

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

October 16, 2006

NRC INFORMATION NOTICE 2006-20: FOREIGN MATERIAL FOUND IN THE
EMERGENCY CORE COOLING SYSTEM

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 (IN) to alert addresses of the problem associated with foreign material in the emergency core cooling system (ECCS) piping. This IN serves to reaffirm the importance of effective foreign material exclusion (FME) controls. It is expected that addressees will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

DESCRIPTION OF CIRCUMSTANCES

On April 30 and May 1, 2006, with Oconee Unit 3 in Mode 5, the licensee conducted a foreign object search and retrieval (FOSAR) of the A and B recirculation lines from the reactor building emergency sump to the containment sump isolation valves prior to installing a new, larger reactor building emergency sump (RBES) in support of resolution to Generic Safety Issue (GSI) 191, "Assessment of Debris Accumulation on PWR Sump Performance." These lines provide the flowpath for the emergency sump recirculation for low pressure injection (LPI), reactor building spray (RBS), and piggy back operation of high pressure injection (HPI). The licensee discovered foreign material inside the LPI piping leading from the RBES to the 3B LPI and RBS pumps. For this discovery in Oconee Unit 3, it was not possible to establish when this debris was introduced to the sump lines.

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Previously, on October 24 and 26, 2005, the licensee had discovered foreign material in Oconee Unit 2 RBES piping while doing a FOSAR as part of GSI-191 post-modification activities. (This discovery in Unit 2 is discussed in detail in Inspection Reports 05000269, 270, 287/2005005, and 2006002; ADAMS Accession Nos. ML060300467 and ML061180451 respectively).

As a result of the discovery of foreign material in the RBES recirculation piping in Oconee Units 2 and 3, the licensee conducted a forced shutdown of Unit 1 to inspect the 1A and 1B RBES recirculation piping. The licensee discovered foreign material inside the LPI piping leading from the RBES to the 1B LPI and RBS pumps. (The discovery in Unit 1 and 3 is discussed in detail in Inspection Report 05000269, 05000270, 05000287/2006003; ADAMS Accession No. ML062090171).

DISCUSSION

The licensee's investigation of foreign material found in the ECCS suction lines concluded that the foreign material was the result of complacent FME awareness, training, and insufficient procedural controls. During accident conditions, foreign material can be transported to downstream ECCS components. This may impact the safety function of downstream ECCS components during accident scenarios that require sump recirculation. The foreign material could result in blockage and component damage.

The event described above illustrates the potential for adverse effects on the ECCS due to foreign material and the importance of thorough inspections, FME controls when working on or near ECCS, and consideration for inspections of some ECCS lines which may not have been inspected for extended period.

Related Generic Communications

Generic Letter 2004-002, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors"

Information Notice 96-10, "Potential Blockage by Debris of Safety System Piping Which Is Not Used During Normal Operation or Tested During Surveillances"

Information Notice 94-57, "Debris in Containment and the Residual Heat Removal System"

Information Notice 92-85, "Potential Failures of Emergency Core Cooling Systems Caused by Foreign Material Blockage"

Information Notice 89-77, "Debris in Containment Emergency Sumps and Incorrect Screen Configurations"

CONTACTS

This information notice requires no specific action or written response. Please direct any questions about this matter to the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

/RA/

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Note: NRC generic communications may be found on the NRC public Web site, <http://www.nrc.gov>, under the Electronic Reading Room/Document Collections.