U. S. NUCLEAR REGULATORY COMMISSION
REGION I

REPORT NO.	50-293/92-06
DOCKET NO.	50-293
LICENSE NO.	DPR-35
LICENSEE:	Boston Edison Company RFD #1, Rocky Hill Road Plymouth, Massachusetts 02360
FACILITY NAME:	Pilgrim Nuclear Power Station
INSPECTION AT:	Plymouth, Massachusetts
INSPECTION DATES:	May 4-8, 1992
INSPECTORS:	John Calvert, Reactor Engineer, RI Leonard Cheung, Team Leader, RI Allen Hansen, Lead Project Manager, NRR Arthur Nolan, Inspector, EG&G, Idaho

LEAD INSPECTOR: W. H. Ruland for 6/22/92
Leonard Cheung, Sr. Reactor Engineer, Electrical Section, EB, DRS — Date

APPROVED BY: W. H. Ruland 6/22/92
W. H. Ruland, Chief, Electrical Section, Engineering Branch, DRS — Date

Areas Inspected: Special, announced inspection to review the licensee's implementation of Regulatory Guide (RG) 1.97, Revision 3, pertaining to post-accident monitoring instrumentation.

Results: The team determined that the licensee has established a program to meet the recommendations of RG 1.97. However, the program is not yet fully implemented until the end of the 1993 refueling outage. No deficiencies were identified.

1.0 INTRODUCTION

Background

The purpose of this inspection was to verify the implementation of Regulatory Guide (RG) 1.97, Revision 3, for instrument systems for assessing plant conditions during and following an accident. These systems were inspected to determine if they were installed in accordance with the requirements of Generic Letter 82-33, "Requirements for Emergency Response Capability" (Supplement No. 1 to NUREG-0737). This letter, issued on December 17, 1982, specifies those requirements regarding emergency response capabilities that have been approved by the NRC for implementation. This supplement also discusses the application of Regulatory Guide 1.97 to emergency response facilities, including the control room, the technical support center (TSC), and the emergency response facility (EOF) at nuclear power plants. Regulatory Guide 1.97 identifies the plant variables to be measured and the instrumentation criteria for assuring acceptable emergency response capabilities during and following an accident.

Regulatory Guide 1.97 divides post-accident instrumentation into three categories and five types. The three design categories are noted as 1, 2, and 3. Category 1 has the most stringent design requirements and Category 3 the least stringent. The five types of instrumentation are identified in Regulatory Guide 1.97 as Type A, B, C, D, and E. Type A variables are plant specific and classified as such by the licensee to facilitate Emergency Response Procedures. Type B variables provide information to indicate that plant safety functions are being accomplished. Type C variables provide information regarding the breach of barriers to fission product release. Type D variables indicate the operation of individual safety systems. Type E variables are those that indicate and are used to determine the magnitude of the release of radioactive materials. Each variable is assigned to a design category by the regulatory guide. However, Type A variables can only be design Category 1.

Correspondence

The licensee's response to Regulatory Guide 1.97 for Pilgrim was submitted on November 1, 1984. The licensee provided additional information on February 10, 1987, April 11, 1989, January 11 and January 15, 1990. On April 5, 1990, the licensee provided an updated response to the compliance issues related to RG 1.97. The April 5, 1990, submittal superseded previous submittals. On March 13, 1991, the NRC issued the safety evaluation report (SER) for Pilgrim RG 1.97 program. The licensee provided a response on October 4, 1991, to address the issues discussed in the SER. This response is currently under NRC review. The review results will be addressed in an SER supplement to be issued later this year.

2.0 INSPECTION OBJECTIVES

The objective of this inspection was to provide a comparison of the installed plant instrumentation related to post-accident instrumentation with the commitments as described in the licensee's submittals to the NRC and in the NRC Safety Evaluation Report. The inspection team also assessed whether the installed instrumentation met the criteria specified in RG 1.97. The specific references used to assess the licensee's conformance to RG 1.97 were:

1. Regulatory Guide 1.97, Revision 3, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident."

2. Safety Evaluation Report (SER), NRC letter, S. F. Shankman to G. W. Davis (BECo), dated March 13, 1991, with Technical Evaluation Report prepared for the NRC by EG&G Idaho, Inc., "Conformance to Regulatory Guide 1.97: Pilgrim," June 1988, EGG-NTA-7047.

3.0 INSPECTION SCOPE

The NRC inspection scope included: equipment qualification (seismic and environmental), redundancy of power sources, measured variables, display and recording methods used, independence and separation of electrical circuits, range and overlapping features of multiple range instruments, equipment identification for Regulatory Guide 1.97 instruments, service, test and surveillance frequency, and direct versus indirect measurements of parameters of interest. The electrical equipment environmental qualification master list was reviewed for the instruments selected to ascertain whether they had been evaluated and tested to the appropriate environmental qualification requirements.

4.0 INSPECTION DETAILS

The team held discussions with various members of the licensee's staff, and reviewed drawings, procedures, and plant lists for selected variables. A walkdown of the control room instruments was performed to assess the implementation of Regulatory Guide 1.97, Revision 3, for Pilgrim.

The team reviewed the instrument channels of 17 variables, including 12 Category 1 variables, and five Category 2 variables. Each Category 1 variable consists of two or more instrument channels to meet the channel-redundancy requirements. These 17 variables are:

- Reactor system pressure - Category 1
- Reactor vessel water level - Category 1
- Torus water temperature - Category 1
- Torus water level - Category 1

- Drywell pressure - Category 1
- Drywell hydrogen concentration - Category 1
- Drywell oxygen concentration - Category 1
- Neutron flux - Category 1
- Torus bottom pressure - Category 1
- Drywell and torus high range radiation - Category 1
- Primary containment isolation valve position - Category 1
- Drywell atmosphere temperature - Category 1
- High pressure coolant injection (HPCI) flow - Category 2
- Core spray system flow - Category 2
- Residual heat removal (RHR) system flow - Category 2
- Reactor core isolation cooling (RCIC) flow - Category 2
- Status of standby power - Category 2

Characteristics examined for each variable include identity, location, function, separation (electrical and physical), isolation, power sources, environmental qualification, seismic qualification, and instrument range.

The instrument channels for the 17 variables evaluated are discussed in detail as follows:

4.1 Drywell Pressure

The drywell pressure is classified by the licensee as a Category 1, Type A variable. The Regulatory Guide 1.97 recommended pressure range of -5 psig to 4 times design pressure is covered by dual ranges of -5 to +5 psig (PT1001-601A and B) and 0 to 225 psig (PT1001-600A and B) with 225 psig being 4x design pressure. The review of the records showed that both pressure channels met the recommendations of RG 1.97. The channels' inputs to the non-safety related plant computer were isolated from the computer using computer input modules employing fiber optic cable. The instrument channel calibration was current with the next calibration due during the 1992 refueling outage.

The control room walkdown of these channels showed that the panel mounted instruments were properly separated from the redundant channels in the other division. The instruments had not been marked with a unique RG 1.97 marker, as the licensee had not completed this phase of the work at the time of this inspection. The recorders used in these channels were seismically qualified for their location and functionally tested to be operable following a seismic event. The channels were found to meet the recommendations of RG 1.97.

4.2 Reactor Vessel Water Level

The licensee classified the reactor vessel water level as a Type A variable. The RG 1.97 recommended instrument range corresponding to Pilgrim would be 186 to 604 inches above the bottom of the vessel. However, the range covered by the instruments is from 205 to 532 inches with two overlapping ranges, the wide range and the narrow range. This range deviation was discussed in the SER and accepted by the NRC.

Two sets of instruments, each consisting of two redundant channels, cover the wide range level from 205 to 505 inches. There are redundant dedicated recorders in the control room which provide trend and transient information. The wide range indicators in the control room have the same range as the recorders. The range is -277.5 to +22.5 inches with respect to instrument zero of 482.5 inches.

The narrow range level of 432.5 to 532.5 inches overlaps the wide range and is implemented by two redundant instrument channels. The narrow range of -50 to +50 inches (with respect to instrument zero of 482.5 inches) is indicated in the control room. The two indicators are side by side on the front of a panel. In the rear of the panel, the meters are contained within a metal box that has an internal metal barrier to provide separation. The rear of the box contains two independent flexible conduits for the separate connections to the respective meters. This physical separation method has been discussed in the SER for the internal wiring of previously installed instruments, and has been accepted by the NRC.

The narrow range reactor vessel level is recorded in the control room, but not from the instrument loop credited for RG 1.97. However, this issue has been identified as a scheduled item in the licensee's Long Term Program submittal (BECo Letter 92-022, dated February 28, 1992), to NRC and is scheduled to be completed during the 1992 mid-cycle outage. The design change will make the recorder signals be from the same instruments as the indicator signals.

The instrument calibration was current as indicated in the calibration records.

4.3 Reactor System Pressure

This variable was classified as a Type A variable by the licensee. The instrument range of 0 to 1500 psig is consistent with the recommended range in RG 1.97. This range was observed on the redundant channel indicators and recorders in the control room. The power sources to the redundant loops are separate and independent as indicated in the wiring diagrams.

The instruments for this variable are in calibration. The instrument calibration was current as evidenced by the calibration records.

4.4 Torus Bottom Pressure

This variable was classified as a Type A variable by the licensee. The range recommended by RG 1.97 is from -5 psig to 4 times the design pressure for the steel torus (4 X 56 psig at 281°F). The instrument presently installed has an indicated range of 0 - 100 psig. This range deviation was addressed by the licensee in their May 13, 1991, submittal to the NRC after the SER was issued, and is still under NRC review.

One channel of indication was verified in the control room (PI-1001-69) with a range of 0 - 100 psig. The license has committed, in their submittal to the NRC, to provide a redundant channel with indication and recording during the 1992 mid-cycle outage. The calibration of the instrument that is presently installed was current as indicated in the instrument calibration record.

4.5 Torus Water Level

The licensee classified this variable as a Type A variable. The range of the redundant instruments, indicators, and recorders are all 0 to 300 inches. The range of measurement is from the bottom of the lowest ECCS suction line to over 11 feet above the mid-point of the torus. Normal pool level is below the mid-point. This range is adequate to cover the recommended range in RG 1.97, which is from the bottom of the ECCS suction line to 5 feet above normal pool level.

The instrument calibration was current as evidenced by the calibration records.

4.6 Drywell Atmosphere Temperature

The licensee classified this variable as a Type A variable. The instrument range of 0-400°F deviates from the RG 1.97 recommended range of 40-440°F. This deviation was discussed in the SER and has been accepted by the NRC.

The temperature sensors of both channels are located in the northeast quadrant of the drywell (NE and ENE directions) at the 40-foot elevation. The sensors are 15 feet apart and displaced vertically 11 inches from each other. The licensee examined high energy line breaks in the area and determined that no single jet impingement from a single break could affect both sensors. The licensee also examined pipe whip from postulated breaks inside containment and concluded that the installed pipe whip restraints would protect both sensors. Within the drywell, there would be no single high energy line break or jet impingement that could affect both sensors simultaneously; therefore, the single failure criteria of RG 1.97 concerning the redundant mounting in the same quadrant is satisfied.

The instrument calibration was current as evidenced by the calibration records.

4.7 Containment and Drywell Hydrogen and Oxygen Concentration

The licensee classified these two parameters as Type A variables. The team examined documentation verifying that Category 1 instrumentation is provided for these variables. The primary range for oxygen is 0-10%, which is in agreement with RG 1.97 recommendations. The primary range for hydrogen is also 0-10%, though RG 1.97 specifies a range of 0-30%. This deviation has previously been accepted by the NRC. Therefore, this instrumentation is acceptable.

The team found both the oxygen and the hydrogen instrumentation to have dual range indicators on panels C174 and C175 located behind the main control panels in the control rooms. Switches are provided on these two panels for each instrument to select the desired range. The dual ranges are 0-10% and 0-25% for oxygen, and 0-10% and 0-20% for hydrogen. The licensee stated that the range selector switch positions on the remote panels change the readout of the recorders on the main control panel, hence inaccurate readings could result from incorrect switch settings.

The licensee has instituted administrative controls to ensure that the proper range is selected for each instrument. In addition, the licensee stated that a plant design change had been initiated to eliminating the dual range feature by replacing the switches and indicators with appropriate alternative components. The licensee anticipates to complete this replacement within this year.

The calibrations of all instruments for these variables were current as indicated in the calibration record.

4.8 Torus Water Temperature

The licensee classified this parameter as a Type A variable. The team reviewed documentation verifying that Category 1 instrumentation is provided for this variable. The documented range of this variable, as confirmed by control room observation, is 30-230°F, which envelopes the RG 1.97 recommended range of 40-230°F. The team reviewed the instrument calibration record and determined that the instrument calibration was current.

4.9 Neutron Flux

Neutron flux was classified as a Category 1, Type B variable in RG 1.97. The instruments provided by the licensee for this variable consist of local power range monitors (LPRM) and source range monitors (SRM). These instruments were not environmentally or seismically qualified as specified in RG 1.97. This deviation was addressed by the licensee in their submittal to the NRC. The licensee endorsed the BWR Owners' Group position that a fully qualified Class-1E post-accident neutron flux monitoring system is not required. The NRC completed the review and considered this position to be unacceptable in a safety evaluation report, dated January 29, 1991. Subsequently, the BWR Owners' Group appealed to the NRC to reconsider their position. This appeal is still under NRC review. The licensee agreed to upgrade these instruments if the appeal is denied. The SER indicated that the existing neutron monitoring instrument is acceptable for interim operation.

The calibration of all instruments for this variable were current as indicated in the calibration records. No other deficiencies were identified.

4.10 Drywell and Torus High Range Radiation

The drywell and torus high radiation level was classified as a Category 1, Type E variable in RG 1.97. Four instrument channels were provided for this variable. RE-1001-606A and B detect the post-accident radiation level in the drywell, while RE-1001-607A and B detect the post-accident radiation level in the torus. Each of these instrument channel has an indicating transmitter and a recorder, with a range of 1 to 10^7 rad/hr. This range conforms to the range specified in RG 1.97, Revision 3. The drywell radiation sensors were installed inside capped pipes which penetrate the containment wall. This configuration avoids exposure of the sensors to the postulated harsh drywell environment following an accident. The torus radiation sensors are located outside the torus in the secondary containment. Signal attenuation through the pipe wall (for drywell radiation sensor) and the torus wall (for torus radiation sensor) were considered during calibration of these sensors.

The licensee performed a loop accuracy calculation for the drywell and torus radiation monitor. The calculation indicates that the loop accuracy is within the acceptable limit.

The calibrations of the instruments for this variable were current as indicated in the calibration records which were reviewed during the inspection. No deficiencies were identified.

4.11 Primary Containment Isolation Valve Position

The Primary Containment Isolation Valve Position circuits were selected for review; however, the licensee had not completed all of the scheduled work on these valves and the review was not performed. Much of the environmental and seismic qualification work was yet to be completed. The licensee stated that all of the work in this area will be completed prior to restart from the 1993 refueling outage.

4.12 Status of Standby Power

The status of standby power was classified as a Category 2, Type D variable in RG 1.97. The licensee provided 20 electrical meters for this variable. One ammeter and one voltmeter were provided for each of the following power sources: 4160V class 1E bus 5, 4160V class 1E bus 6, emergency diesel generator A, emergency diesel generator B, 125V battery A, 125V battery B, 125V battery charger A, 125V battery charger B, 250V battery A, 250V battery B, 250V battery charger A, and 250V battery charger B.

The team verified that the ranges of the above meters were consistent with the ranges addressed in the licensee's submittal to the NRC.

The team noted that these meters were not periodically calibrated as specified in RG 1.97. The licensee stated that their RG 1.97 program would not be fully implemented until the end of the 1993 refueling outage. During this inspection, the licensee included these 20 meters into their periodic calibration program, which requires these meters to be fully calibrated during the 1993 refueling outage.

4.13 HPCI Flow

The inspectors examined this Type D, Category 2 instrumentation, and found that it conforms with RG 1.97 recommendations, with one exception. The instrumentation is not qualified for a harsh environment. Justification for this exception has been provided by the licensee. The only event leading to a harsh environment in the area of HPCI flow instrumentation is a HPCI steam line break at the HPCI pump station. The instrumentation to assure HPCI operation need not be qualified, as it would not be needed after a break in the HPCI steam line. Based on this consideration, the team found that the HPCI flow monitoring instrumentation was acceptable.

4.14 RHR System Flow

The RHR System Flow is a Category 2, type D variable. The RG 1.97 recommended range of 0-110% design flow converts to a channel range of 0 to 20,000 gallons per minute. The flow transmitters associated with this variable are environmentally qualified for a harsh environment. The review of the records showed that both flow channels met the recommendations of RG 1.97. The instrument channels are in calibration with the next calibration due during the 1993 refueling outage.

The control room walkdown of these channels showed that the panel mounted instruments were properly separated from the redundant channels in the other division.

4.15 **Core Spray System Flow**

The Core Spray System Flow is a Category 2, Type D variable. The RG 1.97 recommended range of 0-110% design flow converts to a channel range of 0 to 5000 gallons per minute. The flow transmitters associated with this variable (FT1461 A and B) are environmentally qualified for a harsh environment. The review of the records showed that both pressure channels met the recommendations of RG 1.97. The instrument calibration was current with the next calibration due during the 1993 refueling outage.

4.16 **RCIC Flow**

The RCIC flow was classified as a Category 2, Type D variable in RG 1.97. A review of the documentation showed that this is a single channel system. The instrument range (0-500 gpm) provided by the licensee enveloped the recommended range (0-110% of design flow) of RG 1.97.

A control room indicator is provided, but not a recorder. This arrangement is in conformance with RG 1.97 for Category 2 variables.

The environmental qualification status of these instruments has been addressed by the licensee submittals to the NRC. This instrumentation is not qualified for a harsh environment. The licensee takes credit for the RCIC during the following events: loss of feedwater flow, total loss of offsite power, and control rod drop accident. These events, when considered independently, do not result in a harsh environment for any RCIC flow components required for operation. Reactor water cleanup or HPCI line breaks will expose the RCIC equipment to harsh environments, but RCIC operation is not credited for these conditions. Based on the above justification, the team considered the RCIC flow instruments to be acceptable.

The instruments are calibrated and have a calibration procedure.

4.17 **Isolation Devices**

The licensee supplied a list of isolation devices currently in use in RG 1.97 circuits. In those circuits where no changes or modifications have been made due to designation as RG 1.97 variables, no changes will be made to the circuits. The specific interfaces between the safety related RG 1.97 circuits and non-safety related devices are discussed below:

1. Mimic Graphic Display Panel - there were no changes made to this panel due to designating some of the indications RG 1.97 associated. However, the RG 1.97 circuit conductors will be removed from existing conductor bundles and rebundled separately.

2. Containment Atmospheric Control System Valves Indication - There were no changes made to this panel due to designating some of the indications RG 1.97 associated. Therefore, the electrical isolation scheme, interfaces, and physical separation are in accordance with the plant's original design criteria.

3. Emergency Ventilation Valve/Damper Position Indication - There were no changes made to this panel due to designating some of the indications RG 1.97 associated. Therefore, the electrical isolation scheme, interfaces, and physical separation are in accordance with the plant's original design criteria.

4. Drywell Floor Sump Effluent Valve Position Indication - In accordance with the guidance contained in RG 1.97, these position indication circuits were upgraded by the addition of a safety-related power supply. All other aspects of the circuits, including electrical isolation scheme, are in accordance with the plant's original design criteria.

5. Emergency and Plant Information Computer - The Emergency and Plant Information Computer (EPIC) employs GEDAC 4800 input modules. These modules provide a fiber optic link between the RG 1.97 safety-related circuits and the non-safety-related EPIC system. The use of fiber optic links and conductors as isolation devices have been reviewed and accepted by the NRC staff.

6. Torus Water Temperature Monitoring System - The Torus Water Temperature Monitoring System employs Foxboro Spec 200 series input modules. These modules have been reviewed and accepted by the NRC staff for use as Class 1E to non-Class 1E electrical isolation devices.

7. The hydrogen and oxygen Concentration Monitoring System - The hydrogen and oxygen Concentration Monitoring System was built and tested by Compsip-Delphi. The system was subjected to extensive environmental, seismic, and electrical testing and was qualified by the vendor as a Class 1E system. The system qualifications were reviewed and accepted by the NRC. The acceptance included the system's contact to contact electrical isolation scheme.

4.18 Environmental Qualification

The team reviewed the Pilgrim environmental qualification master list (EQML), Revision E25, dated April 2, 1992, for the instruments examined in this inspection. With the exception of the neutron flux monitoring instruments, as described in paragraph 4.9, all instruments located in the harsh environment are on the EQML. Some instruments, e.g., HPCI and RCIC flows, were not required to be qualified as discussed in paragraphs 4.13 and 4.16. Within the scope of this review, no deficiencies were identified.

4.19 Seismic Qualification

The team examined the status of the seismic qualification of all Category 1 instrumentation. The seismic qualification was either complete or not required for all systems, with two exceptions. The neutron flux monitoring instrumentation qualification is open pending resolution of the BWR Owners' Group (BWROG) appeal, and several of the primary containment isolation valve indicator qualifications are open. The licensee has committed to close these open items by the end of the 1993 refueling outage, assuming a timely resolution of the BWROG appeal. This schedule has been accepted by the NRC.

5.0 PHYSICAL INSPECTION

The inspectors performed a physical inspection on May 6, 1992, of display instruments located in the control room, and local instruments located in various areas of the Reactor Building. For the display instruments (indicators and recorders) specified, the team verified instrument functions, ranges and identification of RG 1.97 instruments. For the local mounted instruments, the team verified mounting and supports, separation of cable routing and tubing for redundant instrument channels.

5.1 Cable Separation

During the control room walkdowns, the team examined the rear of the control room cabinets which contained the RG 1.97 instruments and found that the licensee had not separated the cables on their approach to the RG 1.97 instruments. The licensee explained that as a basis of licensing, there is no requirement for the physical separation of the cables within the cabinets. However, the licensee did separate the RG 1.97 associated cables within the constraints of the existing cabinets.

Before this inspection, the licensee performed a walkdown of the RG 1.97 instrumentation channels for the purpose of identifying potential cable separation problems. The licensee color coded the conduit installation drawings to highlight areas of separation conflicts. In addition to the plant walkdown, the licensee performed a detailed inspection of the control room panels with respect to the wiring of the RG 1.97 panel mounted instruments. All areas of separation conflicts were noted, analyzed, and corrective action determined. There were no instances of conduit installation separation conflicts.

In the cases where conductors were bundled incorrectly, the licensee will cut the bundles open and rebundle the conductors in accordance with recommended separation criteria. This work will be completed prior to restart from the 1993 refueling outage.

5.2 RG 1.97 Instrument Markings

The licensee has committed to supplying unique markings for the control panel mounted Category 1 instruments as part of their control room design review program. The exact nature or form of the markings had not been formalized at the time of the inspection. In their early submittal to the NRC, the licensee committed to complete this work during the 1993 refueling outage.

6.0 SURVEILLANCE TESTING AND CALIBRATION

The surveillance tests and calibration of all RG 1.97 Category 1 instruments are performed by the Instrumentation and Control (I&C) maintenance department. The team reviewed the calibration data sheets of the instruments discussed in Paragraph 4.0 for the past two operating cycles. The calibrations of all instrument were current except the standby power status instruments as discussed in paragraph 4.12.

The team also inspected the calibration history (beyond 2 calibration cycles) of the Category 1 and Category 2 instrument and found them to have been regularly calibrated (except the standby power system status instruments) in accordance with the plant Technical Specifications and the Master Surveillance Tracking Program.

The calibration of the RG 1.97 instrumentation channels are covered by the "8E" series of calibration procedures. These procedures calibrate an instrumentation channel by isolating the individual instrument, calibrating the instrument and then returning the instrument to service. After all instruments in the channel have been calibrated in this fashion, the channel is assumed to be operational. The channel is not given an operational check or an end-to-end functional test to ensure that the instruments were properly replaced or returned to service. The 8E series calibration procedures do not invoke sub-routines to either remove from service or return to service the instruments being calibrated. The 8E series calibration procedures perform a fragmented channel calibration with the licensee depending upon the experience of the instrument technicians to ensure the functionality of the channel after calibration.

After discussing the concern with the licensee, the licensee agreed to modify the RG 1.97 calibration procedures to include a functional test for the Category 1, Type A instrumentation channels. The licensee started to modify the procedures while the inspection team was still on-site. Calibration Procedure 8.E.65, "Containment Pressure, Water Level and Torus Pressure Instrument Calibration," was modified to include a 5-step end-to-end functional check of the channel upon completion of the formal channel calibration. The modification of all affected procedures will be completed by about November 1992 and the new procedures will be effective for the 1993 refueling outage calibration effort.

7.0 OPERATOR TRAINING

According to the licensee, the operator training material will be updated to include the use of the RG 1.97 instruments and the unique markings to be installed on the control board mounted RG 1.97 instruments. The material upgrade and the initial operating training will be completed during the 1993 refueling outage when the RG 1.97 program is fully implemented. The RG 1.97 training will become part of the on-going operator re-qualification program.

8.0 EMERGENCY OPERATING PROCEDURES

The licensee stated that the emergency Operating Procedures (EOPs) will not be changed to include the RG 1.97 instruments by either tag numbers or color coding. The EOPs call for the reading of a parameter by its function, i.e., steam generator pressure, RCS pressure, or core spray system flow. By virtue of the unique markings on the RG 1.97 instruments and operating training, the operators will know which instruments have been designed for reliability and post-accident use.

The inspectors had no concerns with the licensee's current approach to training and EOPs.

9.0 EXIT MEETING

The inspectors met with the licensee's representatives (Attachment 1) at the conclusion of the inspection on May 8, 1992. The lead inspector summarized the scope of the inspection, the inspection findings, and confirmed with the licensee that the documents reviewed by the inspectors did not contain any proprietary information.

ATTACHMENT 1

EXIT MEETING ATTENDEES

Boston Edison Company (BECo)

R. Andrew, Senior I&C Engineer
A. Balta, Division Manager, Power Systems
G. Basilesco, Senior Compliance Engineer
A. Biswas, Senior I&C Engineer
E. Boulette, VPO/Station Director
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D. Dean, Control System Engineer
R. Fairbank, Nuclear Engineering Department Manager
J. Keyes, Acting Licensing Division Manager
P. Keyes, System & Safety Analysis Engineer
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E. Kraft, Jr., Plant Manager
F. Mogolesko, RG 1.97 Project Manager
V. Oheim, Regulatory Affairs Manager
B. Rancourt, Senior I&C Engineer
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