

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-352/84-33

Docket No. 50-352

License No. CPPR-106

Priority --

Category B

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, PA 19101

Facility Name: Limerick Generating Station, Unit 1

Inspection At: Limerick, Pennsylvania

Inspection Conducted: June 25 - July 6, 1984

Inspectors: Leonard S. Cheung
L.S. Cheung, Reactor Engineer

8/6/84
date

H.I. Gregg
for A.E. Finkel, Lead Reactor Engineer

8/15/84
date

H.I. Gregg
H.I. Gregg, Lead Reactor Engineer

8/1/84
date

Ute Cheh
U. Cheh, Reactor Engineer

8/6/84
date

Approved by: H.I. Gregg
for C.J. Anderson, Chief, Plant System
Section, EPB

8/15/84
date

Inspection Summary:

Inspection on June 25 - July 6, 1984 (Report No. 50-352/84-33)

Areas Inspected: Routine unannounced inspection of licensee's action on previous inspection findings and NRC Bulletins and Circulars. The inspection involved 193 inspector-hours onsite by four region-based inspectors.

Results: No violations were identified.

1. Persons Contacted

1.1 Philadelphia Electric Company

- *A.S. MacAinsh, QA Site Supervisor
- *J.J. Connelly, QA Engineer
- J.M. Corcoran, Field QA Branch Head
- *J.B. Cotton, Maintenance Engineer
- *P.J. Duca, Jr., Technical Engineer
- *C.R. Endriss, Regulatory Engineer
- *C.B. Harmon, QA Engineer
- *J.F. Hunter, QA Engineer
- *G. Lauderback, Jr., QA Engineer
- *G.M. Leitch, Superintendent - LGS
- *G.J. Madsen, Engineer, ISEG
- *R.H. Moore, Supervisor, Quality Assurance
- *C.A. Mengers, General Supervisor, Quality Assurance
- *G.E. Paptzun, Plant Staff Maintenance Engineer
- *P.K. Pavlides, Quality Assurance Manager

1.2 United States Nuclear Regulatory Commission

- *J. Wiggins, Senior Resident Inspector
- *S. Chaudhary, Senior Resident Inspector

*Denote personnel present at exit meeting.

2. Licensee Action on Previous Inspection Findings, NRC Bulletins and Circulars

(Closed) Inspection Enforcement Bulletin 76-06 pertaining to diaphragm failures in air operated auxiliary actuators for safety relief valves. The bulletin described the problem cause as excessive heat because thermal insulation was applied to the actuator.

The inspector reviewed the Bechtel Power Corporation Specification for Thermal Insulation for LGS Units 1 and 2 (Specification 8031-M-103 Rev. 5) and verified that it contains provisions which address the concerns of the IE Bulletin. The inspector reviewed the specification provisions, that relief valve inlet lines shall be insulated up to the relief valve flange and valve insulation shall cover valves up to the stuffing box, and determined they are responsive to the IE Bulletin identified problem.

This item is closed.

(Open) Construction Deficiency Report 80-00-10 pertaining to channel separation violation in PGCC wiring. The licensee identified, in various PGCC panels, where the required separation between electrical channels or between an electrical channel and a non-separation channel was not maintained.

The licensee's letter PLG-232E defined the separation criteria within panels and the method to comply with the criteria. The licensee's criteria is in compliance with RG 1.75 and IEEE 384 for this part of the design with the exceptions listed in G.E. Specification 22A4027. G.E. Specification 22A4027 Electrical Equipment, Separation for Safeguards Systems was changed to delete paragraph 4.4.7.1 which requires terminal boards and wireways to be separated by barriers were under 6 inches as required by R.G. 1.75 and IEEE 384. The licensee's position is that in the FSAR, page 8.1-24 it states "Exceptions to these component separation criteria are allowed in cases where it has been shown that a sustained overcurrent through the device will not cause the ignition of that device. Indicating lamps and isolation relays are specific examples of this exception".

The Wyle Test Report No. 46960-4, titled Electrical Separation Verification Testing on Terminal Blocks and Panel Meters for the Philadelphia Electric Company Limerick Generating Station, Units 1 and 2, dated May 14, 1984, was used by the licensee to justify their position on not requiring the separation criteria of R.G. 1.75. IEEE 384 has been submitted to the NRC for evaluation.

This item is considered open pending NRC approval of the licensee's position of not using barriers between redundant class IE equipment and wiring internal to the switchgear in the event the 6" minimum separation distance are not maintained.

(Closed) Unresolved Item 84-06-03 pertaining to the compliance of General Electric SIS Vulkens and Vulkene Supreme cables with requirements of Specification E-1412, Section 9.

General Electric drawing 174B9175 titled Wire (Electric Insulated) lists the cable referenced as similar to GE S1-57275 cable. Drawing GE175A7293 specification for S1-57275 cable is similar to that cable referenced in GE drawing 174B9175.

A Wyle Laboratories qualification Report No. 44114-2 dated September 15, 1978 qualified a GE type SIS-57275 for the environmental requirements of thermal aging, radiation, Accident requirements (LOCA) and the functional testing. G.E. specification states that the SIS-57275 cable should meet the vertical flame test described in paragraph 6.19.6 of IPCEA S-19-81. Brown Boveri Electric, Inc., qualification Report No. 33-55181, QS states that the GE SIS Vulkene Cable (GES1-57275) is qualified to IEEE 383, IPCEA S19-81 and UL44.

This item is closed.

(Closed) Violation 83-12-01 pertaining to factory wiring completed by the MCC Power Company did not comply with workmanship standards required by site drawing E-1412.

The licensee issued Finding Report N-359 which required an inspection of the MCC Power Company equipment. The results of the quality inspection of the FR No. N-359 were listed in NRC 8353. NRC, 8353, Revision 2, issued on December 21, 1983 identified the action taken and the verification of the action by the quality assurance organization.

This item is closed.

(Closed) Unresolved Item 82-03-02 pertaining to the lack of fire barriers to prevent a common mode failure in the floor sections under the remote shutdown panels 10C201 and 20C201.

The licensee issued Finding Report No. N-303 which identified the problem identified in inspection report 82-03-02. A DCN #169 against drawing E-1406, Revision 33 requiring fire stop material to be added to the Remote Shutdown Panels 10C201 and 20C201 was issued May 28, 1982.

The inspector reviewed DCN 169 Revision No. 33 and verified that Conduit and Cable Tray Notes Symbols and Details drawing was changed to include the requirements of DCN 169.

The fire material will be added after the cables have been installed in these cabinets.

This item is closed.

(Closed) Unresolved Item 81-05-02 pertaining to Vendor supplied documentation does not agree with installed instrument manufacturer and range.

The licensee obtained documentation reflecting the installed equipment. A surveillance check report (SCR No. I-D18) dated June 27, 1984 verified that all identified instruments (35) were properly tagged and identified in accordance with the up-dated GE/NEBO Instrument Data Sheets.

The inspector verified that the SCR was in accordance with the following references:

-- 8031-M-1-B21-3050-H-1.17,
-- 8031-M-1-C11-3050-H-1.7, and -- R&T-50014, Rev. 0

This item is closed.

(Closed) Unresolved Item 81-01-06 pertaining to FDDR's site specific changes that will not be incorporated into GE design drawings. Bechtel is filing FDDR, that affect GE drawings, separate from the drawing with no positive system to identify the FDDR with the affected drawing.

The licensee changed Job Rule (JR)-G-39 Revision 21, titled, Field Modification - Control and General Electric/Construction Interface to require a control system to assure that FDDR's generated in the field are referenced to the respective drawing.

Surveillance Report G-36 dated April 14-15, 1981 verified that the changes in Job Rule G- 39 were being implemented and appeared to be working per the intent of the revisions.

This item is closed.

(Closed) Construction Deficiency Report 83-00-03 pertaining to MCC Power HVAC control panel wiring damage. On April 18, 1983 MCC Power notified the NRC and various licensee's of a construction defect regarding shielded multiconductor cable in HVAC control panels.

During the installation of this cable, when the exterior covering was removed, the insulation of various separate conductors had been damaged due to cutting too deeply into the covering material.

The licensee notified the NRC on June 1, 1983 with a deficiency report (10 CFR 50.55(e)) based on the MCC Powers part 21 notification of April 18, 1983. The licensee identified the HVAC panels to be re-worked in non-conformance reports (NCR's) F-81-86, 89, 90-95, 99 and 102. The NCR's identified the type of rework to be performed, the quality inspection organization verified the work completed and the quality assurance organization approved the task.

This item is closed.

(Closed) Construction - Deficiency Report 83-00-02 pertaining to intermittent lock-up of the RM-23 display manufactured by GA Technologies, Inc. The result of an investigation by GA Technologies, Inc., resulted in the conclusion that the equipment defect was associated with the RM-23 software.

Tag No. 00C691 was modified by Ga Technologies, Inc., before it left the plant and RM-23's No. 2 and 15 were returned by the licensee for the corrected software and have since been returned to the Limerick site.

This item is closed.

(Closed) Construction Deficiency Report 81-00-12 pertaining to an under-voltage in the 120 volt motor control circuits. Bechtel notified the licensee that physical and electrical characteristics of certain power and control circuit cables at the Limerick site were undersized and would result in excessive circuit voltage drops that could prevent some Class IE devices from functioning as required during degraded plant voltage conditions.

Bechtel study identified 166 safety related circuits that had excessive voltage drops if installed as originally designed. Of the 166 circuits, 47 were power while the remaining 119 are control circuits. The circuits identified by the study were corrected.

Licensee Audit Report No. E-124 indicated that engineering action was being completed as scheduled. Cable repulling and retermination was being performed and documented according to Job Rule E-10, QCI/E-4.0 and QCI/E-5.0. During the system test each component voltage is being verified by the test and start-up function.

This item is closed.

(Closed) Construction-Deficiency Report 81-00-09 pertaining to tandem mounted CR2940 switches with loose contact blocks. General Electric recommended that "Loc Tite" be applied to the loose nuts after being retightened. (Reference GE Letter dated May 20, 1981)

On October 13, 1981. General Electric subsequently notified the licensee that the use of "Loc Tite" is not recommended. Since excessive "Loc Tite" could possibly migrate into the switch, G.E. recommended a torque valve in Service Information Letter (SIL No.360). In SIL No. 360 General Electric noted the action to be take by the licensee that have used "Loc Tite".

The licensee identified the location of each CR 2940 switch and that the following steps were performed: "Loc Tite" was applied, screws retightened and that the switch still would function. Operating the switch after the "Loc Tite" set-up was a sufficient test to demonstrate that the CR 2940 would perform its function. During system check-out no CR 2940 switch malfunctions have occurred.

This item is closed.

(Closed) Construction Deficiency Report 81-00-06 pertaining to Limitorque motor operator components found to be defective. During field inspection of the Limitorque valve motor operators the licensee found the following defects, which if not corrected could possibly prevent the operators from performing their safety-related function.

- Cracked limit switch rotors
- Mis-drilled limit switch shafts
- Missing screws, shims and other types of price parts

The licensee has inspected and re-worked as required all safety related limitorque operators at the Limerick site. The results of their program is documented in their Significant Deficiency Report No. 38 titled "Final Report on Defects in Limitorque Mctor Operators (Revised), dated February 25, 1983.

During the course of the rework program, the NRC inspector verified the work being performed by the Licensee on this task.

This item is closed.

(Closed) Construction Deficiency Report 80-00-07 pertaining to a diode failure in Rosemount Transmitters Model Nos. 1151 and 1152 with "A" and "D"

output codes. Zener diodes on the amplifier board become unstable which presents itself as noise on the normally stable output current signal.

An analysis of the diode indicates that if moisture were trapped in the diode during the manufacturing process a condition similar to a condition called gold migration could occur. To correct the condition replacement of the diode or the amplifier would correct the problem.

There is also a common mode failure of a capacitor when the transmitter operating temperature is greater than 175°F or when the damping potentiometer is rotated clockwise.

General Electric Field Disposition Instruction No. (TNGW) identified location and instructions for repairing and modifying the 1151 and 1152 transmitters.

The licensee's procedure RT-11-00342 titled "Implementing Procedure to Replace Amplifier Boards on Rosemount Transmitters" was issued on April 5, 1984. This task has been completed.

This item is closed.

(Closed) Construction Deficiency Report 80-00-06 pertaining to defective cam followers in the General Electric SBM switches in the PGCC panels. The licensee identified the action to be taken and the required re-work on Nonconformance Report (NCR) No. 4304. The "Q" listed SBM switches were identified by examination of scheme drawings and a walkdown of plant equipment is part of the NCR No. 4304 documentation.

The NCR is open with approximately 95% of the work completed.

This item is closed.

(Closed) Inspection Enforcement Circular 81-01 pertaining to indicating pushbutton switches manufactured by Honeywell. The Series 2 indicating pushbutton switches exhibited two types of design deficiencies.

1. A short circuit may be induced during relamping, and
2. The circuit controlled by the switch may inadvertently be actuated.

A review of the licensee's safety-related design indicates that no indicating Honeywell pushbutton switches as described in the circular are used at the Limerick site.

This item is closed.

(Closed) Inspection - Enforcement Circular 80-23 pertaining to potential defects in Beloit Power Systems emergency generators. The potential deficiency concerned frayed insulation around the rotor leads at the clamping device.

The licensee performed an inspection of the eight (8) Beloit Generators associated with the diesels for both Unit 1 and 2. Results and correction actions are identified in Nonconformance Report No. 4394. The NCR closed out all items re-worked for the Unit 1 generators but the Unit 2 generators are being carried as an open item.

This item is closed for Unit 1. The NCR No. 4394 is carried as an open NCR against the Unit 2 generator and will be dispositioned at a later date by the licensee.

This item is closed for Unit 1.

(Closed) Inspection Enforcement Circular 80-10 pertaining to failure to Maintain Environmental qualified equipment. The license was to establish controls to prevent the degradation of environmentally qualified equipment due to improper maintenance or improper use.

The inspector verified that the licensee is presently establishing a maintenance system that will provide direction in the following areas.

- Administrative controls to ensure that equipment which is environmentally qualified is identified prior to maintenance,
- Maintenance procedures provide necessary instructions and precautions to ensure that the environmental qualification of equipment is not degraded when maintenance is completed, and
- Maintenance personnel are adequately trained on environmental qualification requirements and the potential for equipment degradation for improper maintenance is identified.

The above systems will be verified during the review by the NRC for compliance to 10 CFR 50.49.

This item is closed.

(Closed) Inspection Enforcement Circular 79-05 pertaining to water penetration between an electrical conductor and its loosely fitting insulation sleeve.

The licensee construction procedures for this site have required that the termination of cables at the electrical penetrations, sensor transmitters, motors, MOV's, limit switches, etc., have butt splices or connectors with a heat shrink tubing applied over the splice/connector. The heat shrink tubing used at this site has been qualified by the licensee.

This item is closed.

(Closed) Inspection Enforcement Circular 78-08 pertaining to environmental qualification of safety related equipment. The licensee conducted a study to identify the various types of safety-related items used at Limerick, the location and the environment at that location. The data

generated by this task is being used in part to provide the qualification data to support IE Bulletin 79-01B inputs to the NRC.

This item is closed.

(Closed) Inspection Enforcement Bulletin 83-08 pertaining to electrical circuit breakers with an undervoltage trip feature in use in safety-related applications other than the reactor trip system.

The safety related applications at the Limerick site is in eight circuits using an ITE (Brown Boveri Electric) type K600 circuit breaker in the 480 volt safeguard systems. The ITE undervoltage trip device does not have a latching mechanism, and therefore is different from the General Electric (GE) type AK-2 and the Westinghouse (w) type DB&DS breakers.

The licensee has completed an analysis of their undervoltage circuit design and states that the design simplicity and an operating history of no failure of this part gives them confidence that this design does not have the same concerns as listed in Bulletin 83-08.

This item is closed.

(Closed) Inspection Enforcement Bulletin 84-02 pertaining to continuously energized General Electric HFA AC excited relay applications. The deterioration of the coil wire insulation as a result of the effects of aging caused the insulating material to vaporize thus melting the coil and shorting the relay. General Electric Co. design modification was to replace the existing coil spools with the Century Series Tefzel coil spool using the existing relay unit.

The licensee has replaced all safety-related G.E. HFA relays with the Century Series Relays and coil conversion kits per BLP #2690. The following action has been completed:

- Specified class IE HFA Relays have been replaced with new G.E. HFA Century Series Relays per EMF #7781,
- Coil conversion kits have been used to replace existing coils in spare HFA Relays.

The above actions have been completed and verified by the quality control organization.

This item is closed.

(Closed) Inspection Enforcement Bulletin 80-16 pertaining to the potential misapplication of Rosemount, Inc. Models 1151 and 1152 pressure transmitters with either "A" or "D" output codes. The potential misapplication problem occurs when the above specified transmitters are exposed to excessive over or reverse pressures. These pressures can

result in ambiguous signal outputs from the transmitter to control and/or indication components.

The licensee's procedures RT-11-00342 as referenced in item 80-00-07 was used to replace piece parts in the Rosemount 1151 and 1152 transmitters. The replace of the 1151 and 1152 transmitters with the model 1153 is approximately 95% complete. A review of the quality records indicates the location and type of Transmitters being used.

This item is closed.

(Closed) Inspection Enforcement Bulletin 79-01B pertaining to Environmental Qualification of Class IE Equipment. The licensee is in the process of providing the NRC with part qualification data sheets as part of their environmental qualification program. The qualification data is being reviewed by the NRC as part of the normal licensee data submittal program and will be addressed in the Safety Evaluation Report (SER) for this site.

This item is closed.

(Closed) Inspection Enforcement Bulletin 74-08 pertaining to a deficiency of the magnetic trip elements in ITE Type HE-3 molded case circuit breakers, current rating of 20-90 amper, identified, during preoperational testing at the Trojan Nuclear Power Plant. The licensee performed an inspection of their ITE Type HE-3 molded case circuit breakers and verified that all items were manufactured after May 1974. The ITE breaker identified with the problem were manufactured prior to May 1974.

The inspector verified the inspection records which list the ITE Type HE-3, at the Limerick Site and in their warehouse, as manufactured between April 1976 and August 1978.

This item is closed.

(Closed) Inspection Enforcement Bulletin 75-04 and 75-04A pertaining to cable fire at Browns Ferry. The following actions were requested of selected Licensees with operating power reactor facilities and major construction activities at a common site:

1. Review their overall procedures and system for controlling construction activities that interface with reactor operating activities, with particular attention to the installation and testing of seals for electrical cables between compartments of the reactor building, e.g., control room to cable spreading room.
2. Review the design of floor and wall penetration seals, with particular attention to the flammability of materials.

3. Evaluate their procedures for the control of ignition sources which may be used for leak testing or other purposes in areas containing flammable materials.
4. Report to this office, in writing within 20 days of the date of this Bulletin, the results of your reviews or evaluations regarding items 1 through 3 above.

The licensee provided their evaluation of the above items in Report S23-2. This report has answered the questions addressed in the above reference Bulletins.

This item is closed.

(Closed) Construction Deficiency Report 82-00-01 pertaining to the Robertshaw Model 1285 thermostatic control valves to modulate flow in their jacket water and lube oil systems. There are two concurs with this valve that the licensee has been notified of.

- A nut on the lower overrun assembly may back-off and cause the valve to fail in a position which will overcool the engine, and
- The O-ring seal on the valve may swell in the presence of oil and impede modulating action.

For the Limerick Site, the above concerns are applicable to the 5" jacket water system thermostatic bypass valve which is equipped with a general-purpose Buna-N "O"- ring seal.

The licensee has identified their problem with the Robertshaw Model 1285 valve on NCR No. 6144, January 19, 1983. The Robertshaw Model 1285 valve has been reworked in accordance with procedure JR-M-3, Attachment 3, Revision 19, titled Procedure and Check-List for Dismantling and Re-assembly of Q Listed ASME Equipment".

Job Rule (JR)-M-3 is being performed per Robertshaw Controls Procedure for the 5" and 6" Size Temperature Control Valves Model 1285.

The licensee's quality control records verify that the changes to the Model 1285 valves have been completed and testing is in progress. The NCR will be closed when all testing is completed.

This item is closed.

(Closed) 80-00-13 Limitorque Wiring Deficiencies The licensee during a sampling inspection of Limitorque motor operators for valves from several valve vendors identified a number of internal wiring deficiencies in the operators.

Based on the results of the inspection performed by the licensee, a 100% inspection of all valve motor operator wiring and connections was performed. Other defects were found by the licensee during their inspection of the limiter torque operators.

A detailed rework program was performed by the licensee and is documented in the following procedures and reports.

- Field Inspection Procedures for Limitorque Motor Operators (FIP) 8031-LT001,
- Limitorque Rework Program and Supplemental Technical and Maintenance Instruction for all limitorque motor operators at Limerick, 8031-FM-4, and
- Final Report on Limitorque Valve Motor Operators, MCAR-1-25, dated October 31, 1983.

During the course of the rework program the NRC inspector performed in-process inspection of the rework being performed by the licensee.

This item is closed.

(Closed) Construction Deficiency Report 83-00-01 During the preoperational cleaning and checkout of the Brown-Boveri 4Kv, Switchgear the licensee identified that (1) wires terminated at the 1000/5 current transformers were not secure, and (2) breakers inadvertently closed following completion of the spring charging cycle while other breakers spontaneously and continuously closed and tripped following the spring charging cycle.

The licensee provided the NRC four interim reports dated March 24, 1983, April 28, 1983, June 17, 1983 and August 25, 1983. The final report was issued on November 15, 1983 which provided the following corrective action.

- 1) The deficiency has been corrected in all circuit breakers, either by adding the omitted anti-shock spring to the operating mechanism or in four cases, by replacing the existing spring. The spring installation was performed in accordance with Brown Boveri Electric installation instruction procedure IB-8307.
- 2) After the corrective action described in one above, one breaker continued to misoperate and was returned to BBE for examination. The problem was found to be caused by an oversized hole used to support the breaker cam assembly. This deficiency was unique to this breaker and no further investigation was considered necessary by the licensee.

During the inspection of the returned breaker to BBE, it was identified that the hex shaft was within drawing tolerances, however the hexagonal

hole in the cam assembly was oversized. The hole which should have been .876/.878" was measured at .886". The cam assembly which is a ambinator closing and timing cam and hex shaft were replaced. The circuit was factory tested for 120 operations without any slippage of the closing latch. The breaker was returned to the licensee.

This item is closed.

(Closed) Violation 83-02-02 pertaining to failure to correctly translate instrument tubing drawings in agreement with specifications. This violation was later developed to a generic problem as a result of inspection by the licensee's Quality Assurance Department. The findings were documented in the licensee's nonconformance report NCR #7256, which identified 206 unacceptable flexlegs. Of these 206, 87 required rework, the balance were dispositioned "use as is" by means of Bechtel Stress Group's Calculation A-276. The reworked items and the "use as is" calculations were accepted by the licensee's QA and NCR #7256 was closed on December 2, 1983.

To prevent recurrence of this problem, the licensee developed a training program for their personnel concerning the flex leg requirements. The inspector reviewed the attendance sheet of a training held February 23, 1983. It indicated 40 students were in the class.

The inspector randomly selected three reworked items (FJ-42-15 flex leg #3, FJ-40-4 flex legs #3 and #4) for field verification, and three "use as is" items (FJ-41-10 flexleg #16, FJ-41-11 flexleg #2, and FJ-44-20 flexleg #1) and verified with Bechtel's calculation A-276 Revision 0.

No deficiencies were identified.

This item is closed.

(Closed) Part 21 item 80-SC-04 pertaining to American Warming and Ventilation William Perc Actuators.

The licensee surveyed the actuators in their HVAC systems and did not identify any William Perc Actuators. The inspector reviewed a Bechtel Memorandum (Problem Investigation Request SF-84-03) dated June 4, 1984. This document indicated that the actuators used at Limerick are mainly manufactured by Bettis, Johnson, Jamesbury, Miller, Iwar, Kieley and Mueller, and Atwood Morrill.

A written statement by the licensee's QA dated June 29, 1984 indicated no William Perc Actuators were used at Limerick.

This item is closed.

(Closed) Inspection and Enforcement Circulator 81-06 Potential deficiencies affecting certain foxboros 10 to 50 ma transmitters. The inspector

reviewed the licensee's file on this item. It indicated that there were no foxboro 10 to 50 ma transmitters in the Limerick systems.

This item is closed.

(Closed) Inspection and Enforcement Circular No. 79-20 pertaining to failure of GTE Sylvania relay, type PM Bulletin 7305, Catalog 5412-11-AC with a 120V AC coil. The inspector reviewed the licensee's file which contains correspondences between the licensee, General Electric Company and Bechtel. The correspondences indicated that no GTE Sylvania relays of the type described in the circular were installed at the Limerick site.

This item is closed.

(Closed) Inspection Enforcement Bulletin 77-07 pertaining to containment electrical penetration assembly failure. This bulletin deals with two incidents of General Electric Series 100 containment penetration failure in Millstone Unit 2. It requires the licensee to identify the penetration they have at their site and to perform proper maintenance to prevent similar problems in their penetrations. The licensee's response dated January 18, 1978 indicated that they did not have G.E. series 100 penetrations at the Limerick site, and they are using Conax penetration for their medium and low voltage power, control and instrumentation services.

A letter from G.E. to the licensee dated January 10, 1978 supported the licensee's statement that no G.E. Series 100 penetrations were used at the Limerick site.

This item is closed.

(Closed) Inspection Enforcement Circular 81-09 pertaining to a potential unmonitored release path for containment cooler fan motor cooling water bypassing the monitors and joining the containment cooler water effluent downstream of the radiation monitoring equipment.

The NRC inspector reviewed the following documents

- a. Bechtel Memo on IE Circular 81-09 by S.J. Ploylan dated 3-8-82.
- b. Scintillation Detectors, 117 B1681 G1, G2, G3 and G4 Operation and Maintenance Instruction.
- c. GE D12-J013 AOS578, OBS578 BHR Service Water Monitors

The inspector verified that the RHR service water monitors were installed and located in Diesel Generator Building E217, as indicated in PI&D M-12 (System 79E). All of the lines were connected to closed systems outside containment except the above mentioned RHR pump cooling system. There is no direct path for discharge to the environment.

This item is closed.

(Closed) Inspection Enforcement Bulletin 87-02 pertaining to Degradation of threaded fasteners in RCPB of PWR's - Significant corrosion wastage experienced with PWR closure studs in the reactor coolant pumps due to boric acid attack as a result of leakage at flexitallic gasketed joints between the pump casing and pump cover.

Limerick units are BWRs and this bulletin does not apply to BWR plants where boric acid is normally absent from the coolant.

This item is closed.

(Closed) IE Circular 80-15 pertaining to loss of reactor pump cooling and natural circulation cooldown for PWR.

The Limerick units are BWRs and the continued operation of the recirculation pumps is not a required safety function.

This item is closed.

(Closed) Inspection and Enforcement Bulletin 79-24 pertaining to the freezing of the water in a portion of the high pressure coolant injection (HPCI) system recirculation line that is common to both HPCI pumps.

The inspector verified that the heat tracing elements, insulation materials and alarm systems with set points of 40°F had been applied to the HPCI system listed below (Cable listing):

Panel 10C901 EL283 MEZZ (EL300)

1FE901; 1GE901; 1HE901A,B; 1JE901A,B; 1KE901A,B,C.

Panel 10C901 A EL283 MEZZ (EL300)

1CE901B,D; 1DE901; 1AE901A,B; 1BE901A,B; 1EE901B,D.

Panel 10C902 EL253

1EE902B,C; 1GE902A,B; 1FE902B,C.

Panel 10C902A EL253

1BE902A,B,C; 1DE902B; 1AE902B,C,D; 1CE902.

All the system piping that is insulated and protected by heat tracing were inside the reactor building and not subject to freezing. Safety-related power for the heat-tracing system is reported from the safety-related power for the alarm system to avoid common mode failure.

This item is closed.

(Closed) Inspection Enforcement Circular 78-07 pertaining to damaged components of B-P test stand functional testing of hydraulic snubbers at a power reactor facility and test results adversely affected by the damaged components in the test and connectors to the snubber being tested.

The inspector reviewed the following documents for Limerick's snubber design:

- a) Bechtel BLP-17203, 6-14-78
- b) PECO N2-1, 7-14-78

The inspector made a sight-inspection of the snubbers at the following elevations:

E249'6" DCR-313-3H4
E249'6" VRR-IRR-H-4
E249'6" SP-DCA-130-J3-H1
E283 APE-1MS-H-2

The snubbers used at the Limerick site are the mechanical type and testing devices of the type described in IE Circular 78-07 is for hydraulic snubbers.

This item is closed.

(Closed) Inspection and Enforcement Bulletin 74-16 pertaining to Improper Machining of Piston in Colt Industries (Fairbanks Power Systems Division) Diesel-Generators. This involves breakaway of the capscrews retaining a piston insert in an upper portion of the diesel engine due to incorrectly machined piston.

The inspector reviewed the licensee's design specification for Diesel Generators (M-71 Revision 6 dated 12-21-79). This specification was provided to Colt Industries prior to the manufacturing and shipment of the diesel-generators to the Limerick site. The inspector determined that the requirements of the bulletin have been met.

This item is closed.

(Closed) 83-00-07 Unistrut Support Clips pertaining to cracks occurred on the inside radius of the unistrut clips.

The inspector reviewed the following documents:

- a) Hanger No. 21 M-1057 (Drawing)
- b) Bechtel Calculation File No. 94.3.1 Pages 110, 111, 112, 113
- c) Manual of Steel Construction AISI'C
Seventh Edition Formula No. 1 Page 2-198
Formula No. 8 Page 2-200

d) Bechtel's calculation of cracked strut fittings tested for Reverse Bend Report for Limerick Generating Station Unit 1 Technical Report No. 0983-04EV, September 1983.

The inspector verified that the cracked unistrut support clips located at E304 Area 8 and E350 Area 8 were replaced (1CE059, 1CE068, 1AG069, 1CH038, 1CH004, 1BE016). There was one missing clip. The inspector reviewed the calculation for the justification of the missing clip and determined that the safety factor of the design was well within the design tolerance.

This item is closed.

(Closed) Inspection and Enforcement Circular 80-11 pertaining to Emergency Diesel Lube Oil Cooler Failures by severe corrosion of the solder which sealed the tubes to the tubesheet and the use of calgon CS inhibitor.

The inspector reviewed the Operation Training Course Outline of Instruction for Fairbanks Morse 3800TD 8 1/8 Nuclear Standby Diesel Generator conducted by Fairbanks Morse Engine Division. 52 PECO employees attended and completed the training.

The inspector verified that the PECO emergency diesel generators were manufactured by Colt Industries Fairbanks Morse Division. The Limerick units were equipped with lube oil coolers manufactured by American Standard Corporation. These coolers are of the rolled tube sheet design. PECO uses Synguard (Sodium Nitrite) Inhibitor. Therefore, the concerned items in the IE Circular 80-13 do not apply.

3. Exit Meeting

The inspector met with licensee and construction representatives (denoted in Details, paragraph 1.0) at the conclusion of the inspection on July 6, 1984 at the construction site. The inspector summarized the scope and inspection findings. At no time during this inspection was written material provided to the licensee.