U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-293/88-23

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 Plymouth, Massachusetts

Inspection Conducted: June 20-30, 1988

Inspectors: T. Koshy, Lead Reactor Engineer — 8-19-88 date

For J. F. Lara, Reactor Engineer — 8-19-88 date

Approved by: C. J. Anderson, Chief, Plant Systems Section — 8/23/88 date

Inspection Summary: This was an announced inspection to review the licensee corrective actions in response to Information Notice 86-03 regarding the unqualified internal wiring in Limitorque valves and Information Notice No. 86-53 which addressed the improper installation of Raychem Heat Shrink tubing. This inspection also looked at some electrical open items.

Results: The licensee corrective action to address the qualifications of Limitorque internal wiring was insufficient in that the inspectors observed three unidentifiable wires in valves located inside the containment. See Section 4 for details. The licensee developed additional test data for supporting the qualification of Raychem Heat Shrink Tubing installations. Section 6 of this report documents the licensee response to previously identified violations and unresolved items.

The presence of unidentifiable wires in the environmentally qualified motor operated valves indicate a weakness in maintenance and quality control activities.

DETAILS

1.0 Persons Contacted

1.1 Boston Edison Company (BECo)

*M. Andrews, Sr. QC Engineer
J. Coughlin, Principal Electrical Engineer
S. Das, Sr. Electrical Engineer
S. Dasgupta, I&C Division Manager
N. Eisenmann, Sp. I&C Engineer
R. Fairbank, Design Section Manager
*F. Famular, QA Manager
D. W. Gerlits, Safety and Systems Analysis Engineer
*R. R. Grammont, Maintenance
*R. E. Grazio, Regulatory Affairs Section Manager
*P. Hamilton, Compliance Division Manager
*K. L. Highfill, Station Director
E. J. Janus, Sr. Electrical Engineer, Nuclear Engineering Department
R. L. Kirven, Electrical Engineering Supervisor, Nuclear Engineering Department
*F. J. Mogolesko, Environmental Qualification Project Manager
*A. V. Morici, Acting Planning and Outage Department Manager
K. T. O'Donnell, Electrical Maintenance Engineer
J. Pawlak, Principal Electrical Engineer, Nuclear Engineering Department
L. Perfetti, Electrical Engineer, Nuclear Engineering Department
*J. E. Peters, Electrical Division Manager
B. Rancourt, Sr. I&C Engineer
*J. A. Seery, Technical Section Manager
R. N. Swanson, Nuclear Engineering Manager
T. Tracy, Civil Structure Division Manager
*T. A. Venkataraman, Sr. QA Engineer
*R. Whetsel, Sr. Compliance Engineer
V. Zukauskas, Principal Structural Engineer

1.2 U.S. Nuclear Regulatory Commission (NRC)

T. J. Kim, Resident Inspector
J. J. Lyash, Resident Inspector
C. Warren, Senior Resident Inspector

*Present at the exit meeting on June 30, 1988.

2.0 Purpose

The purpose of the inspection was to review the following items.

- The environmental qualification of internal wiring utilized in the Limitorque motor operated valves (MOVs) that are required to perform safety functions in a harsh environment.
- The installation of Raychem heat shrinkable tubing on safety related cable splices.
- Electrical and Equipment Qualification open items.

3.0 Background

On September 30, 1985 Commonwealth Edison reported to the NRC that it discovered four Limitorque operators with jumper wires different from those tested by Limitorque in their environmental qualification program. Subsequent to this finding, several licensees identified similar problems. That led to the issuance of Information Notice No. 86-03 which promulgated the need for establishing the qualification of Limitorque internal wiring.

On May 14, 1986 the licensee for Davis Besse plant reported that terminations and splices using heat shrinkable tubing were not done according to the manufacturer's instructions in that the installed configuration placed the plant in an unanalyzed condition. Typical discrepancies included improper diameter of the tubing and, improper overlap of the heat shrinkable tubing (HST). Discrepancies of this nature were observed at various plants. As a result NRC issued Information Notice No. 86-53.

4.0 Limitorque MOV Wiring (TI 2515/75)

The licensee inspected all MOVs covered under the EQ program to determine if the internal wiring was environmentally qualified. The licensee document PDC 84-60 addressed the inspection and upgrade of the MOV wiring. The inspectors reviewed the checklist and the work instructions contained in the above document. The document identified the acceptable wires and also several other aspects of Limitorque MOVs which are critical for maintaining the equipment qualification. The team selected the following seven, from a total of seventy MOVs covered in the environmental qualification (EQ) program. The first two MOVs were selected from the valves inside containment.

MO-202-5A
MO-202-5B
MO-1001-28A
MO-1001-43A
MO-1001-43C
MO-2301-10
MO-2301-33

All but two valves contained identifiable Rockbestos SIS or General Electric Vulkene Supreme wires. Valves MO-202-5A and MO-202-5B contained wires which could not be identified. The inspectors noticed a red jumper wire on the terminal block inside the Limitorque compartment of MO-202-5A. It was the only red wire and it did not have any identifiable markings on it. The licensee presented a QC Verification Checklist dated November 2, 1984. It refers to the following documents which trace the wire to be Gauge 12 SIS GE Vulkene.

- E-928 Material Receiving Instruction dated June 7, 1984
- 82-027.1 Material Receiving Report for Purchase Order FN-4050Q dated September 18, 1984
- General Electric Certificate of Compliance dated February 14, 1985 for Customer Order FN-4050Q

In MOV MO-202-5B the inspectors observed two types of unidentifiable wires inside the Limitorque compartment. One was a grey wire with a red line used as a jumper on the terminal block, the other was a white wire connected between the limit switches. The licensee presented the following document to establish the origin of the wire.

- 84-060-04-E-002 QC Verification Checklist dated November 2, 1984

However, this document traced the wire to be a GE Vulkene Supreme red wire. The field installation was a grey wire with a red line on it. This raised some questions regarding the adequacy of QC inspection. The licensee generated PCAQ NED 88-085 to address this concern. The licensee believes that the white wires on the limit switches were installed by the manufacturer, Limitorque. The licensee initiated a 10 CFR Part 21 review to address the extent of the problem and to evaluate this issue for reportability to the NRC.

The licensee had replaced several MOV assemblies under PDC 84-16 in the current plant outage. Only a few of those new assemblies were inspected for Environmental Qualification requirements, as there were no discrepancies identified in the first batch inspected. In the light of the concerns identified during this inspection, the licensee committed to complete the walkdown of all new MOVs for any potential EQ concerns, before restart.

Subsequent to the inspection, the licensee inspection revealed a few more instances of unqualified wiring in MOVs. The licensee review concluded that some of the wires are qualifiable. The presence of unidentifiable wiring in the MOVs that are covered under the EQ program is an unresolved item pending the licensee evaluation of the causes of the discrepancy and the corrective action. (50-293/88-23-01)

5.0 Raychem Heat Shrinkable Tubing Installation (TI2500/17)

In response to the NRC Information Notice 86-53, Improper Installation of Heat Shrinkable Tubing, the licensee issued a "Potential Condition Adverse to Quality Report." This report contained a preliminary evaluation that recognized some concerns on the subject installations at Pilgrim Station. PNPS conducted a field inspection of a sample of installations in order to document the most limiting configurations to be addressed. The sample size chosen was equal to or greater than that specified in standard, Sampling Procedures and Tables for Inspection By Attributes MIL-STD-105D. The selected samples were inspected to document acceptable configurations that can be tested to establish qualification. The test samples were then made with a bend to crease and were subjected to equipment qualification tests. This test establishes qualification of Raychem splices with ½" seal length for Gauge 14 and 16 cable sizes. The other cable sizes were tested with a one inch seal length.

Based on the licensee's acceptance criteria as supported by the qualification data, the NRC inspectors reviewed the following selected installations.

Safety Related Penetration Q106B (approximately 20 power and control splices)

- MO-202-5A MOV
- MO-1001-63 MOV
- J208 Junction Box
- J456 Standby Gas treatment splice box
- J177 Standby Gas treatment splice box
- 10-DPIS-261-12C Pressure Switch for Low Pressure Injection
- 2-PS-1001-104A Pressure Switch
- 2-PS-1001-93A Pressure Switch

The NRC inspectors walked down the above installations for the following attributes.

- Seal length of ½ inch to 1 inch per the licensee qualification data

- Use of proper size HST

- improper or inadequate shrinking of HST

- Use of HST over unqualified surfaces such as braided jackets
- Appropriate use of shims

Based on the records verified and the samples inspected, no discrepancies were observed. The licensee has developed Procedure No. 3.M.3-17.1 "Field splice, Repair, and Sealing of Safety Related Cables (1000V and Under) Raychem WCSF-N Sleeve NPK, NPKV, NMCK, NCBK and NESK kits Installation". The inspectors reviewed this procedure for the inclusion of the manufacturer's requirements.

No violations or deviations were identified.

6.0 Status of Previously Identified Items

6.1 (Update) Violation (88-08-01) Failure to Perform Periodic Calibration/Testing of DC Circuit Breakers: This violation pertains to the failure of the licensee to perform periodic calibration/testing of DC circuit breakers as required by PNPS Technical Specification 6.8A. Periodic testing of these Class 1E breakers is specified to ensure that they will perform their safety function when called upon.

The inspector reviewed BECo Nuclear Engineering Department's (NED) analysis addressing the untested breakers. The Pilgrim Unit 1 Report 88XE-1ER-Q, "Analysis of 125V and 250V DC System Molded Case Circuit Breaker Maintenance and Testing" documented the analysis and methodology used to develop a testing program for a representative sample of all types of safety-related DC breakers installed at PNPS. Testing includes breakers of varying ratings and types. A sample of 44 breakers will be tested. The inspector verified that all types of breakers were considered for testing and reviewed NED's method of choosing the sample to be tested.

The inspector reviewed in detail the technical analysis and basis used to document the breaker testing program. Independent calculations revealed no discrepancies in the NED acceptance criteria with respect to the guidelines presented in NEMA Standard AB 2-1984, "Procedures for Field Inspection and Performance Verification of Molded Case Circuit Breakers Used in Commercial and Industrial Applications".

The breaker acceptance criteria was incorporated into PNPS procedure 8.Q.3-4, "125/250 VDC Motor Control Center Testing and Maintenance", Revision 5. The procedure provides maintenance personnel with requirements for periodic testing and maintenance of 125/250 VDC Motor Control Centers.

Upon conclusion of this inspection period, the licensee had completed testing 23 of the 44 DC breakers. The remaining breakers not yet tested are being tracked and scheduled for completion prior to restart. Upon completion, NED will review the results to evaluate breaker performance. If all the breakers pass the acceptance criteria, long-term testing will be scheduled for the entire population of Class 1E DC breakers. However, if any type of the breakers fail the criteria, all breakers of that type in the entire population will be tested before restart.

Test results and analyses will be provided to the NRC for review prior to restart. The licensee has committed to develop and implement a long-term DC breaker surveillance testing program. The program will include the type and frequency of testing to be performed. The licensee committed to implement this program by October 1, 1988. Pending NRC review of the test results, this issue will remain open.

6.2 (Closed) Violation (88-08-02) Inadequate Battery Maintenance: During a previous special team inspection of the electrical power systems, NRC inspectors identified examples of inadequate battery maintenance and procedures. Examples of corrosion by-products were observed on various battery terminals of the 125 VDC Control and 250 VDC power batteries. Licensee procedures did not include criteria for removal of corrosion by-products, spacing between battery cells and seismic support racks, and verifying the torquing of battery connections.

The NRC inspector reviewed the licensee's response to the notice of violation during this inspection. The review revealed a revision of the following procedures:

- 8.C.14, "Weekly Pilot Cell, Overall Battery Check and Battery Charger Test", Revision 23

- 8.C.16, "Quarterly Battery Cell Surveillance", Revision 15

These procedures include battery surveillance criteria and requirements of PNPS Technical Specification sections 4.9.A.2.a and 4.9.A.2.b. These sections specify the weekly and quarterly battery surveillance requirements.

Requirements for the inspection of corrosion by-products on battery terminals, battery cells and seismic support racks spacing, and verification of proper terminal torque values are now incorporated into a newly issued PNPS Plant Maintenance Procedure 3.M.3-25.1, "Periodic Battery Inspections", Revision 0.

The inspectors inspected three battery banks for cleanliness and proper maintenance. Three separate cell terminals exibited varying degrees cf corrosion on battery "B" (DZ). Review of the licensee's Maintenance Request (MR) log book indicated that several MRs were written to

specifically clean the identified battery cell terminals which showed sign of corrosion by-products. Inadequate cleaning and inspection for the past several years has made all the battery terminals very susceptive to corrosion. The inspector concluded that the issued MRs provided only temporary and not long-term solution to the problem of corrosion by-products. This lack of maintenance for all battery cells could in the long run cause insufficient charging due to poor terminal contact. The licensee agreed with the inspector that unless all battery terminals and bolted connections were completely cleaned and adequately maintained at the same time, corrosion by-products would be a recurring problem. The licensee committed to completely clean and apply the protective wax on all battery banks prior to restart.

Based on these actions, this violation is considered closed.

6.3 (Closed) Unresolved Item (88-08-05) Low Setpoints of Degraded Grid Voltage Relays: This item pertains to degraded grid voltage relay setpoints being set too low to ensure minimum required voltages at safety-related loads during a degraded grid scenario. On January 30, 1988 the licensee reported to the NRC that the degraded grid voltage protection system setpoints were set too low. The licensee committed to complete a detailed review analysis of the Electrical Distribution System to address low relay setpoints and recommend corrective action.

BECo's Nuclear Engineering Department (NED) performed the review analysis of the Electrical Distribution System. NED's Power Systems Group Study on load flow and voltage conditions of PNPS Auxiliary Power Distribution System resulted in various modifications within the electrical systems. The study included new alarm and trip setpoints for the degraded grid voltage protection system. Based on these setpoints, the minimum acceptable switchyard voltage had to be revised. In addition, to reduce voltage drops within the distribution system under LOCA conditions, certain loads will be shed from the safety bus. To further assure proper voltage levels at loads, RHR and CS pump starting logic will be modified to add a time delay before any automatic start. Additional alarms will also be installed to provide operators with additional information on the status of load shed relays. Within the scope of the study results, specific non-safety loads will be relocated from safety busses to non-safety busses. Results of the NED study indicate that these modifications will provide greater assurance that all safety-related equipment will have adequate voltage for proper and safe operation during all modes of operation.

During this inspection period, the NRC inspectors held various discussions with NED staff members. An in-depth review of NED's voltage study was performed. Modifications resulting from the study are documented in PDC 88-07. Results of the study, scope of modifications, and inspector observations are described below.

A. Degraded Grid Protection Setpoints for Alarm and Trip Relays: PNPS is connected to the New England power grid through a 345 KV ring bus. Rhode Island Eastern Massachusetts Vermont Energy Control (REMVEC) monitors and assures that PNPS receives adequate power to be distributed throughout the station. REMVEC presently has procedures in place to provide a minimum of 330 KV at the PNPS switchyard. Results of the group study on load flow and voltage conditions revealed that the present 330 KV minimum required grid voltage would not ensure adequate voltage for all safety-related loads under all operating conditions. Therefore, BECo has requested REMVEC to revise their operating procedures to provide a minimum of 340 KV to PNPS. REMVEC will notify PNPS if the new minimum acceptable voltage cannot be maintained and thus allow PNPS to prepare for necessary actions.

Based on the new minimum acceptable switchyard voltage, modifications were made to the degraded voltage alarm and trip relay setpoints. New relays are being installed to support the voltage range required by the new setpoints. These new relays, ITE-27N Undervoltage Relay, have higher accuracy and response characteristics. Accordingly, trip relays now have a trip setpoint of 3868V, as opposed to the previous setpoint of 3745V. Alarm relays are now set at 3959V, as opposed to the previous setpoint 3850V. These setpoints are applicable to both Class 1E 4.16KV busses A5 and A6.

The new trip setpoints correspond to an MCC voltage of 437V at MCC busses B14 or B15 under worst case conditions. This condition results in a margin of 7V above the minimum required MCC voltage of 430V. However, it should be noted that the worst case MCC voltage of 437V ocurrs at a switchyard voltage of 337KV which is below the minimum acceptable voltage of 340 KV. All other MCCs have a greater voltage margin.

The inspector reviewed BECo calculations PS-67 and PS-68 which provide the analysis performed to determine the new trip and alarm setpoints. No deficiencies were identified.

B. Modification of Emergency Diesel Generator Load Shedding Logic: This modification initiates load shedding under LOCA conditions coincident with the safety related busses being supplied by the

Startup Transformer. However, the load shedding logic will be initiated only if the 4.16KV bus voltage is at or below the alarm relay setpoint of 3959V for a duration greater than the time delay of 9.2 seconds. Loads to be stripped from the bus are only those loads which are not required to mitigate the consequences of an accident. These load shedding logic changes ensure that, when in any degraded voltage condition, sufficient voltage is available to all safety-related loads.

Other logic modifications include the removal of the Feedwater Pump auxiliary oil pumps from the load shedding logic. These pumps will not be stripped from the 4.16KV busses. This will allow the plant operator to restart the pumps if needed.

C. Modification of RHR and CS Pump Starting Logic: This modification ensures that, under LOCA conditions, adequate power is available for all required equipment and loads during load starting transients. Pump starting logic for RHR and CS pumps will be modified so that for any automatic pump start, time delays will be imposed when safety busses are being supplied by the startup transformer. The time delay is the same that exists when the emergency diesel generator or the shutdown transformer are supplying the Class 1E 4.16KV busses. Specifically, CS pumps will have a 1/3 second delay for any automatic start. RHR pumps A and B will have a 5 second delay while RHR pumps C and D will have a 10 second delay for any automatic start.

D. Additional Load Shedding Alarms: This modification provides the operator with additional alarms regarding the status of load shedding relays. Once a LOCA signal is received, alarms alert the operator that load shedding has been initiated. Presently, once the LOCA signal is cleared, these alarms are also cleared. This situation can lead the operator to believe that all load shedding relays are reset and thereby loads can be restarted if needed. However, there are some loads which require manual resetting of their respective load shedding relays. This modification provides for the installation of additional alarms to alert the operator that certain loads are still shed and require manual resetting of their respective relays.

E. Relocation of non-safety loads from safety-busses: This modification, as documented in PDC 88-18, consists of relocating five non-safety loads from safety busses B14 and B15 to non-safety busses B13 and B19B. The loads include plant heating pumps and auxiliary boilers and their associated equipment. Relocating these loads reduces power requirements at the safety busses and thereby improves voltage during all modes of operation.

NED analysis to determine relay setpoints was performed with the aid of a commercial software program called Distribution Analysis for Power Planning, Evaluations and Reporting (DAPPER). Results of NED's DAPPER generated calculations were cross-referenced with those of Stone & Webster's similar main frame program. Numerical results were found to be essentially identical.

During this inspection, the NRC inspector performed an in-depth review of various licensee documents pertaining to proposed degraded grid protection system design changes. These documents were reviewed independently and later discussed with NED staff members. Documents reviewed are listed in Attachment 1. New relay voltage ranges and tolerances were reviewed to verify they supported the voltage study requirements.

BECo is in the process of submitting proposed Technical Specification changes to NRR for review and approval. Technical Specification changes incorporate the design modifications resulting from the load analysis and voltage study.

Based on the information presented to the NRC inspector, this unresolved item is considered closed.

6.4 (Closed) Unresolved Item (86-40-01) Raychem Splices on ECCS Equipment: This item pertains to the motor lead splices performed by General Electric on 5 Kilovolts (KV) motor. During January 1987 the motor lead splices for these pumps were removed to facilitate 10 CFR 50 Appendix R, modifications. During this removal, it was discovered that B and D RHR pump motor splices were improperly installed, some cable insulation damaged and some strands severed.

The licensee initiated an extensive program to reinspect the 5KV splices. The problem was traced to a certain crew that performed the splices. The licensee elected to replace the potentially affected splices with a qualified splice using procedure No. 313 "5KV Cable Splice Replacement" Revision 2. The unqualified splices remained in service only for a short duration when the plant was shutdown. The inspectors reviewed the following documents to verify the adequacy of the corrective action.

- Root cause and corrective action plan 86-192
- Failure and Malfunction Report 86-435
- Maintenance Request 86-10-53

The damaged cable was evaluated by General Electric Company and the recommended corrective actions were taken by the licensee. The licensee has taken measures to increase QC attention on contractor performed services. This item is closed.

6.5 (Closed) Unresolved item (50-293/88-08-04) Solid Fuse Links: This item pertains to the use of solid links instead of fuses in the auto trip circuit of the 4160 volt breakers and the Emergency diesel generator field flashing circuits.

The licensee has elected to use solid links in the auto trip circuit of the 4160 breaker to provide the maximum tripping capability. This circuit carries the current to operate the trip device only and does not carry the fault current. The trip signal from the protection system is generated through remote sensing relays. Moreover, any potential fault on this circuit will be interrupted by a magnetic only circuit breaker. The tripping of this breaker can cause power failure only to one bus that belongs to one train.

The field flashing current is limited to approximately 60% of the no load generator field current. A 2.5 ohm resistor limits this current to approximately 50 amperes and is immediately removed when the field is established. Since this circuit is current limiting and critical for field flashing, the fuse would function to provide only short circuit protection. For greater reliability in establishing the field in the exciter, a solid link is used. The use of a solid link provides an electrically continuous circuit to function without interruption or failure. Short circuit protection for the entire circuit is still provided by the circuit breaker at the distribution panel. The consequences of tripping this circuit breaker, resulting from a short circuit, would be a loss of diesel generator control power to an already inoperable generator due to a failed field flashing circuit. Since each diesel generator is supplied from an electrically and physically independent DC power supply, the tripping of the field flashing circuit breaker will not affect the operability of the second diesel generator.

This item is closed.

6.6 (Closed) Inspector Followup Item (87-53-05 Item #2) Analog Trip System Fuses: This item deals with the blown fuses in the analog trip system during the loss of offsite power event on November 12, 1987.

The licensee investigation discovered that four fuses were blown in the analog trip system (ATI). The failures were in the power supplies of the ATI System. The root cause of the problem is attributed to high inrush current due to repeated energizing and denergizing. The inspector reviewed the trip characteristics of the original fuse FNM KTKR, the fuse supplied by the manufacturer. The licensee replaced this fuse with an MIN type which is very similar to the original fuse. Due to the similarity in characteristics the inspector, agreed with the licensee that the failure could have

happened even with the use of the original fuse. In order to prevent similar fuse failures, BECo has installed a new type of fuse, FNM which provides additional margin to accommodate switching transients. The licensee review of other instrumentation fuses did not reveal any new concerns.

This item is closed.

6.7 (Closed) Violation (87-32-01) Equipment Qualification Environmental Profile in Containment: This pertains to the accident environment profile utilized by the licensee for qualifying safety related equipment located inside the drywell. The qualification requirements for this equipment is addressed in 10 CFR 50.49. As required by this regulation, the licensee did not use the most limiting design basis time dependent temperature profile to qualify the safety related solenoid valve SV-220-44 and cable splice assemblies Q102A, Q102B, Q103A and Q103B. The licensee instead, qualified the equipment to a large break temperature profile which was 30°F lower than the temperature profile for a small break LOCA.

In response to this violation, the licensee developed a composite temperature profile for the drywell environment. This information was submitted to the NRC for review and is currently being reviewed by the office of the Nuclear Reactor Regulation. The profile indicates a peak temperature of 320°F in the initial part of the accident. The licensee stated that all of the equipment was qualified based on the documented test reports which the licensee had in possession before November 30, 1985.

The inspectors reviewed the qualification basis of terminal blocks used inside Limitorque compartments. The terminal blocks were originally qualified as per test report No. B0119 which tested the terminal blocks for a peak temperature of 311°F. Limitorque test report B-0027 dated August 31, 1978 provides data on the ambient temperature of terminal blocks when the actuator is subjected to high superheat conditions. This test establishes that the internal component temperature for terminal block does not exceed the saturated steam temperature for the required operating duration. Based on this fact, the qualification of the terminal block is established through test report B0119 for terminal blocks utilized in power and control applications.

The inspectors also reviewed the licensee records on revising the qualification data for other drywell instrumentation, cables, penetration and splices. No discrepancies were identified.

This item is closed.

7.0 Unresolved Items

Unresolved items are matters for which more information is required in order to ascertain whether they are acceptable, violations, or deviations. One unresolved item is discussed in Section 4 of this report.

8.0 Exit Interview

At the conclusion of the inspection on June 30, 1988, the inspectors met with the licensee representatives denoted in Section 1.0. The inspectors summarized the scope and findings of the inspection at that time.

No written material was provided to the licensee by the inspectors.

ATTACHMENT 1

DOCUMENTS REVIEWED

1) Licensee Event report 88-003-000, "Low Setpoints of Degraded Grid Voltage Relays due to Error in Model Used for Analysis," January 30, 1988.

2) Failure and Malfunction Report 88-29, January 30, 1988.

3) Plant Design Change (PDC) 88-10.

4) Scope and Justification Approval 88-10, "Replace Degraded Voltage Relays and Modify Load Shedding Logic," February 4, 1988.

5) Field Revision Notice (FRN) 88-07-01.

6) BECo Calculations:

   a) PS-67; Degraded voltage - trip setpoint, June 21, 1988
   b) PS-68; Degraded voltage - alarm setpoint, June 21, 1988

7) Safety Evaluations:

   a) 2277; Replacement of voltage relays and modification of load shed logic
   b) 2289; Technical Specification changes evaluation
   c) 2290; Post FRN 88-07-01 evaluation.