



10CFR50.59

**BOSTON EDISON**

Pilgrim Nuclear Power Station  
Rocky Hill Road  
Plymouth, Massachusetts 02360

**Ralph G. Bird**  
Senior Vice President — Nuclear

BEC0 88- 113  
July 22, 1988

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

License DPR-35  
Docket 50-293

REPORT OF CHANGES, TESTS AND EXPERIMENTS  
PERFORMED AT PILGRIM NUCLEAR POWER STATION

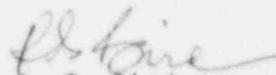
Dear Sir:

In accordance with 10CFR50.59(b), Boston Edison submits this report of the changes, tests, and experiments performed at Pilgrim Nuclear Power Station for the period of January 22, 1987 through January 21, 1988.

Attachment A is a list of changes completed in the reporting period. Each listing contains a brief description of the changes, a reference to the relevant Final Safety Analysis Report (FSAR) section, and a reference to the Safety Evaluation(s) that supports each change.

Attachment B contains a brief description of changes made to the plant prior to 1987.

There were no reportable tests or experiments conducted in the report period.

  
R. G. Bird

GGW/amm/2236

Attachments: A) Changes Completed in 1987  
B) Changes Made Prior to 1987

cc: See Next Page

8808030117 880722  
PDR ADOCK 05000293  
R PNU

LEA7  
1/1

BOSTON EDISON COMPANY

July 22, 1988

U. S. Nuclear Regulatory Commission

Page 2

cc: Mr. D. McDonald, Project Manager  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Station P1-137  
Washington, DC 20555

U. S. Nuclear Regulatory Commission  
Region I  
475 Allendale Road  
King of Prussia, PA 19406

Senior NRC Resident Inspector  
Pilgrim Nuclear Power Station

CHANGES COMPLETED IN 1987

The following changes and related Safety Evaluations were reviewed and recommended for approval by the Operations Review Committee. The safety evaluations concluded that these changes did not involve an unreviewed safety question as defined in 10CFR50.59(a).

10CFR Appendix "R" Related Modifications

Safety Evaluation No. 1623

Reference: FSAR Section 8.9

This modification was broken up into six separate PDC packages as follows:

1. PDC 84-03A; Ductline Installation for Rerouting 65 Cables
2. PDC 84-03B; In plant raceway installation
3. PDC 84-03D; ADS System Relocation (Panel C157)
4. PDC 84-03E; Cable Installations
5. PDC 84-03F; Diesel Generator Alternate Shutdown Panel Modifications
6. PDC 84-03C; (This PDC was voided)

The changes were required for the plant to be in compliance with the requirements of 10CFR50, Appendix "R".

Reactor Building Secondary Containment Isolation Dampers Replacement

Safety Evaluation No. 2032

Reference: FSAR Section 5.3.4, 5.3.3.3

This modification replaced the secondary containment isolation dampers. The old dampers were commercial grade and experienced a high failure rate. The replacement dampers are of sturdier construction and are fabricated with metal linkages for positive closure.

Add an Alarm to Monitor Position of Diesel Generator Jacket Water Pressure Relays

Safety Evaluation No. 1866

Reference: FSAR Section 8.5.4

This modification added an alarm to monitor the position of the diesel generator jacket water pressure relays when the diesels are in standby mode. Monitoring the position of control relays in the starting logic of the diesels is not safety related, and does not impact diesel generator performance. The alarm will increase reliability by providing the operators with advanced warning that parts of the diesel generator starting logic are inoperable, preventing the engines from starting.

## Ultrasonic Flow Monitor for Standby Liquid Control System

Safety Evaluation NO. 1858 (RI)

Reference: FSAR Figure 3.8-1

This PDC installed an ultrasonic flow monitor on the SLC System discharge piping for determining pump capacity during surveillance testing. 10CFR50.62 required an increase in SLC pump capacity. In order to measure the increased flow rate the externally mounted ultrasonic flow monitor was mounted on the discharge piping of the SLC pumps.

## Shift Supervisor's Console - Communications Modules

Safety Evaluation No. 1988

Reference: FSAR Section 10.15-3

This change installed communications modules in the shift supervisor's new console. All communication functions previously provided are now provided in the new console with new equipment. The arrangement is organized to support operator and shift supervisor use. Additional capabilities (intercom and State Police line) are provided to resolve Human Engineering Discrepancies and improve emergency response.

## Jog Open Feature for RWCU Valve 1201-2

Safety Evaluation No. 1900

Reference: FSAR Figures 4.9-1 and 7.3-20

This change will enable operators to jog open MOV 1201-2. There is no change to the control circuit to close the valve. The jog opening feature reduces the pressure transient experienced during start up of the RWCU system. MOV 1201-2 is a primary containment system valve. The automatic closure of the valve upon receiving a containment isolation signal is not affected by this change.

## Refueling Bridge Replacement

Safety Evaluation No. 2044

Reference: FSAR Section 7.6

Due to degradation and obsolescence, the original refueling bridge was replaced with the exception of the refueling mast. The new bridge and attachments were analyzed against design basis accidents that could place a load on the bridge to ensure this Class II component will not degrade any Class I equipment.

### Install Pressure Gauges on RHR System

Safety Evaluation No. 1962 (Rev. 1)

Reference: FSAR Figure 4.8-1, Figure 4.8-2

This modification provides indications to assist plant personnel in trending the leakage rate past the Residual Heat Removal System isolation valves. This will result in more efficient plant operation and an increase in plant safety. To achieve this, 4 additional pressure indicators were added and a controlled leakage bypass around the RHR discharge check valves was provided. In addition, temperature indicating tape was added to the process lines outboard of MO1001-29A&B.

### Deletion of Modulating Controls for Diesel Generator Rooms Ventilation Dampers V207(A&B)

Safety Evaluation No. 2082

Reference: FSAR Section 10.9-10

This modification deletes the modulating temperature controls for ventilation dampers in the diesel generator rooms. The requirements for these controls have been eliminated by the addition of a separate ventilation system consisting of two shutdown cooling fans. The ventilation dampers will open when the DG starts and will close when the DG is secured. The shutdown cooling fans operate whenever the DG is secured and the area temperature exceeds 90°F.

### Replacement of Offgas SJAE Flow Transmitter

Safety Evaluation No. 85-30

Reference: FSAR Figure 11.4-1

This modification replaced the Fischer and Porter SJAE flow transmitter with a qualified Rosemount transmitter. The installed Fischer and Porter transmitter failed in the field. Fischer and Porter no longer manufactures this unit. The Rosemount replacement is used in similar applications at PNPS and is functionally identical and only minor installation changes were required.

### Replacement of Moisture Elements

Safety Evaluation No. 84-99

Reference: FSAR Figure 5.4-1

Obsolete moisture elements in the drywell have been replaced with new, smaller units, with no change in function. The elements are used to detect moisture in the drywell, and provide no trip function, only indication. They are also used during the ILRT.

## Drywell Personnel Air Lock Modification (TM 84-25)

Safety Evaluation No. 2011

Reference: FSAR Figure L.2-24

The Drywell lock/closing mechanism was modified using the manufacturer's rebuild kit. Improved materials and replacement-in-kind components were recommended by the original equipment manufacturer. The rebuild/upgrade of the locking/closing mechanism for the drywell personnel air lock improves the reliability and operability of the equipment without changing the original design function.

## RCIC Valve Annunciation Circuit Modification

Safety Evaluation No. 83-22

Reference: FSAR Figure 4.7-6

This modification eliminated the 15 second time delay relay in the RCIC trip valve annunciation circuit. The trip valve requires manual reset; therefore, this modification provides the operator with immediate indication of the system condition.

## RBCCW Pressure Gauges Installation

Safety Evaluation No. 2086

Reference: FSAR Figure 10.7-1

This modification installed pressure gauges at exiting pressure test taps located on the salt water inlet and outlet nozzles for both RBCCW heat exchangers. Administrative limits for containment cooling subsystem operability require assessment of RBCCW heat exchanger heat transfer capability. To aid in surveillance in support of these limits, a means of pressure indication is required to show pressure differential between the heat exchanger tube inlet and outlet.

## Replacement of Fuses in the 23KV Supply to the Shutdown Transformer

Safety Evaluation No. 2068

Reference: FSAR Figure 8.2-1

This modification replaced the fuse holders and links in the 23KV switchyard with 250 ampere links and new holders. This is the non-class 1E supply to transformer X13 (Shutdown Transformer). The fuses originally specified for protection of the Shutdown Transformer were type 'E' power fuses. The replacement fuse is the same basic type with an increase in size to 250 amp to provide transformer protection and acceptable coordination with downstream protective devices.

Replacement of the Seal Welded Yoke to Adapter Plate on Motor Operator 1400-4A and B

Safety Evaluation No. 2132

Reference: FSAR Figure 7.4-8

This modification to Core Spray MOVs 1400-4 A&B, replaces a yoke design with a seal welded adapter plate with a yoke which has an integral adapter plate. The seal welded plate was a modification made to the original yoke design to eliminate an overstress condition. The replacement yoke has been manufactured specifically to accommodate the SMB-00 Limitorque operator. As part of this change, the motor operator torque switch is also adjusted to limit the closing force thereby limiting stresses in the yoke. This modification was made to strengthen the yoke to motor connection, improving valve reliability.

"B" RHR Heat Exchanger Floating Head Drain Modification

Safety Evaluation No. 2130

Reference: FSAR Section 10.5-1

This modification removed the defective "B" RHR Heat Exchanger (E-207B) floating head drain line ball valve and replaced it with a threaded pipe cap. This change will decrease maintenance and improve the reliability of the heat exchanger by eliminating a potential leakage problem. The RHR Heat Exchanger is an interface between the RHR and RBCCW system. The floating head drain is used to drain the tube side (RBCCW side). This modification does not effect the operation of either system.

Replacement of Valve AO-7011A

Safety Evaluation No. 2244

Reference FSAR Figure L.2-24

This modification replaced containment isolation valve AO-7011A (drywell equipment drain sump discharge) on the Radwaste Collection System. Only the valve was changed. The existing operator, limit switches and air supply is retained.

CHANGES MADE PRIOR TO 1987

This attachment describes changes made prior to 1987. They were identified this period as a result of improvements to our 50.59 reporting process.

Administrative/Shop Building Service System Tie-ins

Safety Evaluation No. 0667

Reference: FSAR Figure 10.6-1

Connections with isolation valves were provided on existing PNPS Unit 1 systems (service/instrument air, plant heating, fire protection, potable water, and TBCCW). These connections were to be used when PNPS Unit 2 was built. The expanded buildings were cancelled with Unit 2 cancellation. The tie-ins were completed and remain unused or were used for other plant modifications. The connections were designed to permit future tie-ins without affecting Unit 1 plant operations.

Miscellaneous Air Compressor Changes

Safety Evaluation No. 80-SE-13

Reference: FSAR Sections F10.11-1 and F11.9-1

This modification made the following changes to increase system reliability:

1. Installation of 1/2" copper piping from the demineralized water source to the two low pressure service air blowers (K105 A&B) seals.
2. Installation of a 1/2" bypass with manual block valve around the low pressure air compressor seal water solenoids (for maintenance purposes).
3. Addition of a 3/4" drain line from the K-111 compressor to the radwaste floor drain hub.
4. Addition of a drain/vent valve to the K-105B Kahn Air Dryer after filter (X-112F).

PASS and H<sub>2</sub>O<sub>2</sub> Monitoring System Electrical Installation

Safety Evaluation Nos. 1112, 1018

Reference: FSAR Sections 10.19 and F10.19.1

This modification provided the electrical installation details for the Post Accident Sampling System and the Primary Containment H<sub>2</sub>/O<sub>2</sub> Monitoring System.

## Reagent and Calibration Gas Supply Subsystem for Containment H<sub>2</sub>/O<sub>2</sub> Monitors

Safety Evaluation No. 1237

Reference: FSAR Section 10.19

This modification provided each H<sub>2</sub>/O<sub>2</sub> analyzer panel with a reagent gas subsystem which provides commercially pure oxygen and hydrogen gas. A calibration gas subsystem common to both panels is also provided which supplies 4% hydrogen and 7% oxygen gas for calibration purposes. The gas subsystems are supplied by compressed gas cylinders located in racks on the 74'3" elevation of the Reactor Building.

## Reactor Pressure Boundary Leak Detection System Panel C-19

Safety Evaluation Nos. 1095/1079/1136/1161

Reference: FSAR Sections 4.10.3.2, T7.3-1, T5.2-4, T5.2-5, F4.10-1

The Reactor Pressure Boundary Leak Detection System (RPBLDS) was modified by adding isolation valves to isolate (on receipt of a LOCA signal) non-Q piping. Sample return lines and containment isolation valves for the RPBLDS sample panel C-19 were also installed. The revised leak detection system takes samples from two of the existing sample locations. These samples will be routed to separate locations at elevation 23' in the Reactor Building Secondary Containment. Sample return lines from each location are routed to a common return penetration with two series isolation valves.

## Replace PT-1001-601 A and B Rosemount Absolute Transmitters with Rosemount Gauge Transmitters

Safety Evaluation No. 1818

Reference: FSAR Figures 4.8-1 and 7.4-11

This modification replaced an absolute pressure monitoring transmitter with a gauge pressure transmitter. Both types of transmitters are Rosemount. The FSAR Figure change is a P&ID update to note the supplier. Mounting and electrical configuration are similar for both types of transmitter. Therefore, there is no change to safety significance. This is essentially an in-kind replacement.

## Modification to Neutralizing Sump

Safety Evaluation No. 83-13

Reference: FSAR Section 10.10.3.7 and Figure 10.10-1

This modification removed the PH meter on the recirculation line of the Demineralizer and make-up systems neutralizing sump pumps and replaced it with a bucket strainer to filter out resin beads.

### Salt Service Water Chlorination Piping

Safety Evaluation No. 84-16

Reference: FSAR Figure 10.07-1

This modification replaced corroded portions of the Salt Service Water chlorination piping with PVC piping. The change was performed on a Class II system. This modification does not affect the ability of other safety systems from performing their safety function.

### Remove Packing Leak-Off Valve on Core Spray Valve MO-1400-4A

Safety Evaluation No. 84-86

Reference: FSAR Figure 7.4-8

This modification, to Core Spray Valve MO 1400-4A, replaced the packing leak-off valve and pipe with a 1/2" diameter section of stainless steel pipe and end cap. The evaluation concluded that no adverse safety condition would be created by this change.

### Removal of the Gland Seal Leak-off Valve on RHR MOV-1001-29B

Safety Evaluation No. 1747

Reference: FSAR Figure 4.8-1

This modification removed a leak-off valve on RHR valve MO-1001-29B. The leak-off line and valve interfered with the removal of the valve bonnet during normal valve maintenance. A 1/2" diameter stainless steel section of pipe with an end cap was welded into the opening created by removal of the leak-off valve. This modification does not affect the operability of the valve to perform its intended safety function nor does it degrade the Class I pressure boundary.

### Installation of a Filter on the Discharge of the Sodium Hypochlorite Tank

Safety Evaluation No. 84-104

Reference: FSAR Figure 10.7-1

This modification installed a filter in parallel with an existing section of one inch PVC pipe down stream of the sodium hypochlorite tank isolation valve. Particulate debris (corrosion products from the tank) had been clogging downstream flow meters, valves, etc. The filter was added to remove the debris. All affected system and piping are non-safety related, Class II. This modification does not affect the ability of other safety systems from performing their safety function.

### Replace Pipe in Sodium Hypochlorite System

Safety Evaluation No. 84-117

Reference: FSAR Figure 10.7-1

This modification replaced 3 sections of original piping with PVC pipe to determine the condition of the remaining original pipe. The chlorination system is non-safety related, Class II. This modification does not affect the ability of other safety systems from performing their safety function.

### Replace Original 304SS Pipe Piece With 316SS in the RWCU System

Safety Evaluation No. 1800

Reference: FSAR Figure 4.3-2

This modification replaced a pipe piece of 304SS in the line from the bottom reactor vessel drain line to the RBCCW drain line. This installation will result in stresses within code allowable limits and will help mitigate IGSCC thereby enhancing safety.

### New Trash Compaction Facility

Safety Evaluation No. 1630

Reference: FSAR Sections 9.5, 9.2.4.1, 9.2.4.2.1, 9.2.4.2.2, 9ii, and 12.2.2.5

This safety evaluation addressed the radiological concerns associated with the new Trash Compaction Facility (TCF). The TCF is located outside the protected area, and is used to collect, prepare, package, and provide temporary storage for dry compactable trash prior to shipment offsite for disposal. No equipment in the TCF is related to any safe shutdown consequences. Radiological releases from the TCF, under normal operations, shall be within 10CFR20 limits. The operating procedures, storage cells and contaminated trash containers of the TCF are designed to reduce radiation levels ALARA.

### Plug Leaking Tubes in the "B" TBCCW Heat Exchanger (E-122 B)

Safety Evaluation No. 1648

Reference: FSAR Section 10.6.3

This safety evaluation allows a revision to the heat exchanger seawater temperature parameter referenced in the FSAR. The evaluation assumes a maximum seawater temperature of 72°F whereas, the FSAR reference is 75°F. Actual operating experience has shown that the seawater temperature stays at or below 70°F. The safety evaluation concludes it is acceptable to plug a total of 141 tubes and still retain adequate heat transfer capability. Tube plugging is a normal maintenance activity.

### Change HPCI Start Time From 25 Seconds To 90 Seconds

Safety Evaluation No. 1830

Reference: FSAR Sections 6.4.1, 7.4.3.2.4, 7.4.3.2.5

The purpose of this safety evaluation was to determine the impact of a potentially extended HPCI response time from the current nominal 25 seconds to 90 seconds. The evaluation concluded that no significant change in the safety margins of the Pilgrim Nuclear Power Station for HPCI system response times ranging from 30 to 90 seconds would occur. Cold starts of the HPCI system have resulted in turbine trips followed by a rapid restart of the system to rated flow in less than 90 seconds. The ECCS performance of PNPS with an assumed HPCI response time as long as 90 seconds was evaluated over the full range of postulated LOCAs. This safety evaluation did not involve any physical change to the HPCI system.

### Expand Allowable Cycle Time Limit for MO-1400-25 Valves A and B (Core Spray Injection Valves)

Safety Evaluation No. 1914

Reference: FSAR 7.4.3.4.4

This safety evaluation provides for changing the allowable cycle time limit for opening or closing MO-1400-25 valves A and B from 18 to 20 seconds. The slightly longer cycle time has a negligible impact on the containment isolation function of this valve. The revised cycle time is referenced in the FSAR. No physical change was made to the plant.

### Diesel Oil Storage and Transfer

Safety Evaluation No. 2084

Reference: FSAR Figure 8.5-1

This safety evaluation documented the acceptability of as-built field conditions which are now reflected in the latest FSAR revision. The installed valve 38-HO-III was determined to be a 1/2" gate valve rather than a 1/2" stop cock as indicated on plant documentation. The replacement of the stop cock with a gate valve does not increase the risk of Diesel Fire Pump inoperability or increase the risk of an oil spill. Gate valves are notably more durable and have superior stem packing than stop cock valves.