

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT NO. 50-293/94-05
LICENSE NO. DPR-35
LICENSEE: Boston Edison Company
RFD # 1 Rocky Hill Road
Plymouth, Massachusetts 02360
FACILITY: Pilgrim Nuclear Power Station
INSPECTION AT: Plymouth, Massachusetts
INSPECTION DATES: January 18-21, 1994

INSPECTOR: *Alan Finkel* *Jan 8, 1994*
Alan Finkel, Senior Reactor Engineer
Systems Section, EB, DRS
Date

APPROVED BY: *P. K. Eapen* *2/8/94*
Dr. Plackeel K. Eapen, Chief
Systems Section, EB, DRS
Date

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Areas Inspected: This was an announced inspection to review the licensee's corrective actions for previously-identified NRC inspection findings.

Results: No violations or deviations were identified. Five open items reviewed were found to be adequate and were closed.

DETAILS

1.0 (CLOSED) UNRESOLVED ITEM 92-81-05

The lack of an established service life for RPS relays.

NRC Information Notice (IN) 84-20 discusses two specific types of relays, Agastat series GP and Sylvania type AC, which have had problems with meeting estimated service life requirements in safety-related systems. IN 84-20 referenced an estimated service life of 4.5 years for the Agastat relays. However, at the time of inspection, 92-81, the licensee had not established service life values for the PRS relays.

Boston Edison did a study in 1988 (Wyle Report No. 48687-REL-1.0) on Agastat relays model nos. GPPC850, FGPBC750, FTR14D3DC750, and FTR14B3CC750 for use at the Pilgrim Nuclear Power Station. The Wyle report indicated that their analysis of the materials and construction of the above referenced Agastat relays had an expected life of 22 years for those relays energized 100% of the time, and a 40-year life for those relays energized at 1% of the time.

A plant records search indicated that the Agastat relays were installed in the plant, beginning in 1985. As of the time of this inspection, no failures of Agastat GP relays have occurred at this site due to end of life conditions. Based on the Wyle report, which indicates that the Agastat relay end-of-life design is estimated to be in the year 2007, the licensee has scheduled a reevaluation program of the Agastat relay in 1999. The schedule is eight years before the calculated end-of-life of the relay. This unresolved item is closed.

2.0 (CLOSED) UNRESOLVED ITEM 92-81-04

In July 1987, while performing a one-hour, 100% emergency diesel generator (EDG) load test, with an ambient temperature of 85°F, elevated jacket water and lube oil temperatures were observed.

The licensee demonstrated, by testing, that with a lower air flow across the diesel radiator, the temperature drop or rise across the radiator for both engine and lube oil coolers, were comparable to their design requirements.

The diesel manufacturer, in a September 1993 letter to Pilgrim Nuclear Power Station (PNPS) (GE-NE-909-028-0893), recommended that PNPS change its high lube oil temperature shutdown switch setting from 205°F to 223°F, and the high jacket water shutdown setting from 195°F to 203°F. GE/ACLO also recommended that PNPS set maximum lube oil in temperature at 195°F, lube oil out temperature at 210°F, and jacket water temperature at 190°F. These recommended values, with limits of 1050°F on cylinder/exhaust temperature and 1200°F on the turbo temperature, bring the diesels within the current recommended operating criteria for a GE/ALCO 18-cylinder generating engine.

Based on system and equipment tolerances, the licensee, on June 10, 1993, set the EDG lube oil setpoints at $218^{\circ}\text{F} \pm 4^{\circ}\text{F}$. The jacket water setpoint will be set to $198^{\circ}\text{F} \pm 4^{\circ}\text{F}$ by March 1994. Since the outside temperature is not expected to reach 85°F , this setting should not be affected before the March date.

Procedure No. 8.9.1, "Emergency Diesel Generator Surveillance," and Procedure No. 8.F.38.1, "Diesel Generator Instrumentation-Calibration and Functional Test," will be revised by March 1994. Based on licensee diesel test data, Safety Evaluation Report No. 2766, Nuclear Engineering Detail Design Review (PDC No. 93-27) and GE/ALCO recommended trip setpoint values, the elevated jacket water and lube oil temperatures are within an acceptable temperature range. This unresolved item is closed.

3.0 (CLOSED) VIOLATION 92-81-02

An exhaust damper in the "B" Emergency Diesel Generator (EDG) system, west side of building, was closed when it should have been in the open position.

Operating Procedure 2.2.108, "Diesel Generator Cooling and Ventilation System," includes a system lineup verification step; however, the lineup did not include the plenum exhaust damper position as part of the final lineup verification step. Also, Operating Procedure 2.2.8, "Standby AC Power System (Diesel Generators)," contained no direction to Operating Personnel to perform a ventilation system lineup check following maintenance work that might affect the ventilation lineup configuration.

The licensee has revised Operating Procedure (OP) 2.2.108 on December 14, 1992, to include a checklist that includes a ventilation position verification. Also, Operating Procedure (OP) 2.2.8 has been revised to include a ventilation system lineup verification in accordance with the requirements defined in OP 2.2.108. The inspector verified the above actions were consistent with the licensee's actions stated in their response letter of March 1, 1993.

In addition to the above OP changes, the licensee performed a walkdown inspection of all manual ventilation dampers installed in the cooling paths of all safety-related equipment. The results of this inspection was completed in May 1993 and documented in licensee's memorandum OP593-135. Manual dampers have been verified to be in the correct position for operating the plant. Three remaining documents are to be revised by June 1994; however, the documents have been redlined for revision. Based on the operating procedure changes, the inspection of the manual ventilation damper positions and the training held with plant personnel on these procedures, the inspector closed this violation.

4.0 (CLOSED) VIOLATION 92-81-01

Inadequate corrective action taken in response to repetitive Emergency Diesel Generator (EDG) fuel oil booster pump V-belt failures.

A V-belt-driven fuel oil booster pump design on the EDG is spliced together instead of using a continuous V-belt design. The failure occurred at the splice point of the V-belt. To correct this type of failure, a gear-driven fuel oil booster pump design has been installed on the "A" EDG during the #9 outage. The "B" EDG modification is scheduled for the #10 mid-cycle outage in October 1994.

To insure that EDG "B" will operate, if the present V-belt fails, Procedure No. 2.2.8, "Standby AC Power (Diesel Generators)," and Procedure No. 2.4.16, "Distribution Alignment Electrical System Modifications," have been revised for starting the EDG with a failed fuel booster pump belt. The action for starting the "B" diesel is described in Step 5 of Procedure No. 2.4.16.

To correct the corrective action with the reporting system, the licensee has modified their present Problem Report (PR) system. The PR program has been revised to have a panel review coding level assigned to corrective action documents to ensure that appropriate assignments of action levels have been assigned to the identified problem which should eliminate the delay in taking timely corrective action. The inspector verified the above actions were consistent with the licensee's actions stated in their response letter of March 1, 1993. Based on the charges made to the PR system and the procedure changes made to operate the "B" EDG, if the V-belt of the fuel oil booster pump fails, the inspector closed this violation.

5.0 (CLOSED) VIOLATION 92-27-01

Fireproofing of the structural steel in the reactor building and the installation of the diesel fire pump fuel oil day tank sight glass did not comply with the National Fire Protection Code No. 20 requirements.

The fireproofing of structural steel in the reactor building was completed during the month of December 1992, as described in Maintenance Report No. 19080639. The diesel fire pump fuel oil day tank sight glass was replaced with a float type level indicator during March 1993, as described in plant design change (PDC), issued December 1992. The inspector verified that both fire proofing of the reactor building and the diesel fire pump fuel oil day tank sight glass were completed and were consistent with the plant drawings. To prevent recurrence of this type of problem in the future, the licensee has consolidated several of their existing corrective action tracking systems into a PR program. The PR program also has placed time limits on responding to PRs and has added the requirement for section manager level and above to approve assigned corrective action extension dates.

The completed fire proofing of the reactor building structural steel, the diesel fire pump day tank sight glass modification, and the modified PR program are actions that have corrected the addressed violation. The inspector verified the above actions were consistent with the licensee's actions stated in their response letter of February 10, 1993. This violation is closed.

6.0 EXIT MEETING

The inspector met with Licensee representatives denoted in Attachment 1 on January 21, 1994. The inspector summarized the purpose, scope and findings of the inspection. The licensee's representatives acknowledged the findings and did not express any disagreement with them.

ATTACHMENT 1

Persons Contacted

Boston Edison Company

- * G. Basileco, Licensing Manager
- S. Burke, Senior Mechanical Engineer
- P. Burrows, Fire Protection Program Engineer
- * J. Calfa, Compliance engineer
- R. MacKinnon, Fire Protection Engineer
- D. Pierce, Lead System Engineer
- J. Sullivan, Senior Quality Assurance Engineer

United States Nuclear Regulatory Commission

- J. MacDonald, Senior Resident Inspector
- D. Kern, Resident Inspector

* Denotes those at the exit meeting held on January 21, 1994.

During the course of this inspection, the inspector contacted other members of the licensee's Technical, Quality Assurance, Fire Protection, and Training staffs.