

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, DC 20555-0001

December 17, 2001

NRC INFORMATION NOTICE 2001-19: IMPROPER MAINTENANCE AND REASSEMBLY OF  
AUTOMATIC OIL BUBBLERS

Addressees

All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to recent problems resulting from improper maintenance and reassembly of automatic oil bubblers. The NRC expects all recipients to review the information for applicability to their facilities and consider actions, as appropriate, to avoid potential problems. However, the recommendations contained in this information notice do not constitute NRC requirements; therefore, this information notice does not require any specific actions or written response.

Background

Recent problems raised concerns regarding improper maintenance and reassembly of automatic oil bubblers. These oil bubblers are used to maintain the oil level in the pump bearing housing of safety-related equipment. Blockage of oil flow from the bubbler, along with periodic loss of oil through equipment operation and routine oil sampling, could deplete the oil level to the point where severe equipment damage could result. This issue was first identified at Millstone Nuclear Power Station Unit 2, in August 2000, then at Joseph M. Farley Nuclear Plant, Unit 1 in January 2001, and later at Seabrook in June 2001. The degraded oil bubblers at Seabrook involved both emergency feedwater pumps.

The concern arises when the oil feed pipe entering the bottom of the oil bubbler extends beyond the threaded fitting (protruding too far into the housing), thereby allowing the pipe to make contact with the level adjuster (flat disc) mechanism. The contact between the oil feed pipe and the disc could block the essential oil flow from the bubbler to the bearing reservoir. (See attachment 2.)

Discussion

Within the past year, two power plants have experienced a situation that resulted in the malfunction of the automatic oiler feature for the bearings on safety-related equipment. The Trico Opto-Matic oiler that malfunctioned is commonly used in many applications in power plants; therefore, the potential exists for similar malfunctions to affect other plant components.

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Plant personnel typically use the oil level in the glass reservoir as a visual indication that an adequate supply of oil is available to replenish the reservoir of the component on which it is installed. The oil for the equipment reservoir is supplied via a ¼ inch threaded pipe that can be connected through either the side of the lower housing or from the bottom (Attachment 2, figure a.) The problem arises when the supply piping (¼ inch, 18-NPT, threaded connecting nipple) is threaded into the oiler base so far that the pipe begins to protrude into the lower base of the oiler (Attachment 2, figure b.) In both plants that experienced this problem, the oil bubbler involved was an early Trico design from the 1970s, which contained a “flat-based” spider assembly that controlled the flow of oil from the bubbler to the equipment being supplied. Trico has since changed the design of the oil bubbler spider assembly to incorporate a concave-shaped spider base (Attachment 2, figure c.) This design minimizes the potential for the connecting pipe to make contact with the spider base by extending a total of ⅜ inch above the oiler base supply port. As a result, this design greatly minimizes the potential for a flow restriction to develop between the bubbler reservoir and the equipment bearing housing. The potential for problems exists only when the oiler feed supply line is connected to the bottom of the oiler base with a flat-based spider assembly.

The EPRI's Nuclear Maintenance Application Center (NMAC) and the NMAC Pump Users Group recommend that licensees take the following actions to ensure that this condition does not affect equipment performance and availability:

- (1) Verify existing oil levels using redundant means, such as a dipstick with secured equipment or visual inspection through the equipment oil reservoir sample/inspection ports while the pump is running.
- (2) As soon as possible, determine if the connecting fitting protrudes into the base of the Trico oil bubbler housing, by removing the bubbler bulb and spider assembly and feeling the bottom of the bubbler base for the protruding ¼ inch fitting.
- (3) At the earliest opportunity, install oil bubblers with the concave-style spider assembly to avoid the possibility of an improperly functioning oiler or oil level indication.
- (4) Change the applicable procedures so that oil change/sampling, and post-maintenance test procedures fill the oil reservoir using a consistent technique as recommended.

Additional detailed information can be found in NRC Inspection Report 50-443/01-07, “SEABROOK STATION - NRC INSPECTION REPORT,” dated July 27, 2001, Accession # ML012110281.

This information notice does not require any specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate project manager in the NRC's Office of Nuclear Reactor Regulation (NRR).

*/RA/*

Eugene V. Imbro, Acting Chief  
Operational Experience  
and Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Technical contacts: Omid Tabatabai, NRR  
(301) 415-3738  
E-mail: [oty@nrc.gov](mailto:oty@nrc.gov)

Javier Brand, Region 1  
(603) 474-3589  
E-mail: [jmb3@nrc.gov](mailto:jmb3@nrc.gov)

Attachments:

1. List of Recently Issued Information Notices
2. Trico Opto-Matic Oil Bubbler figures

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**/RA/**

Eugene V. Imbro, Acting Chief  
Operational Experience  
and Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Technical contacts: Omid Tabatabai, NRR (301) 415-3738 E-mail: [oty@nrc.gov](mailto:oty@nrc.gov)  
Javier Brand, Region 1 (603) 474-3589 E-mail: [jmb3@nrc.gov](mailto:jmb3@nrc.gov)

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NAME	CCowgill*oty	CPetrone*	JTappert	EVImbro	
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LIST OF RECENTLY ISSUED  
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Information Notice No.	Subject	Date of Issuance	Issued to
2001-18	Degraded and Failed Automatic Electronic Monitoring, Control, Alarming, Response, and Communications Needed for Safety and Safeguards	12/14/2001	All uranium fuel conversion, enrichment, and fabrication licenses and certificate holders authorized to receive safeguards information. Information notice is not available to the public because it contains safeguard information.
2001-17	Degraded and Failed Performance of Essential Utilities Needed for Safety and Safeguards	12/14/2001	All uranium fuel conversion, enrichment, and fabrication licenses and certificate holders authorized to receive safeguards information. Information notice is not available to the public because it contains safeguard information.
2001-08, Sup. 2	Update on Radiation Therapy Overexposures in Panama	11/20/2001	All medical licensees
2001-16	Recent Foreign and Domestic Experience with Degradation of steam Generator Tubes and Internals	10/31/2001	All holders of operating licenses for pressurized-water reactors (PWR), those who have permanently ceased operations and have certified that fuel rods have been permanently removed from the core.
2001-15	Non-Conservative Errors in Minimum Critical Power Ratio Limits	10/29/2001	All holders of operating licenses or construction permits for boiling water reactors (BWRs)

OL = Operating License

CP = Construction Permit