




# pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF RADIATION PROTECTION

MEMO

**TO** Pennsylvania Fixed Gauge Specific and General Radioactive Material Licensees

**FROM** David J. Allard, CHP   
Director  
Bureau of Radiation Protection

**DATE** December 30, 2009

**RE** NRC Information Notice 2009-18  
"Performance of Required Shutter Checks and  
Reporting of Gauge Shutter Failures."

As a U.S. Nuclear Regulatory Commission (NRC) Agreement State, the Commonwealth of Pennsylvania, Department of Environmental Protection (DEP), Bureau of Radiation Protection (BRP), is officially issuing the enclosed copy of NRC Information Notice 2009-18, "Performance of Required Shutter Checks and Reporting of Gauge Shutter Failures."

The DEP regulations incorporate by reference certain NRC regulations, and it is our policy to use NRC guidance as appropriate for our PA Agreement State licensing program. The NRC has recently issued this Information Notice to its licensees and DEP is in concurrence with this notice. The NRC Information Notice 2009-18 reminds licensees of the requirement to perform routine shutter checks as required by 10 CFR 31.5 (c)(2), as well as the requirement to make notification of shutter failures within twenty-four (24) hours as required by 10 CFR 30.50 (b)(2) and written follow-up reports within thirty (30) days as required by 10 CFR 30.50 (c)(2). The DEP intends to incorporate these requirements as standard license conditions starting in 2010. This notice imposes no new requirements.

If you have any questions regarding this notification, please contact BRP Radioactive Materials Section by e-mail at [RA-EPRadiationContro@state.pa.us](mailto:RA-EPRadiationContro@state.pa.us) or by telephone at 717-787-3720. Also please be aware that information regarding this notice can be found at [www.depweb.state.pa.us](http://www.depweb.state.pa.us), keyword: Radiation Protection.

Attachment

**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF FEDERAL AND STATE MATERIALS  
AND ENVIRONMENTAL MANAGEMENT PROGRAMS  
WASHINGTON, DC 20555**

September 18, 2009

NRC INFORMATION NOTICE 2009-18: PERFORMANCE OF REQUIRED SHUTTER  
CHECKS AND REPORTING OF GAUGE  
SHUTTER FAILURES

**ADDRESSEES**

All U.S. Nuclear Regulatory Commission (NRC) specific and renewal fixed gauge materials licensees. All Agreement State Radiation Control Program Directors and State Liaison Officers.

**PURPOSE**

The NRC is issuing this Information Notice to alert fixed gauge specific and general licensees about the potential for the failure of shutter closure mechanisms on fixed gauges and the requirements for reporting these events to the NRC. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar incidents. Recommendations contained in this Information Notice are not new NRC requirements; therefore, neither specific action nor written response is required. Information herein is based upon an Information Notice issued by the State of Ohio in December 2008. NRC is providing this Information Notice to the Agreement States for their information, and for distribution to their licensees as appropriate.

**DESCRIPTION OF CIRCUMSTANCES**

Since 1990, NRC received numerous reports of fixed gauge shutter closure failures occurring during shutter closure checks performed by licensees. The initial reports indicated that the failures of the shutter open/close mechanisms were sudden and unexpected and most resulted in the inability of the licensee to close the shutter on the device. In addition, most of these reports indicated a breakage of some part of the shutter closure mechanism. An investigation of the circumstances surrounding these events indicated several contributing factors:

1. The devices were typically operating in harsh environments with the presence of grit, dust, and other foreign materials which could get into the shutter operating mechanism or otherwise interfere with the movement of the shutter during operation.
2. Previous shutter checks performed prior to the reported failure may have indicated "sticking" or "binding" of the shutter during closure, although the licensee was eventually able to get the shutter closed and reopened.

**ML091890514**

3. Periodic shutter mechanism checks were not always conducted by licensees as required, were sometimes neglected over a prolonged period of time, and the result was a buildup of foreign material or corrosion within the device and a stuck or frozen shutter which could not be closed.

During the investigation of the reported shutter failures, it was also noted that additional mechanical means, such as a pry-bar or hammer, were sometimes used to attempt to move a stuck shutter operating mechanism. Furthermore, Ohio's investigation revealed that many additional similar events had occurred involving fixed gauges, but were not reported as required. These incidents were identified through service and maintenance reports from manufacturers and service providers.

## DISCUSSION

Fixed gauges containing licensed radioactive materials are used by specific and general licensees in a wide variety of manufacturing and processing operations to measure parameters such as flow rates, thickness, density, or volume. The shutter on a fixed gauge is a safety feature designed to eliminate or significantly reduce the radiation levels at the opening of a fixed gauge when the shutter is in the closed position. Additionally, shutter closure is necessary to allow licensee or service personnel to perform certain operations or maintenance activities on or near the gauge. Therefore, the inability to close the shutter, due to the presence of corrosion or foreign materials, breakage of the closure mechanism, or some other cause, is considered by NRC to be a failure of equipment to operate as designed and for which there is no redundant equipment to perform the required safety function. As such, an NRC licensee which possesses a fixed gauge with a shutter that cannot be closed is required to notify NRC within twenty-four hours of any such incident, in accordance with 10 CFR 30.50(b)(2). In addition, the licensee is required to follow-up the initial report within 30 days with a written report describing the circumstances which led to the shutter failure and the corrective actions taken. The 30-day follow-up report is required by 10 CFR 30.50(c)(2).

Fixed gauges routinely operate in a continuous mode with the shutter open, exposing the radioactive source inside. A shutter closure check is a periodic maintenance activity to be performed by licensees possessing fixed gauges in accordance with the procedures included in the manufacturer's instructions. The requirement for NRC fixed gauge licensees to conduct these checks is found in 10 CFR 31.5 (c)(2) for general licensees, and by license condition for specific licensees. Licensees are required to document that the checks have been performed. The typical timeframe for conducting a shutter check is every six months.

Licensees should promptly contact the manufacturer or other licensed service provider for guidance on necessary maintenance or service and whenever the gauge requires repair. At no time should the licensee attempt to apply additional force or pressure to the closure mechanism through the use of pry bars, hammers, or other mechanical means. Use of such methods is prohibited and may cause damage to or breakage of the operating handle or the bolts used in assembly of the device.

NRC fixed gauge licensees are advised that NRC will place additional emphasis during future inspections on licensee performance of required shutter checks, documentation of the checks, and reporting of equipment failures such as those described in this Information Notice.

## CONTACTS

This Information Notice requires no specific licensee action or response. If you have any questions about the information in this notice, please contact one of the technical contacts below, or the appropriate regional office.

Terry Reis for */RA/*  
Robert J. Lewis, Director  
Division of Materials Safety  
and State Agreements  
Office of Federal and State Materials  
and Environmental Management Programs

Technical Contacts: J. Bruce Carrico, FSME  
(301) 415-7826  
E-mail: [Jbruce.Carrico@nrc.gov](mailto:Jbruce.Carrico@nrc.gov)

Jim Lynch, Region III  
(630) 829-9661  
E-mail: [james.lynch@nrc.gov](mailto:james.lynch@nrc.gov)

Enclosure: List of Recently Issued FSME  
Generic Communications