

August 3, 2000

Mr. Robert M. Bellamy
Site Vice President
Entergy Nuclear Generation Company
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, Massachusetts 02360-5599

SUBJECT: NRC's PILGRIM INTEGRATED INSPECTION REPORT NO. 05000293/2000-006

Dear Mr. Bellamy:

On July 1, 2000, the NRC completed an inspection at your Pilgrim reactor facility. The enclosed report presents the results of that inspection. The results were discussed on July 21, 2000, with Mr. R. Bellamy and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC identified an issue that was evaluated under the significance determination process and was determined to be of very low safety significance (Green). This issue has been entered into your corrective action program and is discussed in the summary of findings and in the body of the attached inspection report. The issue was determined to involve a violation of NRC requirements, but because of its very low safety significance the violation is not cited. If you contest this noncited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region I; the NRC Resident Inspector at the Pilgrim Nuclear Power Station; and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Robert M. Bellamy

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Sincerely,

/RA/

James C. Linville, Chief
Projects Branch 6
Division of Reactor Projects

Docket No.: 05000293
License No.: DPR-35

Enclosure: Inspection Report 05000293/2000-006

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket No: 50-293
License No: DPR-35
Report No: 05000293/2000-006
Licensee: Entergy Nuclear Generation Company
Facility: Pilgrim Nuclear Power Station
Location: 600 Rocky Hill Road
Plymouth, MA 02360
Inspection Period: May 21, 2000, through July 1, 2000
Inspectors: R. Laura, Senior Resident Inspector
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Approved By: James C. Linville, Chief
Projects Branch 6
Division of Reactor Projects

SUMMARY OF FINDINGS

Pilgrim Nuclear Power Station NRC Inspection Report 05000293/2000-006

IR 05000293/2000-006, on 05/21 - 07/01/2000; Entergy Nuclear Generation Company; Pilgrim Nuclear Power Station. Permanent Plant Modifications.

The inspection was conducted by resident inspectors and a regional senior project engineer. This inspection identified one green issue which was considered a non-cited violation. The significance of an issue is indicated by its color (green, white, yellow, or red) and was determined by the Significance Determination Process in draft Inspection Manual Chapter 0609 (see Attachment 1).

Cornerstone: Initiating Events

1. **Green.** An emergency diesel generator (EDG) modification changed the EDG building air flow paths and velocity profiles from those of its original design. A postulated abnormal condition (fire in one EDG with both EDGs in normal operation) would subject the EDGs to a potential single failure mechanism that was not present in the original plant design and was not addressed by a detailed fire analysis in the modification package. A detailed analysis, as required by Pilgrim procedure NE 320, "Modifications" was not performed which is a violation 10 CFR 50, Appendix B, Criteria III, Design Control. The NRC determined that there was low risk associated with a postulated single failure. Therefore, this violation is being treated as a Non-Cited Violation. This issue was entered into the Pilgrim corrective action process as Problem Report PR 00.1534. (Section 1R17)

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Report Details

SUMMARY OF PLANT STATUS

Pilgrim Nuclear Power Station began the period at 100 percent core thermal power. On May 26, 2000, the unit was brought to 30 percent power for a planned maintenance activity to replace the brushes and polish the collector ring surface for both the "A" and "B" recirculation motor generator sets. After effecting repairs to the recirculation motor generator set, the unit returned to full power on May 28, 2000. Reactor power was reduced on June 7, 2000, to 42 percent due to lowering main condenser vacuum, as a result of fouling of the condenser water boxes during a coastal storm. The unit returned to 100 percent power on June 8, 2000.

1. REACTOR SAFETY (Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity)

1R04 Equipment Alignment

a. Inspection Scope

The inspectors conducted partial system walkdowns of the following systems:

1. Emergency diesel generators (EDG) and EDG supporting systems (including: air start, turbo charger air, EDG building ventilation, fuel oil storage and fuel oil transfer).

This inspection was intended to confirm proper configuration control of the protected, operable electrical division trains, as well as correct alignment and system restoration of equipment following a scheduled surveillance activity. During the conduct of the system walkdown, applicable tagging boundaries and the restoration of sampled valves, breakers, and switches to a normal operational alignment were confirmed.

2. Reactor core isolation cooling (RCIC) system while the high pressure coolant injection system was out of service for planned surveillance testing.

The walkdown included verification of proper valve position by observing control room valve position indication and visual inspection of valves in the RCIC pump room to verify that the system was properly aligned to support normal and emergency plant operation. The inspector also visually inspected the equipment for any obvious degradation such as oil or pressure boundary leakage.

b. Findings

There were no findings identified.

1R05 Fire Inspection

a. Inspection Scope

The inspector conducted fire protection inspection tours of the emergency diesel generator (EDG) building, which contains redundant trains of electrical equipment with both risk and safety significance. The building houses two EDGs, EDG enclosures, associated local EDG controls, fuel storage tanks and ventilation equipment. During the tours, the inspector examined the control of combustible and flammable material, the status of fire detectors and alarm devices, the condition of fire penetration seals and other barriers, recent modifications to the building and the ventilation lineup.

The inspector also performed tours of the 4160 volt switchgear areas and cable spreading room. The inspection consisted of inspecting fire protection panel and the carbon dioxide fire suppression system. The inspector examined the areas for control of combustible and flammable materials and the condition of fire penetration seals and doors. The fire protection system engineer accompanied the inspector during the tours of the switchgear and cable spreading room.

b. Findings

There was one finding identified which is discussed in section 1R17, Permanent Modifications, of this report.

1R07 Ultimate Heat Sink (UHS)

a. Inspection Scope

The inspector reviewed the reactor building closed cooling water (RBCCW) heat exchanger performance evaluations per procedure 2.1.16, "Nuclear Operator Tour;" audited historical heat exchanger test performance data per procedure 8.5.3.14, "SSW Flow Rate Operability Test;" and reviewed licensee compensatory actions as stated in operability evaluation OE 00-16 in response to current RBCCW heat exchanger fouling. Test acceptance criteria and results were reviewed against design heat removal conditions and functional testing data. Licensee compensatory actions including operability evaluations, standing orders, technical evaluations and operator directives were evaluated to determine if preestablished engineered acceptance criteria, frequency of testing and/or inspection, instrument accuracies and selected ASME test methodology were consistent with accepted industry practices and were adequate. Fouling factors, heat transfer coefficients and system modeling were inspected to determine if they were consistent with design basis values and assumptions.

b. Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed the implementation of the Maintenance Rule as related to the following:

- a. The emergency diesel generators (EDGs), as part of an EDG systems review and to examine the effect of LCO maintenance on the "A" EDG. The inspector reviewed a listing of problem reports generated during the previous two years that involved equipment problems with the EDGs. Several potentially significant issues were reviewed including: PR 00.0946 (breaker deficiency), PR 00.0952 (air solenoid did not close), PR 00.1215 (part specifications), PR 00.9047 (turbo assist air controller miswired), PR 00.9158 (oil tank water intrusion), PR 99.9669 (start time too long) and PR 99.9675 (water in oil tank).
- b. The high pressure coolant injection system, as part of a high pressure coolant injection (HPCI) system review. The inspector reviewed PR 98.9460 (HPCI steam line drain valve did not close) and PR 99.0199 (HPCI inoperable due to differential switch failure).
- c. Proper classification of equipment failures in the reactor core isolation cooling (RCIC) system as documented in the problem reporting system from April 1999 to June 2000. The inspector reviewed Problem Report (PR) 99.9265 which documented, evaluated and developed corrective actions to address the failure of check valve 1301-41 and 1301-64 alternate position verification test.

b. Findings

There were no findings identified.

1R13 Maintenance Work Prioritization

a. Inspection Scope

The inspectors reviewed the following maintenance work plans to assess the adequacy of the licensee's risk assessment process. The inspectors viewed the plans against the criteria contained in licensee procedure 1.5.21, "Integrated Scheduling and Guidelines," and 1.5.22, "Risk Assessment Process."

- d. A major LCO maintenance outage for the "A" emergency diesel generator (EDG)
- e. Replacement of electrical brushes on both recirculation system motor-generator sets
- f. Inspection of the ventilation fan shaft gearbox on the "A" EDG

b. Findings

There were no findings identified.

1R14 Nonroutine Event

a. Inspection Scope

The inspector reviewed operator response to the coastal storm (Northeaster) that occurred on June 7, 2000. The inspector reviewed operator logs and procedure 2.1.37, "Coastal Storm - Preparations and Actions," to ensure that the procedure guidance was followed. In response to the storm, operator lowered power to 42 percent due to an increase in hot well temperature and degrading condenser vacuum.

Upon arriving at the site, the inspector discussed the event with the Nuclear Operating Supervisor and monitored operator performance during portions of backwashing the main condenser and restoring the unit to 100 percent power.

b. Findings

There were no findings identified.

1R15 Operability Evaluations

a. Inspection Scope

One risk important operability evaluation was selected for review to verify that continued operability was justified. The Pilgrim Updated Final Safety Analysis Report, technical specifications and licensee procedure 1.3.34.5, "Operability Evaluations," were utilized as references to assess the adequacy of the operability evaluation.

The inspector selected operability evaluation 98-0060 for review, which involved the potential loss of the functionality of the control room high efficiency air filtration system (CRHEAFS). Specifically, the ductwork may fail during a seismic event. Temporary modification 98-16 was installed to mechanically gag damper AO-N-1 to isolate a potential vent path. Longer term corrective actions were planned including a major system modification. The inspector determined that continued operability was justified.

b. Findings

There were no findings identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspector reviewed the operator work-around list and operator logs to evaluate the potential aspects on the operators' ability to implement abnormal or emergency operating procedures. The inspector also walked down the control room panels to ensure that applicable control room deficiencies were captured in the licensee's work-around list. During the review, the inspector used the criteria contained in licensee procedure 1.3.34.4, "Compensatory Measures."

b. Findings

There were no findings identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors verified that selected design bases, licensing bases and performance capability of the emergency diesel generator (EDG) building, EDGs and EDG supporting systems were not degraded as a result of building and EDG modifications, which together were intended to correct EDG building ambient temperature problems. Included in the inspection were the environmental temperature design limits of the EDG and supporting electronic equipment, the starting energy requirement of the EDG, the performance cooling needs of the EDG, the design electrical generation capability of the EDG, the technical specification (TS) required starting response time of the EDG, and the seismic qualification of certain modified EDG building equipment. The inspector reviewed Modification VC 99-12 which created two large rectangular holes in the fire rated ceiling of each EDG enclosure within the EDG building. The modification was implemented to increase building ventilation during periods of warm weather. In addition, ventilation damper position and other changes that were made in support of this modification were reviewed.

b. Findings

There was one finding concerning the modification of the EDG building and the design basis of the EDG.

The inspector concluded that the modification changed the EDG building air flow paths and velocity profiles from those of its original design. The new ventilation conditions exist during normal operating conditions when the EDG is aligned in the summer mode lineup (May 15 through September 15). A postulated abnormal condition (fire in one EDG with both EDGs in normal operation) would subject the EDGs to a potential single failure mechanism that was not present in the original plant design and was not addressed by a detailed fire analysis in the modification package, as required by Pilgrim modification procedure NE 320, "Modifications." Failure to establish an adequate design modification package, in accordance with Pilgrim procedure NE 320, is a violation of

10 CFR 50, Appendix B, Criteria III, Design Control. This violation is being treated as a Non-Cited Violation (NCV), in accordance with Section VI.A of the NRC's Enforcement Policy. **(NCV 05000293/2000-06-01)**. This finding was entered into the Pilgrim corrective action process as Problem Report PR 00.1534.

The postulated fire would result in one tripped EDG with no forced ventilation in the affected enclosure. Smoke and hot fumes would rise through the ventilation openings created by the modification, filling the upper plenum area above the affected EDG enclosure. The flow of smoke and hot fumes would then emanate from the building through the original building air intake port. Some portion of the fumes and smoke would be entrained in the operating EDG air intake affecting the air intake oxygen content of the remaining EDG. The licensee performed an initial review of the postulated fire and determined that the emanating smoke would not travel into the intake of the operating EDG. Based on typical EDG air consumption and building flow parameters, the inspector determined that some smoke and hot fumes would travel into the air intake of the operating EDG. The design basis risk of this postulated fire was reviewed by the inspector, an NRC Region I fire protection specialist and the NRC Region I, Senior Reactor Analyst (risk specialist). Considering the design effectiveness of the water suppression system, the excess oxygen loading supplied by the EDG turbo charging system, and the low probability of a fire in the EDG enclosure occurring with a loss of off site power, the inspectors determined that the risk was small.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspector reviewed and/or observed portions of the following post maintenance tests to ensure that test activities were adequate to verify operability and functional capability of the system/component following maintenance.

- a. Test of the "B" intake structure exhaust fan following maintenance request (MR) 19601453
- b. Test of off gas solenoid valve AO-3711 following MR 10001199
- c. Test of the main gas stack monitor following maintenance request MR 10000986
- d. Testing following implementation of temporary modification TM98-16 in accordance with MR 19801802

The inspector also verified equipment and system restoration to the normal, operable configuration after completion of the testing.

b. Findings

There were no findings identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspector observed the conduct of selected portions of reactor core isolation cooling system logic testing and RBCCW flow and heat exchanger capacity testing, either in the field or from the control room, and reviewed completed data sheets and other operational records to verify the tests were performed in accordance with the associated procedure and TS requirements.

The inspector also reviewed surveillance procedure 8.5.2.2.1, "LPCI System Loop "A" Pump and Valve Quarterly Operability." The inspector verified that the systems requirements were correctly incorporated into the test procedures and that the test acceptance criteria were consistent with the technical specifications and Updated Final Safety Analysis Report requirements. The review also included an evaluation of the completed surveillance test data to verify that the selected systems and components were capable of performing their intended safety functions and were operationally ready.

b. Findings

There were no findings identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspector reviewed temporary modification TM98-16, "Seismic Supports for Control Room High Efficiency Air Filtration System HVAC Equipment and Gagging closed damper AO-N-1." The inspection included a review of the modification and associated 10 CFR 50.59 safety evaluation to ensure that the modification did not adversely affect system operability/availability. The inspector also performed a walkdown of the system to verify that the modification was properly installed in the field and reviewed controlled drawings to ensure they were properly annotated to reflect the installation of the modification.

b. Findings

There were no findings identified.

4. OTHER ACTIVITIES [OA]

4OA5 OTHER ACTIVITIES [OA]

1. Performance Indicator (PI) Data Collecting and Reporting TI 2515/144

a. Inspection Scope

A sample of performance indicators (PI) was reviewed to ensure that the licensee had a clear understanding of the PI definitions, data reporting elements, calculational methods, definitions of terms and clarifying notes. The sample included unplanned power reduction, safety system availability and functional failures, emergency response organization drill participation, occupational exposure control effectiveness and protected area security equipment performance index. Further, the review verified that the licensee's process was capable of producing accurate PIs, in accordance with the guidance in NEI 99-02, Performance Indicators.

b. Findings

There were no findings identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. R. Bellamy, Site Vice President, and other members of licensee management at the conclusion of the inspection on July 21, 2000. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered propriety. No propriety information was identified.

.2 Senior Management Site Visit

Messrs. Hubert J. Miller, Regional Administrator, NRC Region I, A. Randolph Blough, Director, Division of Reactor Projects, and James C. Linville, Chief, Reactor Projects Branch 6, toured the Pilgrim site and met with members of the station staff on June 5 and 6, 2000.

ITEMS OPENED, CLOSED, AND DISCUSSEDClosed

NCV 05000293/2000-06-01 Lack of Detailed Fire Protection Review for Emergency
Diesel Generator Ventilation Modifications

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CRHEAFS	Control Room High Efficiency Air Filtration System
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
HPCI	High Pressure Coolant Injection
LPCI	Low Pressure Coolant Injection
MR	Maintenance Request
PMT	Post Maintenance Test
PR	Problem Report
RBCCW	Reactor Building Closed Cooling Water
RCIC	Reactor Core Isolation Cooling
UFSAR	Updated Final Safety Analysis Report

ATTACHMENT 1

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting safety performance at NRC licensed plants.

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
<ul style="list-style-type: none"> ● Initiating Events ● Mitigating Systems ● Barrier Integrity ● Emergency Preparedness 	<ul style="list-style-type: none"> ● Occupational ● Public 	<ul style="list-style-type: none"> ● Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And

RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.