

September 11, 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 INSPECTION REPORT NO. 05000293/2000-007

Dear Mr. Bellamy:

On August 19, 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 September 7, 2000, with Mr. V. Oheim 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 risk significance determination process and was determined to be of very low safety significance (Green). This issue involves a malfunction of the High Pressure Coolant Injection System which has been entered into your corrective action program and is discussed in the summary of findings and the body of the attached inspection report, as well as in Licensee Event Report 50-293/2000-02. The safety significance of this problem was low because the malfunction was immediately identified, operators verified that the remaining technical specification required core cooling systems and electrical power systems remained operable and available, and plant staff corrected the malfunction within a reasonable time, minimizing the risk exposure.

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 05000293/2000-007

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-293

License No: DPR-35

Report No: 05000293/2000-007

Licensee: Entergy Nuclear Generation Company

Facility: Pilgrim Nuclear Power Station

Location: 600 Rocky Hill Road
Plymouth, MA 02360

Inspection Period: July 2, 2000, through August 19, 2000

Inspectors: R. Laura, Senior Resident Inspector
R. Arrighi, Resident Inspector
P. Frechette, Physical Security Inspector

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

SUMMARY OF FINDINGS

IR05000293-2000-007 on 07/02 - 08/19/2000; Entergy Nuclear Generation Company; Pilgrim Nuclear Power Station. Event Followup.

The inspection was conducted by resident inspectors and a physical security inspector from NRC Region I. This inspection identified one green issue. The significance of this issue was indicated by the color (green, white, yellow, red) that was determined by the Significance Determination Process (SDP) in draft Inspection Manual Chapter 0609 (see Attachment 1 for a description of the new reactor oversight process).

Cornerstone: Mitigating Systems

1. **Green.** The malfunction of the high pressure coolant injection (HPCI) system power supply inverter rendered the HPCI system inoperable as documented in LER 293/2000-02. This malfunction was detected immediately by operators who declared the HPCI system inoperable. The inverter was replaced in less than 1 hour. The HPCI system was then restored to an operable status. During the unavailability time for the HPCI system, the remaining core standby cooling systems remained operable. This issue was determined to be Green in the Significance Determination Process because of the low event likelihood and the full compliment of remaining mitigation equipment capability.

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Report Details

Summary of Plant Status: Pilgrim Nuclear Power Station began the period at 100 percent core thermal power. On August 6, 2000, the unit was brought to 90 percent power to perform a rod pattern adjustment. Power remained at 100 percent for the remainder of the period until August 11 when the unit began experiencing elevated condenser hotwell temperatures. For the remainder of the period, power was cycled from 100 percent to 94 percent to maintain hotwell temperature and condenser vacuum in established administrative bands. The licensee has scheduled a power reduction and a thermal backwash for August 29, 2000, to correct this condition.

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

1R01 Adverse Weather

a. Inspection Scope

Due to seasonal hurricane activity, the inspector reviewed Entergy procedure 5.2.2, "High Winds (Hurricane)," for site preparations for adverse weather. No actual hurricane or high wind conditions were experienced at the site during this inspection. The inspection also included a review of problem reports generated within the last three years to ensure items identified were properly corrected. Problem reports (PR) reviewed included PR97.2676 (wrong traveling screen sheer pins), PR 97.3026 (inadequate number of stored traveling screen sheer pins), and PR 00.1420 (in surge of seaweed at intake structure). The inspector toured the intake structure, SBO diesel and the protected area to verify adequate preparations for adverse weather.

b. Findings

There were no findings identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspector performed a partial system walkdown on the emergency diesel generators, including the fuel oil transfer and diesel air system valve line-ups and electrical switch and breaker verifications. This field inspection was conducted during a planned maintenance outage on the station blackout (SBO) diesel. The risk configuration during the SBO diesel outage was appropriately evaluated and controlled by the licensee. The licensee followed the risk management practices contained in procedure 1.5.22, "Risk Assessment Process."

b. Findings

There were no findings identified.

1R05 Fire Inspection

a. Inspection Scope

The inspector toured the following plant areas to evaluate the operational status of the fire suppression systems protecting these areas, the condition of penetrations seals and other fire barriers, and the control of transient combustible materials located in these areas: (1) cable spreading room; (2) 4160 volt switchgear rooms; (3) high pressure coolant injection (HPCI) turbine room; (4) reactor core isolation cooling (RCIC) turbine room; and (5) inner and outer auxiliary bay rooms. The observed fire suppression systems were compared with the design of these features as described in the Updated Final Safety Analysis Report (UFSAR) and the fire hazards analysis.

b. Findings

There were no findings identified.

1R11 Licensed Operator Requalificationa. Inspection Scope

On July 25, 2000, the inspector observed the performance of an operations crew in the simulator to ensure the crew met the event scenario objectives and performed the critical tasks. The scenario involved a feed water level control malfunction, feed water system line break inside containment, and loss of a 125 VAC emergency bus load center. The inspector verified proper use of the Emergency Plan and also verified that the post scenario critique discussed any relevant lessons learned. The inspector verified that identified deficiencies during the scenario were discussed with the crew to enhance future performance.

b. Findings

There were no findings identified.

1R12 Maintenance Rulea. Inspection Scope

The inspectors reviewed the implementation of the maintenance rule as related to the following:

Proper classification of an equipment failure for the "A" hydrogen/oxygen analyzer during surveillance 8.M.3-13 as documented in problem report (PR) 00.9230.

Proper classification of equipment failures for the station blackout (SBO) diesel generator during the previous 12 months. Various problem reports were reviewed including PRs 00.1248 (racking problems of the output breaker), 00.9158 (possible water intrusion into the fuel oil storage tank), 00.9302 (ring gear and flywheel damage), and 00.9306 (air leak). The licensee properly placed the SBO diesel generator in the increased monitoring status under section (a)(1) of the maintenance rule. The

development of a corrective action plan was in process at the end of this inspection period.

b. Findings

There were no findings identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspector reviewed the following on-line maintenance work plans/activities to assess the adequacy of the licensee's risk assessment process. The inspector reviewed the plans against the criteria contained in licensee procedures 1.5.21, "Integrated Scheduling Guidelines," and 1.5.22, Risk Assessment Process." The inspection also included a review of the risk assessments and contingencies established, and verification that the increase in risk was conveyed during the licensee's morning meeting and during operator shift turnover.

- Emergent work for the "E" salt service water pump during the week of July 23, 2000
- Planned work/surveillance activities for the week of August 13, 2000.

b. Findings

There were no findings identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

The inspector observed portions of and evaluated operator response to the unexpected overspeed of the "A" reactor recirculation motor-generator set on August 3, 2000. This resulted in a power excursion and a resultant minor plant transient. The scoop tube on the motor generator set automatically locked-out, as designed, limiting the resultant power increase. The inspector reviewed the applicable plant computer printout and interviewed reactor engineering personnel to confirm that the power increase did not exceed 102% reactor power and that no reactor core thermal limits were exceeded. The inspector reviewed abnormal response procedure 2.4.20, Reactor Recirculation System Speed or Flow System malfunctions, to verify that operators properly followed abnormal procedural guidance. The scoop tube was left in lock-out pending maintenance troubleshooting.

b. Findings

There were no findings identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspector reviewed the following operability evaluations to verify that continued operability was justified. The Pilgrim Updated Final Safety Analysis Report (UFSAR), technical specifications, and licensee procedure 1.3.34.5, "Operability Evaluations," were used as references to assess the adequacy of the operability evaluations. The inspector also verified that the identified corrective actions to correct the degraded condition were adequate and scheduled in the licensee's work control process.

- OE 99-072, Potential pressure locking of residual heat removal (RHR) suction valves while in RHR shutdown cooling mode.
- OE 00-003, "A" emergency diesel generator turbo assist air controller mis-wired.
- OE 00-026, Restoration of safety buses exceeds time specified in UFSAR accident analysis due to time delay of degraded voltage circuitry.
- OE 00-028, Steam leak from high pressure coolant injection system drain line.

b. Findings

There were no findings identified.

1R16 Operator Work-Arounds

a. Inspection Scope

The inspector reviewed the entire list of operator work-arounds and licensee procedure 1.3.34.4, "Compensatory Measures," to determine the impact of the aggregate effect of work-arounds on the operators ability to implement abnormal or emergency operating procedures. The inspector also reviewed the licensee's annunciator log, caution tagout log and questioned licensed operators for items that were not in their automatic lineup to ensure compensatory measures were properly captured and documented in the licensee's work-around list.

b. Findings

There were no findings identified.

1R19 Post Maintenance Testinga. Inspection Scope

The inspector reviewed and observed portions of the post maintenance test (PWT) for corrective maintenance on the station blackout (SBO) diesel generator. The air start motor and teeth sections on the bull gear were replaced under maintenance request (MR) 10001582. The inspector verified that the PWT assured proper start and operation of the air start motor.

Additionally, the licensee completed the normal surveillance test run on the SBO diesel.

b. Findings

There were no findings identified.

1R22 Surveillance Testinga. Inspection Scope

The inspector reviewed and observed portions of the following surveillance tests:

- 7.1.8.7, "Diesel Fuel Oil Quality Analysis"
- 7.1.30, "Standby Gas Treatment and Control Room High Efficiency Air Filtration System HEPA Filter and Charcoal Cell test program"

The inspector verified that the system 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 the selected systems and components were capable of performing their intended safety functions and operational readiness.

b. Findings

There were no findings identified.

3. SAFEGUARDS

Cornerstone: Physical Protection

3PP1 Access Authorization Program (71130.01)a. Inspection Scope

The following activities were conducted to determine the effectiveness of the licensee's behavior observation portion of the personnel screening and fitness-for-duty programs:

Five supervisors representing the Maintenance, Operations, Radiation Protection, System Engineering and Instrumentation & Control Departments were interviewed on July 26, 2000, regarding their understanding of behavior observation responsibilities and the ability to recognize aberrant behavior traits. Two (2) Access Authorization/ Fitness-for-Duty self-assessments, an audit, and event reports and loggable events for the four previous quarters were reviewed, during this inspection. On July 26, 2000, five (5) individuals, who perform escort duties, were interviewed to establish their knowledge level of those duties. Behavior observation training procedures and records were also reviewed.

b. Findings

There were no findings identified.

3PP2 Access Control (71130.02)

a. Inspection Scope

The following activities were conducted during the period July 24-29, 2000, to verify that the licensee had effective site access controls, and equipment in place designed to detect and prevent the introduction of contraband (firearms, explosives, incendiary devices) into the protected area:

A random sample of ten (10) personnel, granted unescorted access to the protected and vital areas, were checked to assure that they were properly screened, identified and authorized. Site access control activities were observed, including personnel and package processing through the search equipment at the access point during peak ingress periods on July 25 and 26, 2000, and vehicle searches, on July 27, 2000. On July 26, 2000, testing of all access control equipment; including metal detectors, explosive material detectors, and X-ray examination equipment, was observed. The Access Control event log, an audit, and three (3) maintenance work requests were also reviewed.

b. Findings

There were no findings identified.

4. OTHER ACTIVITIES [OA]

4OA2 Performance Indicator Verification (IP 71151)

a. Inspection Scope

The inspector reviewed the licensee's programs for gathering and submitting data for the Fitness-for-Duty, Personnel Screening, and Protected Area Security Equipment Performance Indicators. The review included the licensee's tracking and trending reports, personnel interviews and security event reports for the Performance Indicator data submitted from the 2nd quarter of 1997 through the 1st quarter of 2000.

b. Findings

There were no findings identified.

4OA3 Event Follow-up

(Closed) LER 50-293/1998-01-01: Single-Failure Vulnerability of the Emergency Diesel Generator (EDG) Fuel Supply System. This supplement identified the licensee's actions to resolve an EDG single-failure concern. The resident reviewed the corrective actions and verified that they had been implemented. This LER provided no new information and was **closed**.

(Closed) LER 50-293/1998-24-01: Control Room High Efficiency Air Filtration System (CRHEAFS) Not Outside Design Basis. This voluntary supplement was submitted to withdraw the original LER since additional testing demonstrated that the plant was not outside the design basis as previously reported. The inspector reviewed the CRHEAFS test data and verified that the system met both technical specification and UFSAR performance criterion. This LER is **closed**.

(Closed) LER 50-293/2000-01-00: Small Amount of Special Nuclear Material Misplaced and Subsequently Located. This event was identified on July 29, 1998, and was previously documented in Section S1.1 of NRC Inspection Report 50-293/98-07. This LER was submitted as a voluntary report and provided no new information. This LER is **closed**.

(Closed) LER 50-293/2002-02: High pressure coolant injection (HPCI) System Inoperable due to Power Inverter Failure. The inverter powers the HPCI flow control circuitry. The licensee replaced the HPCI system power supply inverter. The HPCI power supply inverter failure was detected immediately as indicated by the "HPCI Inverter Failure" annunciator. Therefore, the inspector noted that the fault exposure time for the HPCI system was minimal. The remainder of the other core standby cooling system (CSCS) remained operable including the automatic depressurization system, reactor core isolation coolant, low pressure coolant injection and core spray systems. The licensee initiated a formal root cause analysis and planned to issue a supplement to this LER to inform the NRC of the root cause.

The inspector reviewed the significance of the inverter failure using the NRC's significance determination process (SDP). The NRC concluded the HPCI power supply inverter failure was of low safety significance (Green) because the malfunction was immediately detected, repaired within 1 hour and the other CSCS remained available for use. This issue was Green in the SDP because of the low event likelihood and the full compliment of remaining mitigation capability. This LER is **closed**.

4OA6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to V. Oheim, Director Design Engineering, and other members of licensee management at the conclusion of the inspection on Thursday, September 7, 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.

ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

LER 50-293/1998-01-01	Single-Failure Vulnerability of the Emergency Diesel Generator (EDG) Fuel Supply System
LER 50-293/1998-24-01	Control Room High Efficiency Air Filtration System (CRHEAFS) Not Outside Design Basis.
LER 50-293/2000-01-00	Small Amount of Special Nuclear Material Misplaced and Subsequently Located
LER 50-293/2000-02-00	HPCI System Inoperable due to Power Inverter Failure.

LIST OF ACRONYMS USED

ALARA	As Low As is Reasonably Achievable
CFR	Code of Federal Regulations
CRHEAFS	Control Room High Efficiency Air Filtration System
EDG	Emergency Diesel Generator
HPCI	High Pressure Coolant Injection
LER	License Evaluation Report
MR	Maintenance Request
NRC	Nuclear Regulatory Commission
OE	Operability Evaluations
PARS	Publicly Available Records
PR	Problem Report
RBCCW	Reactor Building Closed Cooling Water
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SBO	Station Blackout
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.