U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Report No.: 50-293/85-35

Docket No.: 50-293

License No.: DPR-35

Licensee: Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199

Facility Name: Pilgrim Nuclear Power Station Unit 1

Inspection At: Braintree and Waterford, Massachusetts

Inspector: R C Wilson 4/8/86
R. C. Wilson, Equipment Qualification & Test Engineer Date

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Office of Inspection and Enforcement

INSPECTION SUMMARY

Inspection on December 9 to 13, 1985 (Inspection Report No. 50-293/85-35)

Areas Inspected: Special, announced inspection to review the licensee's implementation of a program per the requirements of 10 CFR 50.49 for establishing and maintaining the qualification of electric equipment within the scope of 10 CFR 50.49.

Results: The inspection determined that the licensee has implemented a program to meet the requirements of 10 CFR 50.49, except for certain deficiencies listed below.

	Name	Report Paragraph	Item Number
Potential Enforcement/Unresolved Items:			
1.	Barton 288A main steam flow switches	4.D(1)	50-293/85-35-1
2.	General Electric EB-25 terminal blocks	4.D(2)	50-293/85-35-2
Open Items:			
3.	Documentation revisions	4.A	50-293/85-35-3
4.	Completion of maintenance procedures	4.B	50-293/85-35-4
5.	File corrections	4.D	50-293/85-35-5

DETAILS

1. PERSONS CONTACTED:

1.1 Boston Edison Company (BECO)

*W. D. Harrington, Senior Vice President, Nuclear
*J. E. Howard, Vice President, Nuclear Engrg. & QA
*A. L. Oxsen, Vice President, Operations
*R. Velez, Project Manager, EQ
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1.2 Consultants

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*R. K. Ho, Consultant to Nuclear Utility Group on EQ, EPM

1.3 NRC

*M. McBride, Pilgrim Resident Inspector

*Denotes those present at exit meeting in Braintree on December 13, 1985.

2. PURPOSE

The purpose of this inspection was to review the licensee's implementation of a program to meet the requirements of 10 CFR 50.49.

3. BACKGROUND

The NRC held a meeting with BECO on May 22, 1984 to discuss BECO's proposed methods to resolve the EQ deficiencies identified in the April 13, 1983 Safety Evaluation Report and January 19, 1983 FRC TER. Discussion also included BECO's general methodology for compliance with 10 CFR 50.49 and justification for continued operation (JCO) for those equipment items for which environmental qualification was not completed. The minutes of the meeting and proposed method of resolution for each of the EQ deficiencies were documented in BECO submittals dated July 9, August 3, and September 24, 1984 and January 21 and 29, 1985. The final SER transmitted March 26, 1985 identified that certain equipment was still under JCO. At the time of the inspection no JCOs or extensions applied. BECO did request qualification deadline extensions for five types of equipment until February 8, 1986, but the requested extensions were not granted. All five equipment types were included in the review sample selected for this inspection.

4. FINDINGS

The NRC inspectors examined the licensee's program for establishing the qualification of electric equipment within the scope of 10 CFR 50.49. The program was evaluated by examination of the licensee's qualification documentation files, review of procedures for controlling the licensee's EQ efforts, verification of adequacy and accuracy of the licensee's 10 CFR 50.49 equipment list, and examination of the licensee's program for maintaining the qualified status of the covered electrical equipment.

Based on the inspection findings, which are discussed in more detail below, the inspection team determined that the licensee has implemented a program to meet the requirements of 10 CFR 50.49, although some deficiencies were identified.

A. EQ Program Procedures

The NRC inspectors reviewed the Pilgrim EQ program as defined in Nuclear Operations Procedure NOP 84A9 dated November 29, 1985, which establishes the requirements of 10 CFR 50.49 and delegates responsibility to various departments. The inspectors reviewed the following Nuclear Engineering Department (NED) and Nuclear Operations Department (NOD) procedures and work instructions which establish and implement the EQ documentation program:

NED Procedures:

- 2.01 Preparation, Issuance and Control of Department Procedures, Rev. 6 dated November 28, 1985

- 2.02 Preparation, Review and Issuance of NED Work Instructions, Rev. 1 dated February 10, 1983

- 3.02 Preparation, Review, Verification, Approval, and Revision of Design Documents for Plant Design Changes, Rev. 14 dated November 18, 1985

- 3.08 Specifications and Reports, Rev. 7 dated November 1, 1985

- 3.09 Design Review to Determine Conformance to Regulation

- 3.11 Calculation Method for Determining Component Lifetime in Event of Excess Drywell Temperature

- 4.01 Procurement of Items and/or Services, Rev. 10 dated April 4, 1985

- 6.03 Maintaining the Environmental Qualification Master List, Rev. 1 dated November 29, 1985

- 17.02 Disposition of Quality Assurance Records and Departmental Correspondence, Rev. 4 dated November 26, 1985

- 20.01 Glossary Terms and Definitions

NED Work Instructions:

- NEDWI #271 Preparation of Environmental Qualification Master List, Rev. 0 dated March 8, 1983

- NEDWI #277 Preparing Justifications for Continued Operations for Environmental Qualification, Rev. 1 dated May 6, 1984

- NEDWI #278 Preparing Equipment Qualification Evaluation Sheets, Rev. 2 dated July 19, 1985

- NEDWI #279 Incorporating Environmental Qualification Requirements into Procurement Documents, Rev. 0 dated May 1, 1984

- NEDWI #280 Review of Vendor Test Reports and Qualification Reports for Environmental Qualification, Rev. 1 dated May 1, 1985

- NEDWI #281 Performing Record Search/Walkdown Verification for Environmental Qualification, Rev. 0 dated May 1, 1984

- NEDWI #284 Resolution of Outstanding Items, Rev. 0 dated May 1, 1984

- NEDWI #285 Review of Maintenance Requests for Equipment Qualification, Rev. 0 dated May 1, 1984

- NEDWI #310 Preparing, Maintaining and Updating Documentation Files, Rev. 0 dated November 6, 1985

NOD (Station) Procedures:

- 1.3.24 Failure and Malfunction Reports, Rev. 11 dated February 6, 1985
- 1.3.31 Procurement of Items and Services, Rev. 0 dated November 13, 1985
- 1.5.3 Maintenance Requests, Rev. 16 dated March 4, 1983
- 1.8 Master Surveillance Tracking Program, Rev. 4 dated August 8, 1984
- 1.8.2 PM Tracking Program, Rev. 1 dated June 8, 1983
- NOP 8305 Regulatory Communication and Commitment Control process

The NRC inspectors were also given a well-prepared presentation describing the licensee's EQ program on December 9 and 10, 1985 during which the above procedures and work instructions were discussed.

The licensee's program was reviewed to verify that adequate procedures and controls had been established to meet the requirements of 10 CFR 50.49. Areas of the program reviewed included methods and their effectiveness for:

(a) Requiring all equipment that is located in harsh environments and is within the scope of 10 CFR 50.49 to be included on the list of equipment requiring qualification (EQ Master List).

(b) Controlling the generation, maintenance, and distribution of the EQ Master List.

(c) Defining and differentiating between mild and harsh environments.

(d) Establishing harsh environmental conditions at the location of equipment through engineering analysis and evaluation.

(e) Establishing and maintaining a file of plant conditions.

(f) Establishing, evaluating, and maintaining EQ documentation.

(g) Training personnel in the environmental qualification of equipment.

(h) Controlling plant modifications such as installation of new and replacement equipment, and providing for updating replacement equipment to 10 CFR 50.49 criteria.

The NRC inspectors identified one concern regarding procedural control of changes to the EQ documentation. NEDWI #310 Section 6.1.2 states that the master EQ Evaluation Sheet is considered a "working copy" and will contain "white-out," correction tape, erasures, etc; the record copy used for documenting qualification is a copy of the master and is to be considered the original. The inspectors did observe such changes in documents presented for review. Paragraph 17.3.5 of the BECO Quality Assurance Manual states, in part: "...Quality Assurance records are corrected or supplemented according to procedures which provide for appropriate review of approval...the correction or supplement includes the date and identification of the person authorized to issue such corrections or supplements." The licensee agreed to change procedures to be consistent with the QA Manual and to review the EQ documentation and correct as necessary. A future NRC inspection will verify that these actions are taken. Documentation revisions constitute Open Item 50-293/85-35-3.

NEDWI #279 described steps for incorporating EQ requirements into the procurement documents. Attachment 3 of NEDWI #279 provided a flow chart for equipment replacement, upgrading EQ requirements from DOR Guidelines to 10 CFR 50.49. Station procedure NOD 1.3.31 implements these requirements. The inspectors reviewed these procedures and concluded that they contain sufficient information to implement 10 CFR 50.49 requirements in the licensee's procurement activities.

The inspector discussed with the licensee the organizational structure for both corporate and site concerning QA/QC activities involving EQ. The Nuclear Quality Assurance Manager directs QA/QC activities at the site and corporate. The Quality Engineering Group Leader and the Audit Group Leader are located in Braintree. The site contains on-site auditors and the Operations Quality Control group leader. This group leader is directly responsible for the Quality Control Engineering personnel involved in reviewing Field Change Packages (FCP's) and Maintenance Requests (MR's), both EQ and non EQ related. The inspector verified that the QC Engineers are certified to ANSI N45.2.6-78 in accordance with established requirements.

In addition to discussing with the licensee the role of the QC Engineers, the inspector reviewed the following Equipment Qualification audit reports and their associated checklists:

- Audit Report No. 84-48 "Equipment Qualification," conducted December 21, 1984 through January 11, 1985.

- Audit Report No. 85-11 "Equipment Qualification Program," conducted April 29 through May 17, 1985.

Both audits encompassed selected portions of the Equipment Qualification program implemented by BECO including:

- Preparation and maintenance of a Master List of equipment important to safety.

- Identification of service data requirements of affected equipment.

- Documentation of environmental qualification for qualified equipment.

- Justification for Continued Operation (JCO) for qualification pending further action or additional documentation.

- Documentation, reporting, and disposition of equipment for which the JCO has been evaluated and determined to be unacceptable.

- Identification of maintenance requirements and establishment of a program to implement these requirements.

- Procedures and instructions which implement BECO Equipment Qualification commitments.

- Completed Equipment Qualification files including backup documentation.

- Maintenance and plant modification activities which impact Equipment Qualification status.

The inspector concluded that the audits were timely and thorough in determining compliance to 10 CFR 50.49, the auditors involved were knowledgeable of the EQ requirements, and the checklists were very detailed.

The inspector interviewed corporate and site personnel concerning the depth to which individuals were trained in accordance with 10 CFR 50.49 requirements. Documents reviewed by the inspector included:

- Nuclear Policy Manual, Policy No. 5, "Nuclear Training Policy"

- NED Procedure 2.03, "Indoctrination and Training Program"

- NOP 1.3.14, "Indoctrination and Training"

- NMSP Procedure 2.01, "Indoctrination and Training"

- QAD Procedure 2.02, "Indoctrination and Training"

Discussions with the licensee revealed that BECO sent personnel involved directly or indirectly in the Environmental Qualification process to various IEEE EQ seminars beginning with the first one. These sessions covered various IEEE standards dealing with the qualification of Class 1E equipment necessary to function in DBE conditions. In addition, BECO personnel attended two EPRI seminars, one dealing with EQ; the other, plant maintenance. Further, the inspector was given objective evidence that 90 licensee personnel (QA, QC, maintenance, stores, nuclear operations, NED, etc.) were

given formal two to three day plant-specific EQ training by Wyle Laboratories and BECO personnel in March and April, 1985. Ongoing EQ training will continue in accordance with the policy and procedures listed above.

The NRC inspectors concluded that with the exception of the Open Item cited above, the licensee has implemented a well planned and thoroughly documented EQ program meeting the requirements of 10 CFR 50.49.

B. EQ Maintenance Program

The NRC inspectors reviewed the licensee's provision for preserving the qualified status of equipment qualified to 10 CFR 50.49. The EQ Documentation Files described in Section 4.D below include EQ Evaluation Sheets which identify required maintenance. Paragraph 7.10 of NOP 84A9 requires incorporation of these requirements into the Pilgrim Qualification Maintenance Program (QMP). The inspectors reviewed the NOD procedures listed in section 4.A above, which cover implementation of the EQ requirements in the QMP. The QMP is administered by NOD, and includes replacement parts procurement, handling and storage, installation and replacement, and QA verification. The QMP also includes tracking provisions to ensure that specific activities are performed within scheduled time spans.

The licensee prepares an EQ Process Checklist for each type of equipment, based on reviewing the applicable Documentation File. The EQ Process Checklist includes information such as the following:

- Equipment identification, specification, vendor manual, qualification level, etc.

- Parts requiring maintenance, activity, and frequency

- Applicable procedure identification

- Parts procurement information such as availability, shelf life, and documentation

A separate EQ maintenance procedure is prepared for each Process Checklist. The Checklist is also used for tracking. The licensee stated that as of December 12, 1985 all of the 72 required component-specific procedures were written. Thirty-five were issued as of that date; the remainder were in review and were expected to be issued within one month. On an interim basis pending issue of the remaining component-specific procedures, maintenance for the affected components is performed by directly using the information in the EQ Evaluation Sheets and Process Checklists.

The inspectors selected the following equipment-specific maintenance procedures for review:

- NOD Procedure No. 8.E.65-2 "Torus Water Level Monitoring System Calibration" in draft form, not yet approved.

- NOD Procedure No. 8.Q.2-1 "Recirculation Water Sample Solenoid Valve EQ Repair" in draft form, not yet approved.

- NOD Procedure No. 8.Q.3-2 "RHR/Core Spray Pump Motor EQ Maintenance and Monitoring," in draft form, not yet approved.

- NOD Procedure No. 8.Q.3-5 "Namco Limit Switch EQ Repair," in draft form, not yet approved.

The inspectors found that these procedures adequately addressed the required maintenance activities. Maintenance records for certain equipment types were also reviewed by the inspectors with no concerns identified. The inspectors found the Pilgrim program for preserving equipment qualification to be acceptable, including the interim treatment of component-specific maintenance procedures, subject to verification of the concerns addressed in the following Open Item.

The inspectors noted that when reviewing Maintenance Requests to determine whether they are safety-related, the maintenance engineer had only oral instructions to compare with the EQ Master List. In response to the inspectors' concern, on December 12, 1985 the chief maintenance engineer issued an office memorandum stating that NOD 1.5.3

> "...presently requires the "Staff Engineer" to identify the work scope when processing the individual Maintenance Requests. Although the present procedure only references the Q-List, it is implicit within this assigned responsibility that the applicable requirements (including EQ) are to be addressed."
>
> "To clarify the present administrative direction, each individual staffing a Maintenance Request will determine if the activity is EQ-related and, if it is, will include the appropriate technical requirements within the defined work scope."

A future NRC inspection will verify that (1) these changes are incorporated into maintenance request procedure NOD 1.5.3 and (2) that the remaining EQ component maintenance procedures have been issued. Completion of maintenance procedures constitutes Open Item 50-293/85-35-4.

C. EQ Master List

The licensee is required to maintain an up-to-date list of the equipment that must be qualified under 10 CFR 50.49. This list is

entitled "Pilgrim Nuclear Power Station Environmental Qualification Master List," revision 7, dated November 1, 1985. Considered in the preparation of this list are environmental effects resulting from all postulated design-basis accidents documented in the licensee's Final Safety Analysis Report, locations within the plant subject to a harsh post-accident environment, technical specification limiting conditions for operation, emergency operating procedures, Piping and Instrumentation Diagrams, and whether electrical power is required for operation of the equipment. The EQ Master List was produced as defined in NEDWI #277 and is maintained per NED procedure 6.03. These procedures were reviewed and determined to provide suitable guidance.

The inspectors selected nine items as an audit sample to verify the completeness of the current EQ Master List. In order to compile this audit sample, a review was conducted of the following Emergency Operating Procedures (EOPs) and Piping and Instrument Diagrams (P&IDs).

Emergency Operating Procedures

EOP-01, RPV Level and Pressure, Rev. 1, dated July 29, 1985
EOP-03, RPV Level Restoration, Rev. 1, dated August 21, 1985
EOP-04, Primary Containment Control, Temperature, Rev. 1, dated July 29, 1985
EOP-05, Primary Containment Control, Pressure, Rev. 1, dated July 29, 2985
EOP-06, Primary Containment Control, level, Rev. 0, dated March 15, 1985

P&IDs

M-207 Rev. E9, sheet 1, June 29, 1984 "Condensate & Feedwater System"
M-207 Rev. E7, sheet 2, January 3, 1985 "Condensate & Feedwater System"
M-241 Rev. E12, sheet 1, March 22, 1985 "Residual Heat Removal System"
M-242 Rev. E8, December 14, 1984 "Core Spray System"
M-252 Rev. E8, sheet 1, September 4, 1985 "Nuclear Boiler"

The audit sample was selected to verify that those items required to be on the Master List were in fact on the list. The sample also included an item required for implementation of R.G. 1.97 (torus water level).

The inspector concluded, based on this review, that the licensee's EQ Master List is satisfactory.

D. Environmental Qualification Files

The Pilgrim EQ Documentation Files are divided into two parts, the EQ Master Reference File (MRF) and the EQ Data Files (EQDF). The MRF contains documentation that is used as the basis for qualifying components: test procedures, test reports, analyses, Qualification Verification Reports, etc. The EQDF documents the qualification of equipment identified in the EQ Master List. The EQDF is indexed by individual component identification numbers or generic equipment types. Individual EQDFs document component qualification by information contained in the EQDF and by referencing information in the MRF or other NED records.

Each EQDF contains the following:

- An EQ Evaluation Sheet, a multi-page form whose first sheet is a modified IEB 79-01B SCEW sheet and which provides a detailed summary of the qualification, including maintenance requirements

- A walkdown record and/or record search report, as appropriate

- Optional material as available, such as maintenance requests, Wyle review and analysis documentation such as Qualified Life and Caveats sheet, Certificates of Compliance, etc.

- A cover sheet with the equipment ID number(s), an index of the EQDF contents, and applicable signatures

The NRC inspectors examined files for 20 equipment items, where an item is defined as a specific type of electrical equipment, designated by manufacturer and model, which is representative of all identical equipment in a plant area exposed to the same environmental service conditions. The items were selected in advance by the inspection team and identified to the licensee during the entrance meeting.

The files were examined to verify the qualified status of equipment within the scope of 10 CFR 50.49. In addition to comparing plant service conditions with qualification test conditions and verifying the bases for these conditions, the inspectors selectively reviewed areas such as required post-accident operating time compared to the duration of time the equipment has been demonstrated to be qualified; similarity of tested equipment to that installed in the plant (e.g., insulation class, materials of components of the equipment, tested configuration compared to installed configuration, and documentation of both); evaluation of adequacy of test conditions; aging calculations for qualified life and replacement interval determination; effects of decreases in insulation resistance on equipment performance; adequacy of demonstrated accuracy; evaluation of test anomalies; and applicability of EQ problems reported in IE INs/Bulletins and their resolution.

The files adequately documented qualification of the equipment except as described below. The files were readily auditable and with the exceptions described below were complete and accurate. No generic documentation deficiencies were found.

(1) Barton 288A main steam flow switches, ID #DPIS 261-2A through 2S - Earlier in 1985 BECO modified 16 Barton 278 flow switches to become model 288A flow switches, and prepared EQDFs for the modified switches. During November and early December, 1985, as many as 11 of the modified flow switches were found to exhibit setpoint drifts approaching plant Tech Spec. limits. This inspection report addresses the EQ aspects of these modified flow switches. The non-EQ aspects have been addressed separately by the NRC.

The model 278 flow switch consisted of a model 224 differential pressure sensing unit and a mercury switch transducer unit. The conversion performed by BECO replaced the mercury switch unit with a snap action switch unit. BECO used Barton repair procedures to perform the modification, and in response to questioning by the NRC inspectors obtained a letter from Barton dated December 12, 1985 which states that "a skilled Instrument Technician can successfully install and calibrate" the replacement switches using the manual instructions provided by Barton. BECO also documented a comparison between the Barton manual procedures and the procedure written by BECO for the modification, showing equivalence. For environmental qualification purposes the inspectors concluded that similarity between the modified plant equipment and the type test specimen was adequately established under the DOR Guidelines, and the setpoint drift was not caused by a basic difference in the design or materials of construction.

The inspectors did determine that the EQDF did not demonstrate sufficient setpoint accuracy to meet the Tech Spec requirement of ±2%; in fact, the type test unit showed approximately ±5% of full scale error for the main steam line break (MSLB) environmental conditions specified in the EQDF. The EQES shows a temperature increase of 156.5F, to a peak of 246.5F. In response to this concern, which was identified late by the inspection, the licensee provided evidence indicating that the specified environment was overly severe. Specifically, the flow switches are located on a balcony in RCIC compartment No. 3, far from the MSLBs addressed in Bechtel analyses PBOC-7 (condenser bay) and PBOC-8 (steam tunnel). PBOC-7 does not model the flow switch location, and PBOC-8 models it only short

term, showing a 5.9F increase in 2.46 seconds. The test specimen had no accuracy problems for such conditions. The EQES shows a required operating time of 61 minutes, whereas the actual time of operation is about 0.5 seconds. Considering this additional input from BECO, received just before and after the exit meeting, the inspectors conclude that the files did not demonstrate qualification of these flow switches because of the accuracy concern, but that the licensee could readily correct the documentation.

The inspectors also noted that Rev. 2 of the EQES states with proper justification that a previously imposed 15 year O-ring life limitation could be removed, but the qualification maintenance document and maintenance requirement summary sheet were not changed accordingly. During revision of the EQDF to correctly specify accuracy and environmental conditions, this discrepancy should also be corrected. Barton 288A main steam flow switches constitutes Potential Enforcement/Unresolved Item 50-293/85-35-01.

(2) General Electric EB-25 terminal blocks, file C158 - These terminal blocks are used in panel C158. The basis for qualification was a report on terminal blocks for use in Limitorque valve operators. This report cited insulation resistance measurements as low as 500 ohms during the test of an EB-5 terminal block subjected to a more severe environment. Similarity was adequately established between the EB-5 and EB-25 terminal blocks, but the effect of low insulation resistances on the performance in the plant's 4-20 mA circuit was not covered in the file. Discussions with utility personnel indicated that they also based the EB-25 qualification on an Electroswitch control switch test report for switches located in the same panel as the terminal blocks and tested to the environment of the panel. This report showed negligible leakage currents between the contacts of the phenolic switch when connected in an actual 4-20 mA pressure transmitter circuit, and thus it could be used to establish terminal block suitability for the plant environment. However, the Electroswitch report was not referenced in the terminal block qualification nor was applicability or similarity of the report established for use with EB-25 terminal blocks. After further discussions with BECO personnel, they decided to reference a separate report and do further analysis to cover terminal block qualification. Brief review of the modified file revealed no problems. General Electric EB-25 terminal block constitutes Potential Enforcement/Unresolved Item 50-293/85-35-2.

(3) File corrections - Three files contained relatively minor discrepancies that are grouped into a single Open Item.

(a) Yarway level indicating switches LIS263-57A et al - This file was assembled shortly before the inspection, and covers equipment whose qualification deadline was extended until November 30, 1985 based on acceptable JCO. It lacks a note relating the tested and installed terminal blocks.

(b) Fenwal temperature switches TSW-1A, 1B - This file was also assembled shortly before the inspection under a November 30 deadline. Note 10 of the EQES requires modification to clarify that it refers to the snap action switch and not the terminal block. The Isomedix certificate of testing is also lacking.

(c) Static-O-Ring pressure switch, ID #PS-1360-9B - Shortly before the exit meeting the inspectors noted that a hand calculation contained a temperature written as "105 C" which did not correspond to the Kelvin temperature subsequently used in an Arrhenius calculation. The effect of this error would be to significantly overestimate the qualified life of the component. Subsequent to the inspection the licensee advised that the calculation was indeed correct; the engineer had erred by transposing two digits in writing "150 C," a number which appeared in an earlier stage of the calculation.

A future NRC inspection will verify that these changes are incorporated into the files. File corrections constitutes Open Item 50-293/85-35-5.

(4) IE Information Notices (IN) and Bulletins - The NRC inspectors reviewed and evaluated the licensee's activities concerning the review of EQ-related IE INs and Bulletins. The inspectors' review included examination of procedures and EQ documentation packages relative to Information Notices and Bulletins. The procedures review determined that the licensee does have a system for distributing, reviewing, and evaluating INs and Bulletins relative to equipment within the scope of 10 CFR 50.49, and that the INs and Bulletins are addressed in appropriate component EQ files as described above. During the review of individual component qualification files the NRC inspectors evaluated the licensee's actions with respect to INs and Bulletins. The inspectors particularly examined BECO's actions with regard to existing and forthcoming INs involving Limitorque operators. These actions included upgrading all qualifications to NUREG 0588 Cat. I; replacing all internal wiring with wires known to be qualified and by means of procedures that establish traceability; and identifying all operator motors with magnesium rotors and verifying that qualification is based on appropriate test specimens. No concerns were identified during this review.

E. PLANT PHYSICAL INSPECTION

The NRC inspectors, with component accessibility input from licensee personnel, established a list of eleven component types for physical inspection. All were accessible at the time of inspection. The inspectors examined characteristics such as mounting configuration, orientation, interfaces, model number, ambient environment, and physical condition. No concerns were noted during the walkdown inspection.