

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

October 22, 2003

NRC INFORMATION NOTICE 2003-20: DERATING WHITING CRANES PURCHASED
BEFORE 1980

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; applicable decommissioning reactors, fuel facilities, and independent spent fuel storage installations.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to notify licensees of a recent report from Whiting Corporation concerning the derating of Whiting cranes sold before 1980. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to address this problem. However, suggestions contained in this IN are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

On January 29, 2003, Whiting Corporation submitted a 10 CFR Part 21 report (Event Notification No. 39545 and Part 21 No. 2003-002-00) to the NRC. The concern described in this report was specific to the Whiting #25 Hoist Unit (Gear Case). When the crane is lifting a load at or near its nominal rating, the stress in one or possibly two internal support bolts in this assembly may be significantly over the design allowable stress. These bolts connect the gear case housing to an open frame that supports bearings and other components in the gear train. If a bolt failed, the open frame might deform, affecting gear alignment. Whiting identified this problem during an engineering analysis, and Whiting Corporation was not aware of any crane failures due to this concern.

The exact extent of the overstressed condition can only be determined by analyzing each hoist; however, based on its findings, Whiting Corporation stated that a 50 percent reduction in rated hoist capacity of the affected cranes would allow continued use of the cranes without compromising design safety factors. Whiting indicated that this limitation should be enforced until the overstressed bolts have been replaced or analysis shows that an overstressed condition does not exist.

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On February 12, 2003, Whiting Corporation submitted a followup Part 21 report to the NRC related to the above notification. As a result of the ongoing investigation and resolution of the January 29, 2003, notification, Whiting identified five cranes that utilize a different hoist configuration that was also subject to a similar overstress condition. This condition applied to special hoist arrangements using a Whiting #10 Hoist Unit, rather than the previously identified Whiting #25 Hoist Unit. The cranes are installed at the following nuclear power plants: Indian Point, Cooper, Columbia Generating Station, Vermont Yankee, and Millstone. Whiting Corporation stated that these hoist units are to be limited to 20 percent of rated capacity to avoid compromising design factors and that this limitation should be enforced until the units are upgraded.

Discussion

The identified conditions involve calculated stresses in the support bolts that exceed design limits specified in applicable design standards. No actual failures have occurred. Failure of the components subject to the overstress condition would not directly result in failure of the crane to retain its load. However, the failure of a support bolt may result in deformation of the frame housing the gear train bearings. The deformation would allow misalignment and potential overstress of gear teeth to develop. The gear teeth transmit torque from the hoist motor and holding brake to the load drum. Therefore, this concern is a facility and personnel safety issue.

This Part 21 report is applicable to a wide variety of cranes purchased prior to 1980, including reactor building cranes, turbine building cranes, fuel handling cranes, spent fuel cranes, intake structure cranes, auxiliary building cranes, refueling cranes, cask handling cranes, fuel gantry cranes, radwaste handling cranes, screenwell cranes, heater bay cranes, and pumphouse cranes. Other cranes may also be impacted.

During the Part 21 evaluation process, Whiting Corporation failed to identify a decommissioning reactor facility (Fermi 1) that utilized one of the affected hoist units. This particular Part 21 report is applicable to decommissioning reactors as well as operating reactors because decommissioning facilities continue to utilize cranes for fuel handling, radioactive waste handling, and related activities for handling contaminated or activated structures, systems, and components in support of decommissioning.

The Part 21 report requests crane owners to contact Whiting Corporation at e-mail address Whiting-Nuclear@WhitingCorp.com and provide the following information: customer name, contact person, e-mail address, telephone number, crane serial number, and date of next scheduled outage. The above Part 21 reports may be obtained from NRC's home page at <http://www.nrc.gov/reading-rm/doc-collections/event-status/part21/>.

This IN requires no specific action or written response. If you have any questions about this notice, contact one of the persons listed below or the appropriate project manager.

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| 2003-19 | Unanalyzed Condition of Reactor Coolant Pump Seal Leakoff Line During Postulated Fire Scenarios or Station Blackout | 10/06/2003 | All holders of operating licenses or construction permits for pressurized water reactors (PWRs). |
| 2003-18 | General Electric Type SBM Control Switches With Defective Cam Followers | 09/26/2003 | 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. |
| 2003-17 | Reduced Service Life of Automatic Switch Company (ASCO) Solenoid Valves With Buna-N Material | 09/29/2003 | All holders of operating licenses for nuclear power reactors. |
| 2003-16 | Icing Conditions Between Bottom of Dry Storage System and Storage Pad | 10/06/2003 | All 10 CFR Part 72 licensees and certificate holders. |
| 2003-15 | Importance of Followup Activities in Resolving Maintenance Issues | 09/05/2003 | All holders of operating licenses for nuclear power reactors except those who have permanently ceased operation and have certified that fuel has been permanently removed from the reactor vessel. |

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