemeter model. This manufacturer also reported that several returned alarm ratemeters appeared to have been purposely damaged by users in an effort to defeat the devices.

Several manufacturers are already aware of the effects of RFI on alarm ratemeters and are in the process of correcting the problem. Licensees who have questions concerning their alarm ratemeter's susceptibility to RFI should contact the manufacturer directly.

Discussion

Licensee personnel should be instructed to be aware of the possible presence of RFI sources, such as two-way radios, that may interfere with radiation detection and measurement equipment, including alarm ratemeters. Such RFI sources may be found at temporary job sites such as construction sites, shipyards, and aviation facilities.

Licensees should also familiarize themselves and their radiography personnel with other operating aspects of their alarm ratemeters so that they may recognize false alarms that could result from depleted batteries, a device malfunction, or other conditions.

Radiography personnel should be provided with guidance to be followed in case an alarm ratemeter alarms. It is essential that radiography personnel avoid complacency about false alarms, regard all alarms as the result of elevated radiation exposure levels, and act accordingly until they are able to assure themselves, through radiation surveys and examination of self-reading dosimeters, that the alarm is not caused by ionizing radiation.

The manufacturer's report of possible intentional damage to alarm ratemeters is of concern to NRC. Intentionally damaging and then using the damaged device when performing radiographic operations will be viewed as a willful violation of NRC regulations and considered for appropriate enforcement action, including civil penalties; license modification, suspension, or revocation; or orders to remove individuals from licensed operations.

Licensees are reminded that the recent amendment to 10 CFR 34.33 (effective January 10, 1991) requires that radiography personnel use alarm ratemeters that alarm at a preset dose rate of 500 mR/hr. This amendment also specifies that ratemeters must be checked before use, to ensure that the alarm properly functions (sounds).

Although the use of alarm ratemeters will help to alert personnel to possible hazardous radiation levels, it is important that licensees emphasize to radiography personnel that alarm ratemeters are NOT intended to replace the use of survey meters or the performance of thorough radiation surveys during industrial radiography operations. As was recently discussed in NRC Information Notice No. 91-23, significant consequences, including serious bodily injuries or death, may result from the failure to perform adequate radiation surveys and properly handle industrial radiography equipment. Licensees are also reminded

that failure to have present, or to use, radiographic equipment, radiation survey instruments, and/or personnel monitoring devices, as required by 10 CFR Part 34, will be cited as Severity Level III violations and may lead to civil penalties. NRC's enforcement policy in this area is further discussed in NRC Information Notice 91-49, "Enforcement of Safety Requirements for Radiographers."

No written response is required by this information notice. If you have any questions about this matter, please contact the appropriate Regional Office or this Office.

Richard E. Cunningham

Richard E. Cunningham, Director
Division of Industrial and
Medical Nuclear Safety
Office of Nuclear Material Safety
and Safeguards

Technical contacts: Torre Taylor, NMSS
301-492-0611

John M. Pelchat, Region II
404-331-5083

Attachments:

1. List of Recent NMSS Information Notices
2. List of Recent NRC Information Notices

LIST OF RECENTLY ISSUED
NMSS INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
91-49	Enforcement of Safety Requirements for Radiographers	08/15/91	All Nuclear Regulatory Commission (NRC) licensees authorized to use sealed sources for industrial radiography.
91-44	Improper Control of Chemicals in Nuclear Fuel Fabrication	07/07/91	All nuclear fuel facilities.
91-39	Compliance with 10 CFR Part 21, "Reporting of Defects and Noncompliance"	06/17/91	All Nuclear Regulatory Commission (NRC) material licensees.
91-35	Labeling Requirements for Transporting Multi-Hazard Radioactive Materials	06/07/91	All U.S. Nuclear Regulatory Commission (NRC) licensees.
91-30	Inadequate Calibration of Thermoluminescent Dosimeters Utilized to Monitor Extremity Dose at Uranium Processing and Fabrication Facilities	04/23/91	All fuel cycle licensees routinely handling unshielded uranium materials.
91-26	Potential Nonconservative Errors in the Working Format Hansen-Roach Cross-Section Set Provided with The Keno and Scale Codes	04/02/91	All fuel cycle licensees and other licensees, including all holders of operating licenses for nuclear power reactors, who use physics codes to support criticality safety in the use of fissile material.
91-23	Accidental Radiation Overexposures to Personnel due to Industrial Radiography Accessory Equipment Malfunctions	03/26/91	All Nuclear Regulatory Commission (NRC) licensees authorized to use sealed sources for industrial radiography.
91-16	Unmonitored Release Pathways from Slightly Contaminated Recycle and Recirculation Water Systems At A Fuel Facility	03/06/91	All fuel cycle facilities.

LIST OF RECENTLY ISSUED
 NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
91-59	Problems with Access Authorization Programs	09/23/91	All holders of OLs or CPs for nuclear power reactors.
91-58	Dependency of Offset Disc Butterfly Valve's Operation on Orientation with Respect to Flow	09/20/91	All holders of OLs or CPs for nuclear power reactors.
91-57	Operational Experience on Bus Transfers	09/19/91	All holders of OLs or CPs for nuclear power reactors.
91-56	Potential Radioactive Leakage to Tank Vented to Atmosphere	09/19/91	All holders of OLs or CPs for nuclear power reactors.
91-55	Failures Caused by An Improperly Adjusted Test Link In 4.16 KV General Electric Switchgear	09/16/91	All holders of OLs or CPs for nuclear power reactors.
85-18, Supp. 1	Failures of Undervoltage Output Circuit Boards In the Westinghouse-Designed Solid State Protection System	09/10/91	All holders of OLs or CPs for Westinghouse (W)-designed nuclear power reactors.
91-54	Foreign Experience Regarding Boron Dilution	09/06/91	All holders of OLs or CPs for pressurized water reactors (PWRs).
89-90, Supp. 2	Pressurizer Safety Valve Lift Setpoint Shift	09/05/91	All holders of OLs or CPs for nuclear power reactors.
91-53	Failure of Remote Shutdown System Instrumentation Because of Incorrectly Installed Components	09/04/91	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
 CP = Construction Permit

REGIONAL TITLES

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Attached List for Memorandum dated:

Subject:

**Ronald R. Bellamy, Chief
Nuclear Materials Safety and Safeguards Branch, RI**

**Douglas M. Collins, Chief
Nuclear Materials Safety and Safeguards Branch, RII**

**John A. Grobe, Chief
Nuclear Materials Safety Branch, RIII**

**L. Joe Callan, Director
Division of Radiation Safety and Safeguards, RIV**

**Robert J. Pate, Chief
Nuclear Materials and Fuel Fabrication Branch, RV**

that failure to have present, or to use, radiographic equipment, radiation survey instruments, and/or personnel monitoring devices, as required by 10 CFR Part 34, will be cited as Severity Level III violations and may lead to civil penalties. NRC's enforcement policy in this area is further discussed in NRC Information Notice 91-49, "Enforcement of Safety Requirements for Radiographers."

No written response is required by this information notice. If you have any questions about this matter, please contact the technical contacts listed below, the appropriate Regional Office, or this Office.

Richard E. Cunningham, Director
Division of Industrial and
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Office of Nuclear Material Safety
and Safeguards

Technical contacts: Torre Taylor, NMSS
301-492-0611

John M. Pelchat, Region II
404-331-5083

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2. List of Recent NRC Information Notices

OFC: IMAB * :IMAB* :IMAB* :IMOB * :IMAB* :IMAB* :IMAB*
NAME:TTaylor:tt :BCarrico :MLamastra :JHickey :JEGlenn :JGreeves :RECunningham
DATE:09/ /91 :09/ /91 :09/ /91 :09/ /91 :09/ /91:09/ /91 :09/ /91

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IN 91XX RATEMETERS

*SEE PREVIOUS CONCURRENCE (4/13/91)

was recently discussed in NRC Information Notice No. 91-23, significant consequences, including serious bodily injuries or death, may result from the failure to perform adequate radiation surveys and properly handle industrial radiography equipment. Licensees are also reminded that failure to have present, or to use, radiographic equipment, radiation survey instruments, and/or personnel monitoring devices, as required by 10 CFR Part 34, will be cited as Severity Level III violations and may lead to civil penalties. NRC's enforcement policy in this area is further discussed in NRC Information Notice 91-49, "Enforcement of Safety Requirements for Radiographers."

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OE reviewed week of Aug. 6, 1991

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IN 91XX RATEMETERS

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