U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/87038(DRS); No. 50-457/87036(DRS)

Docket Nos. 50-456; 50-457 Licenses No. NPF-72; No. NPF-75

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection Conducted: October 5 through December 22, 1987, and January 19, February 18 and 26, 1988.

Inspectors: Ron Gardner for Zelig Falevits — 3/17/88 Date

Ross Landsman — 3/17/88 Date

Approved By: R. N. Gardner, Chief, Plant Systems Section — 3/17/88 Date

Inspection Summary

Inspection on October 5 through December 22, 1987, January 19 and February 18 and 26, 1988, (Reports No. 50-456/87038(DRS);50-457/87036(DRS))

Areas Inspected: Routine, unannounced safety inspection of licensee action on previous inspection findings; review of electrical and instrumentation components including systems design and completed installations; examination of Remote Shutdown Panel; inspection of Main Steam Line and Main Feedwater Isolation Valve components; observation of ongoing field activities; review of selected systems and components; review of Critical Drawings in the control room; review of OAD construction activities; and training (92701, 99020, 41400, 51053, 51054, 51055, 51056, 51063, 51064, 51065, 51066, 52053, 52054, 52055, 52056, 52063, 52064, 52065, and 52066).

Results: Of the nine areas inspected, no violations or deviations were identified in three areas; one violation with three examples (Paragraphs 4.b, 7.b, and 8.d) - failure to follow procedure or inadequate procedures; one violation with five examples (Paragraphs 5.a, 6.a, 8.f.(3), 8.f.(4), and

8.g) - failure to assure that quality control inspections were properly executed to verify conformance to applicable drawings and procedures; one violation (Paragraph 10.b) - failure to promptly correct identified deficiencies; and one deviation (Paragraph 4.a) - failure to adhere to a commitment made in correspondence with the NRC, were identified in the remaining areas.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- •E. E. Fitzpatrick, Station Manager
- •W. B. McCue, OE
- •D. E. Paquette, Assistant Superintendent
- •J. S. Cosnell, Q.C. Supervisor
- •L. E. Davis, Assistant Superintendent Technical Services
- •D. E. O'Brien, Services Superintendent
- •P. L. Barnes, Regulatory Assurance Supervisor
- •J. L. Woldridge, Technical Staff Supervisor
- •J. Roth, Technical Staff E.Q. Coordinator
- •S. C. Bendster, Technical Staff Design Review Group Coordinator
- •D. J. Skoza, SFE Supervisor
- •M. E. Lohmann, Project Construction and Startup Superintendent
- •E. Wendorf, PCD Assistant Supervisor
- *•M. Teras, PCD Electrical Supervisor
- •K. D. Kyrouac, Q.A. Superintendent
- •McLeon Takaki, Regulatory Assurance
- •R. Legner, OPS
- •R. C. Bedford, Regulatory Assurance
- *•E. W. Carroll, Regulatory Assurance
- •C. W. Nelson, Assistant TSS
- S. Hunsader, Nuclear Licensing Administrator

U.S. Nuclear Regulatory Commission

- •T. Tongue, Senior Resident Inspector
- •T. Taylor, Resident Inspector
- •S. Reynolds, Reactor Inspector

The inspector also contacted and interviewed other licensee and contractor personnel.

•Denotes those in attendance at the exit meeting on December 22, 1987.
*Denotes those who participated in the telephone exit meeting on January 19, and February 18, 1988.

2. Action on Previous Inspection Findings

(Closed) SER Item (457/86000-02): Safety Evaluation Report (SER), Section 6.2.4., requires that the licensee provide redundant Class 1E power to the remote-manual isolation valves on Reactor Coolant Pump (RCP) injection lines prior to fuel load. The inspector reviewed schematic diagrams 20E-2-4030CV25 and CV26 and conducted a field inspection to verify that the installations conformed to the applicable design drawings. The inspector visually examined RCP 2A and 2B seal injection isolation valves (2CV8355A and B) using schematic diagram 20E-2-4854, Revision E,

and connection diagrams 20E-2-4685E, Revision F, and 203-2-4661B, Revision L. Limit switch termination designations on both valves were not in conformance with the ones shown on the drawings, however, the licensee presented the inspector with a letter issued by the vendor addressing this concern.

(Closed) SER Item (457/86000-12): SER, Section 8.2.4., requires that ESF bus voltages predicted by a Computer Analytical model be verified by comparing actual measurements of ESF bus voltages to established acceptance criteria. The inspector reviewed pre-operational Test No. BwPT-AP-56, Revision 0, Sections 9.1. and 9.2., "Bus Loading and Independency." This test measured and documented the loaded voltage levels of the safety-related buses from the 4.16KV level down to the 120V level. The test evaluation compared measured ESF bus voltages with the ESF bus voltages predicted by a computer analytical model. Acceptance criteria were met in that measured bus voltages fell within the ± three per cent of the predicted values.

(Closed) SER Item (457/86000-21): SER, Section 7.3.2.1., requires that the 2-out-of-3 steam generator level channel logic used to isolate the feedwater on high-high (Hi-2) water level be changed to a 2-out-of-4 logic. This would prevent a continuous demand for feedwater during a downscale failure of a level channel. The inspector verified, by review of the applicable loop schematic and logic diagrams, that the protective action is initiated on a 2-out-of-4 design logic.

(Closed) SER Item (457/86000-26): SER, Section 9.2.2., requires that the licensee provide safety-grade (Class 1E) indication of loss of component cooling water system (CCWS) flow to the reactor coolant pumps (RCPS) to provide increased assurance that the operator will trip the RCPs before occurrence of an unacceptable locked pump motor condition. The inspector verified that Class 1E component cooling flow instrumentation to RCP oil coolers was provided by 1FT-0651, 1FT-0654, 1FT-0657, and 1FT-0660 for RCP 1A, 1B, 1C, and 1D, respectively, and that the above flow transmitters were powered from ESF divisions 11 and 12.

(Closed) Bulletin No. 78-04 (457/78004-BB): During a 1978 review conducted by Westinghouse of the seismic and environmental qualification of the electrical circuitry used for valve operation, certain stem mounted limit switches associated with various safety-related valves were found not to be environmentally qualified for loss of coolant accident (LOCA) conditions. The function of these valves provide either containment isolation or emergency core cooling system (ECCS) alignment during accident conditions. The inspector reviewed licensee actions concerning this bulletin. The work required to satisfy this bulletin was completed by the licensee under Work Instruction, WI 4.3.16-02, Revision 0, dated September 11, 1986. The inspector reviewed documentation and conducted a visual inspection of limit switches on selected safety related valves. No deviations were noted. This bulletin is considered closed.

(Closed) 10 CFR 50.55(e), Item (457/83009-EE): "Contact bounce experienced during Seismic Test of mercury relays on Temperature Channel Test (NTC) cards used in the Solid State Protection System." The inspector reviewed completed Work Request No's. 3451, 3452, 3453, and 3454 which implemented

the requirements of Westinghouse FCN No. CDEM-10664, dated July 23, 1986. The licensee installed modified NTC printed circuit cards in the 7300 process equipment and performed a functional test on the modified cards. This action resolved the seismic contact bounce problem. This item is considered closed.

(Closed) Part 21 (457/84006-PP): Westinghouse Technical Bulletin NS110-TB-84-11, dated November 2, 1984, identified a problem concerning a failure of the 7.5KVA static inverters. The cause of the failure was traced to the secondary side of the ferro-resonant transformer which shorted to ground. This type of failure would prevent the inverter from shutting down or tripping off-line. The ferro-resonant transformers were returned to the manufacturer for a fault analysis. The failure was determined to have been caused by electrical shorting between the coil and core. The manufacturer concluded that the transformers failed because the laminations making up the center leg of the core shifted and vibrated due to the fact that the core was insufficiently secured.

Westinghouse recommended action to address this potential problem included either of the following two options: (1) any ferro-resonant transformer operated under load for a six month period without exhibiting output degradation could be considered satisfactory; or (2) performance of a high potential leakage current test that would indicate whether the dialectric strength of the transformer had deteriorated. The licensee elected option (1) for the Unit 2 inverters. The inspector verified that the inverters had operated under load for over six months with no output degradation.

(Closed) SER Item (457/86000-27): Non-Class 1E loads powered from Class 1E Busses. The inspector verified through a review of the applicable design drawings and visual field inspections that the licensee had adhered to a commitment to provide two circuit breakers in series to protect the Class 1E buses from possible faults on the Non-1E circuits.

(Closed) SER Item (457/86000-25): The generation of actuation signals to open the pressurizer power-operated relief valves to prevent the RCS from exceeding allowable limits during low temperature operation is described in Section 7.6.1.5. of the SER. In its review of the control logic of the automatic actuation system, the staff found that a failure resulting in a high output signal from either of the two auctioneers would prevent both relief valves from opening when needed. This was due to the fact that the output signal from an auctioneer was used in the control logic to generate an auction signal to the associated relief valve and also provided a permissive signal to the logic train of the other valve. In response to the concern that the relief valve does not meet the single-failure criterion, the licensee adopted the Westinghouse recommendation to remove the cross connect and employ manual arming of the channels. The inspector verified by review of documentation and revised drawings that the above actions were accomplished.

(Closed) SER Item (457/86000-18): SER, Section 7.3.2.9. indicated that the licensee would provide test jacks at the reactor trip breakers to facilitate testing of the P-4 interlocks. The licensee also committed

to permanently install voltmeters for testing the P-4 interlocks. The inspector verified by visual inspection and documentation review that the licensee had installed permanent voltmeters for P-4 interlock testing.

(Closed) SER Item (457/86000-06): Verify that Class 1E power to the hydrogen recombiners and their associated suction and discharge valves is fed by the same power supply. By letter, dated February 22, 1984, the NRC was notified that the present recombiner system design differed from that described in the original SER. Specifically, the suction and discharge valve operators are powered from opposite division Class 1E power supplies. The licensee elected to use this design arrangement to prevent backflow through a failed recombiner. This item was accepted by the staff in Braidwood SSER 1 contingent on the recombiner discharge valves being kept open during normal operations. The applicant was also required to ensure that appropriate administrative controls were instituted to maintain the discharge valves open. The applicant had committed to satisfy this requirement. However, on October 6, 1987, the inspector identified a closed discharge valve. This is considered to be a deviation from an SER commitment as documented in Section 4.a. of this report.)

(Closed) 10 CFR 50.55(e) (457/79002-EE): "Undetectable Failure in Engineered Safety Features Actuation System (ESFAS)." On November 7, 1979, Westinghouse identified an undetectable failure that could have potentially affected a circuit associated with Engineered Safeguards. A failure analysis assumed a failure of the affected circuit in both redundant protective trains. Consequently, automatic initiation of the protective function could be lost under certain conditions. This problem pertained to the P-4 permissive which is associated with the reactor trip and reactor trip bypass breakers. It provides an interlock in the ESFAS to enable or to defeat the capability to manually reset and block safety injection. Westinghouse determined that although the ESFAS logic was required to be periodically tested, there were no tests required for checking the operation of the P-4 contacts or associated wiring. Therefore, Westinghouse concluded that a potential failure could occur undetected. Westinghouse recommended incorporating tests in each train of the protective system with the plant shutdown and the protective system in normal operation to check the P-4 contacts and associated wiring.

The licensee implemented the vendor's instructions but determined that the voltage reading on a cleared P-4 input was 41 and 43 volts instead of 48 volts as noted by Westinghouse. The differences in the voltage were apparently due to load placed on the circuit by the addition of the two sets of contacts and the voltmeter. Westinghouse letter No. BRA-123, dated December 9, 1987, noted that either test is valid provided that the nominal 48 volts not be allowed to fall below 40.8 volts at the breaker.

3. Inspection Objective

The purpose of this inspection was to ascertain whether the installed electrical and instrumentation safety-related components and systems at Braidwood conformed to the latest design documents, drawings, regulatory requirements, technical specifications, industry codes and standards, and licensee commitments.

To accomplished this objective, the inspector selected several representative safety-related systems and components. The inspection included independent review of design documents and records, direct observation of work in progress, and review of completed installations. The inspector attempted to determine whether the records reviewed were in conformance with established procedures and whether they reflected completed work activities which were consistent with requirements and licensee commitments. Some of the attributes reviewed included safety related cable terminations such as lug connections, splices, plug connectors, termination strips and other devices or techniques which directly contribute to the adequacy of the electrical continuity of the electrical circuit; cable raceway installations and cable routings; cable sizes, protection, redundancy, and separation including separation of various circuits (power, control, and instrumentation); fuse sizes, overload element ratings, starter sizes, nameplates, tag identification, and grounding; as-built configuration of components and terminations as delineated in the latest design documents such as schematic and connection diagrams, logic and loop diagrams, P&I drawings, and design change documents; status of control room critical drawings; and Q.A. program requirements, audits, and training.

4. Combustible Gas Control System Review

The inspector conducted a design review and field inspection to ascertain whether the Combustible Gas Control System design and lineup conformed to the requirements delineated in the FSAR, SER, and applicable design drawings.

There are two hydrogen recombiners permanently installed at the Braidwood Station. Through the use of cross-tie piping either recombiner may be used on either unit. The suction and discharge valve operators are powered from opposite division Class IE power supplies. The suction and discharge valves are not powered from a common power supply because the licensee determined that certain single failures in that configuration could compromise recombiner system effectiveness and that the present electrical division assignment prevents backflow through a failed recombiner.

During this inspection, the inspector determined the following:

a. SER 1, Paragraph 6.2.5, states that the two hydrogen recombiners at the Braidwood site, including their associated piping and valves, will perform the intended hydrogen control function assuming any single active component failure coincident with loss of offsite power (GDC 41). However, the SER states that this is contingent upon the recombiner discharge valves being kept open during normal operation. The applicant must ensure that appropriate administrative controls are instituted to maintain the discharge valves open. The SER further states that the applicant has committed to satisfy this requirement.

On October 6, 1987, during an examination of panel indicators and valve positions, the inspector noted that the Hydrogen Recombiner "B" Discharge Isolation Valve 00G066 was closed. This valve must remain open during plant operation to comply with design requirements. Subsequent review indicated that the valve was closed (using a caution card) on August 25, 1987, during the performance of an ILRT. The inspector determined that the caution card was subsequently removed but the valve had been left closed. Plant operating personnel were not aware that valve 00G066 had been closed for 40 days, nor were there any tags found attached to valve 00G066 to indicate its as found position. The valve is controlled by a switch mounted on local panel 00G08J. Valve position can be determined by the indicating lights above this switch. There are no indications or alarms relative to this valve in the control room.

Review of "Caution Card Procedure" BwAP 330-6, Revision 51, indicated that no requirement existed in the procedure to verify or assure that equipment was placed in its normal operating condition after a caution card was no longer required and was cleared from the equipment. For example, in the case of valve 00G066 the valve was closed using the caution card; however, when the card was cleared the valve was not reopened.

The Hydrogen Recombiner System is a manually operated system and would probably not be required to operate during the initial stages of a LOCA. In the event of a single failure (loss of ESF division I) the discharge valve (00G066) to Hydrogen Recombiner 00G08SB and the suction valve (00G065) to Hydrogen Recombiner 00G08SA would have remained closed causing both systems to become inoperable. Although the discharge or suction valves could be opened manually, the operator would first have to recognize the need to open the valves.

The inspector informed the licensee that the failure to establish appropriate administrative controls to ensure that the hydrogen recombiner discharge valves were maintained in the open position was a deviation from the commitments identified in SER 1. (456/87038-01(DRS); 457/87036-01(DRS))

b. During a review of the Hydrogen Recombiner operating procedures, the inspector determined that the Unit 1 Electrical Lineup Operating Procedure BwOP OG-E1, Revision 1, did not contain valves OMOV-0G065 and OMOV-0G066. The Unit 2 Electrical Lineup Operating Procedure, BwOP OG-E2, Revision 1, did not contain valves OMOV-00G059, OMOV-00G060. The Unit 1, Mechanical Lineup Operating Procedure BwOP OG-M1, Revision 1, did not contain valves OMOV-00G065 and OMOV-00G066 and the Unit 2 Mechanical Lineup Operating Procedure BwOP OG-M2, Revision 0, did not contain valves OMOV-00G059, OMOV-00G060, OMOV-00G061, OMOV-00G062, OMOV-00G065, and OMOV-00G066 and various other components. Furthermore, the Braidwood Onsite Review Committee had reviewed and signed off the above procedures which contained the noted omissions.

The inspector informed the licensee that the failure to identify, in the Electrical and Mechanical Lineup Procedures, certain valves and other components required to correctly lineup the Hydrogen Recombiner system was a violation of 10 CFR 50, Appendix B, Criterion V (456/87038-02A(DRS); 457/87036-02A(DRS)).

c. FSAR Paragraph 6.2.5.1.a. states, "The combustible gas control system is designed to maintain the concentration of hydrogen below the lower flammable limit of 4% by volume." In addition, Paragraph 6.2.5.2.3. states, "The function of the mixing subsystem is to ensure that local concentrations with greater than 4% hydrogen cannot occur within the primary containment following a LOCA." In contrast to the 4% maximum hydrogen concentration allowed by the FSAR, Braidwood Procedure BwOP OG-10, "Startup of a Hydrogen Recombiner," Revision 51, allows for hydrogen concentration to reach 5% as noted in Sections D.5., E.3.c., F.8.b., and F.9. This is an open item (456/87038-03A(DRS); 457/87036-03A(DRS)).

d. At the time of the inspection, suction valve 00G059 and discharge valve 00G060 did not contain identification tags. Also, most OG valves in the hydrogen recombiner system contained duplicate identification on the Unit 1 and 2 (common) valves. For example, valve 00G064 was also labeled as 20G058. In addition, valves 00G059 and 00G066 did not have the required pins to indicate valve closed position. Disposition of this item is identified in Section 10.b. of this report.

e. Unit 2 Control Room Group 3 Containment Isolation Phase "A" indicating lights contained a light to indicate the close position of hydrogen recombiner A and B suction valves 00G059 and 00G065. These valves do not receive a Phase "A" isolation signal and should not have been located in the Control Room Group 3 Containment Isolation Phase "A" dedicated group of lights (drawing 20E-2-4030AN052 and AN058). This is an open item. (456/87038-03B(DRS); 457/87036-03B(DRS)).

f. During the conduct of this inspection, the inspector observed a "B" operator perform his shift walkdown. The inspector requested that the operator examine the hydrogen recombiner discharge valve and determine its position. The operator was not familiar with this type of valve and was not able to indicate the valve position. Subsequent discussions with control room supervisory personnel indicated that in case of emergency, whenever a "B" operator encounters difficulties in completing his assigned task, he is to contact the shift supervisor for assistance.

No violations or deviations were identified.

g. The present design is such that the control switches for Hydrogen Recombiners A and B discharge valves 00G060 and 00G066 are spring return types (not keylock types). These switches are mounted on local panels. Since there is no alarm or indication in the control

room to indicate the position of these valves, anyone could manipulate these switches locally and close the valves without the knowledge of the control room operators.

The control switch for the discharge valve of Hydrogen Recombiner A is located on a local panel in the lower cable spreading room while the control switch for the suction valve for the same recombiner is located on a local panel in the Auxiliary Building. A similar arrangement applies to Hydrogen Recombiner B. This is an open item (456/87038-03C(DRS); 457/87036-03C(DRS)).

h. In evaluating the hydrogen recombiner system, the inspector conducted a visual inspection of the following relevant components using the applicable design documents to determine the condition and the as-built configuration of the installed components:

(1) Hydrogen recombiner valve local control panels 00G08J and 00G09J

(2) 480V Aux. Bldg ESF MCC 232X5 compt. D5
480V Aux. Bldg ESF MCC 231X4 compt. D5
480V Aux. Bldg ESF MCC 131X4 compt. B4
480V Aux. Bldg ESF MCC 132X5 compt. F4 and D4
480V Aux. Bldg ESF MCC 131X3 compt. F3
480V Aux. Bldg ESF MCC 132X3 compt. D4

(3) Sections of Main Control Panel Containment Isolation Panel 2PM11J.

(4) Hydrogen recombiner "OG" valve positions.

No violations or deviations were identified.

5. Examination of Unit 2 Remote Shutdown Panel

The inspector selected the Remote Shutdown Panel for review and visual examination. This review consisted of an examination of the final electrical and instrumentation component and system installations of portions of the following safety related systems: Auxiliary Feedwater (AF), Main Steam (MS), Control Volume (CV), Component Cooling (CC), ESS Service Water Cooling (SX), and Containment Cooling (VP). The inspector conducted a review of procedures, inspection checklists, startup tests, and a design evaluation of selected schematic, connection, and loop diagrams to determine the status of the drawings and the final installations.

The Remote Shutdown Panel is divided into three sections. Sections 2PL04J and 2PL05J are safety related while section 2PL06J is balance of plant (BOP). The inspector concentrated on the safety-related sections of the panel. During this inspection, the following deficiencies were noted:

a. For section 2PL05J, connection diagram 20E-2-4089K, Revision J, and ECN No. 36345 required the black conductor of cable 2MS683 to be terminated to TB7 point 40 and the white conductor to be terminated

to TB7 point 39. However, the inspector found these conductors to be terminated in reverse; black to point 39 and white to point 40. This cable is being used in the "Main Steam Line Isolation" alarm circuitry. Review of test procedure BwPT-MS-50, Section 9.14, indicated that this circuit was tested by actuating the open limit switches and that leads or jumpers were not used in panel 2PL05J to conduct this test. Further review of latest L.K.C. Q.C. Inspection Checklist of Electrical Termination for cable 2MS683, dated April 24, 1987, indicated in Step 3.1.2. that the cable was terminated per the latest appropriate wiring diagram and ECN-36345 and that the conductors were properly color coded. In addition, the termination card for cable 2MS683 dated April 24, 1987, referenced the ECN and the wiring diagram as the documents used for termination. The inspector informed the licensee that failure to adequately execute a program for inspection of activities affecting quality to verify conformance with procedures and drawings is an example of a violation of the requirements of 10 CFR 50, Appendix B, Criterion X (457/87036-04A(DRS)).

b. The black conductor of cable 2MS286 was observed to be very loose (at least three full turns) on panel 2PL05J, TB7 point 119. Review of schematic diagram 20E-2-4030 MS02, Revision M, identified that this conductor is used for the common positive feed to the automatic actuation signal. This signal is used to close (solenoid "A") Main Steam Isolation Valve 2MS001B during an ESF actuation.

The inspector examined Preoperational Test BwPT-M550, Step 9.6.111, which indicated that a strip chart recorder was connected to TB7 point 119 via clips on June 24, 1987. Step 9.6.174 verified that the strip chart recorder had been removed on July 11, 1987.

Review of the latest Q.C. Inspection Checklist of Electrical Termination for the subject cable, dated September 20, 1986, indicated in Step 3.1.4.c. that lug connections were tight at the termination points. The inspector interviewed Operational Test Engineers, Startup engineers, L.K.C., and other CECo management personnel to determine the activity that caused the terminal to become loose; however, the cause could not be determined. Disposition of this item is identified in Section 8.g of this report.

c. The inspector determined that the majority of the designations on termination points of terminal blocks in panels 2PL04J and 2PL05J did not conform to the designations shown on the applicable design drawings. Disposition of this item is identified in Section 10.b of this report.

In general, the inspector found the installed components and systems in the Shutdown panel to be in accordance with the applicable design documents, regulatory guides, and industry standards.

6. Examination of Main Steam Line and Main Feedwater Isolation Valves and Miscellaneous Equipment

The inspector conducted a review and visual inspection of the MSIV and feedwater stem mounted limit switches and termination boxes used to connect the local devices to the remote equipment (Aux. Equipment Room, Control Room, etc.). The following documents were examined:

- Internal External W/D MSIV Junction Boxes, drawings 20E-2-4382E, F, G, and H, Revisions N, L, N, M, respectively.
- Internal External W/D S.G. 2A-D Feedwater Isolation Valves 2FW009A-D, drawings 20E-4-4410A-D, Revisions F, F, H, G, respectively.
- Schematic diagram S.G.2A Feedwater Isolation Valve 2FW009A, drawing 20E-2-4030FW18, Revision "F."
- Q.C. Inspection checklists for cables 2FW263, 2FW256, 2FW224, dated April 1987.
- Q.C. Inspection Checklists for cables 2MS270, 2MS28, and 2MS564 dated March 1987.
- ICR No. 18988 dated November 24, 1987.

a. During this review, the inspector noted that flexible conduit C2A17J8 which was routed to MSIV Junction Box 2JB499A and which contained safety related cable No. 2MS280 was in contact with a bare section of an insulated pipe. The pipe insulation was carved out in a V shape configuration and the flexible conduit was set inside the V and against the pipe (chemical injection line).

Q.C. Inspection Checklist Form No. 36 of L.K.C Procedure 4.8.9 required that the Q.C. inspector verify that clearance between electrical conduits and mechanical pipes conform to the 3" minimum requirements. The Inspection Checklist for cable 2MS280, dated March 25, 1987, denoted in Section 6.2.d. that the 3" Clearance Notification Form (CNF) No. was N/A. The acceptable column was checked indicating that the installation was verified and found accepted. Subsequent to this finding, the licensee issued ICR No. 18988 to relocate the flexible conduit to achieve the required clearance. In addition, the licensee indicated that a review was conducted to determine whether additional examples existed. No additional examples were found.

The inspector informed the licensee that this was another example of failure to adequately execute a program for inspection of activities affecting quality and that this was a violation of 10 CFR 50, Appendix B, Criterion X (457/87036-04B(DRS)).

b. MSIV Junction box wiring diagrams 20E-2-4382 E through H showed that all cables entering the MSIV Junction boxes were terminated to terminal blocks; however, field visual inspection revealed that none

of these boxes contain terminal blocks and that all cables were spliced using Raychem splices. Note No. 5 on the drawing directed the field to disconnect the cables from the terminal blocks and splice them. The drawings were not corrected to reflect the field as-built condition. Review of Q.C. Inspection checklists indicated that inprocess inspections were done during the cable splicing activities. No additional concerns were noted.

No violations or deviations were identified.

c. Junction box cables/tags on the MSIV and FW boxes were either missing or marked with pen or marker. Also, the tag number for cable 2MS270 was missing. Disposition of this item is identified in Section 10.b of this report.

7. Observation of Ongoing Field Activities

The purpose of this inspection was to ascertain whether ongoing activities relative to electrical and instrumentation components and systems were conducted in accordance with licensee-approved procedures, instructions, and latest drawings; that these activities were preplanned; that the procedures, instructions, and drawings used met the requirements of regulatory guides and industry codes and standards; and that the personnel performing the activities were trained and knowledgeable of the task being performed.

a. On November 12, 1987, the inspector observed field work associated with deficiency No. NR-50-064. This document required repair of source range plug P4A. Pin "A" was found retracted inside the plug and did not make electrical contact. The electricians used Determ Request No. 2217 to determinate cables No. 2NR036 and No. 2NR037 from the plug and MRR No. 23044 to acquire the new plug assembly. This plug is connected to Source Range Neutron Monitoring pre-amplifier 2NR07EB. The present design utilizes two cables which are connected to the 10 pin plug as noted above. The licensee used special instructions as noted on CECo letter BR/PCD 87-124E, dated May 27, 1987, to resolve this problem. Both cables 2NR036 and 2NR037 were stripped back to just past the end of the cable clamp assembly and individual conductors were soldered into the pins in the plug assembly. In place of the rubber bushing, the individual conductors within the clamp assembly were covered with Raychem Heat Shrink Tubing Type WCSF-200. A final coating of Raychem Heat Shrink Tubing Type WCSF-500 was applied over the completed plug assembly. The licensee's Q.C. inspector examined this activity while in progress. The electricians used wiring diagram 20E-2-4056H, Revision "F," during this activity. The work was done effectively and in accordance with set requirements. Personnel appeared to be knowledgeable of the activity being performed.

No violations or deviations were identified.

b. On November 18, 1987, the inspector observed licensee craft personnel during preparations to fill the reactor head RC cable plugs with epoxy potting compound to protect them from adverse environmental conditions.

The licensee used the following documents for this activity:

(1) Guidelines for Grafoil Gasket Retrofit of HJTC Litton Connectors on Eaton Organic Cable No. 60000-MPS-5GL-001, dated September 4, 1985.

(2) Veam Procedure VAP-201, "Epoxy Potting Compound," dated May 18, 1981.

(3) Wiring diagram 20E-2-3555, Revision "K."

(4) Wiring diagram 20E-2-4206C, Revision "D."

(5) RC system cable pull cards.

During the inspection, the inspector noted that all RC cables, which are plug-in cables, were unplugged from the reactor head plug assembly board. Review of the cable termination cards in the work package indicated that termination cards for cables 2RC706, 2RC709, 2RC711, 2RC705, and 2RC708 had been filled out. However, they were not signed and dated. Termination cards for cables 2RC698, 2RC697, 2RC699, 2RC700, 2RC701, 2RC702, 2RC703, 2RC704, and 2RC707 had been filled out, signed, and dated even though the terminations had not been completed. Further review indicated that all associated plug pins had been terminated during February and April, 1987, and left unplugged. All Q.C. Inspection Checklists of Electrical Terminations had been signed, reviewed, and approved during the same period as the termination cards. A note in the checklist remarks column stated "other checklists to follow."

L.K.C. Procedure WI-4.3.9., page 3, item 12, states "the person who did the termination will sign his name, list his brass number and date the termination occurred." The inspector determined that since the cable plugs had not been connected, the termination cards should not have been signed until the plugs were connected to the plug assembly plate. This would have assured that unplugged cables did not exist in the field.

In addition, Appendix "D" of procedure WI-4.3.9., page 12, part 1, stated "Partial/Complete Retermination - a complete retermination is any retermination which leaves the cable end complete per latest design drawing. Any reterm which leaves the cable end with further work remaining to meet the latest design is partial retermination." Therefore, it is apparent that in this case retermination cards should have been issued for all fourteen "RC" cables since they were not terminated as required by the latest design drawing.

Based on the above, the inspector informed the licensee that the failure to follow the cable termination procedure is another example of a violation of 10 CFR 50, Appendix B, Criterion V (457/87036-02B(DRS)).

8. Inspection of Selected Systems and Components

The inspector verified by visual inspections and by review of design documents that the as-built configuration of selected electrical and instrumentation portions of safety related systems conformed to the applicable regulatory requirements and industry codes and standards. The following is a representative sample of plant components and systems inspected:

a. Auxiliary Feedwater Pump 2B startup panel 2AF01J. Documents used - Elevation drawing 20E-2-4468, Revision "H" and latest wiring diagrams 20E-2-4469 A through J.

No deviations or deficiencies were identified.

b. 4160V ESF Switchgear Bus 242 (selected cubicles). Documents used - Key diagram 20E-2-4006B, Revision E, and Internal/External wiring diagrams 20E-2-4613Q, -4613R, 4613S.

No deviations or deficiencies were identified.

c. RC Pump 2A Seal Injection Isolation Valves 2CV8355 A through D. Drawing used 20E-2-4854, Revision E.

During the review of the wiring of the valve limitorque operators, the inspector noted that the individual terminal markings and/or labeling did not match the terminal labeling shown on the wiring diagram. Subsequent to this finding, the licensee presented the inspector with a CECo letter to L.K.C. dated October 6, 1986. The letter stated that L.K.C. was to inform its personnel that limitorque valve operators were to be wired as they are physically pictured on the S&L wiring diagrams and that the individual terminal markings on the valve may be ignored. The inspector raised the concern that plant personnel using these drawings to trouble shoot or to conduct modifications on the valve wirings might erroneously lift the wrong wires or miswire the limit switches. The present drawing designations do not reflect as-built conditions. Disposition of this item is identified in Section 10.b. of this report.

The inspector also walked-down selected power and control cables associated with valves 2CV8355A and B. No deviations or deficiencies were noted during this walkdown.

d. Auxiliary Building HVAC System Control Panel OVA01JD. The following documents were used during the review:

- Loop Schematic diagram 20E-0-4031VA13, Revision L

- Loop Schematic diagram 20E-0-4031VA05, Revision L
- Internal/External wiring diagrams 20E-0-4462 A through G
- Elevation drawing 20E-0-4463 and -4463A
- Internal/External wiring diagram 20E-0-4469W, Revision D
- Q.C. Inspection Checklist for cables 2VA720, 2VA719, and 2VA642
- Approval of Design for Installation Form ADI No. 7559
- FCR-L-25182, dated August 6, 1987
- "Field Problem Reporting/Approval of the Design for Installation," L.K.C. Procedure No. 4.2.3, Revision D.

Visual inspection of panel 0VA01JD revealed that ADI No. 7559 required the determination of ten "2VA" cables to allow for permanent removal of damper 0VA401YA. The cables had been determinated in the field however the inspector noted that the schematic and connection diagrams still showed these cables connected. For example, cable 2VA720 had been disconnected in panel 0VA01JD on November 11, 1987 however loop schematic diagram 20E-0-4031VA13, Revision 6, and connection diagram 20E-0-4462B, Revision M, still showed the cable in the electrical circuit. Review of the Open Design Change Document list in Central File indicated that no change documents were listed to be posted against the drawings noted above. Further review of L.K.C. ADI procedure 4.2.3., Revision D, indicated that changes made to existing plant design, using ADI's, are not required to be posted on the drawing as do changes made by the use of ECN's, FCR's, FCN's, and DCR's. The inspector expressed the concern that plant personnel using an "authorized for use" print obtained from central file to conduct field or design activities would not be aware of the fact that a design change to these drawings was pending.

During the review of panel 0VA01JD, the inspector noted that TB54TB point 10 contained an extra orange conductor. Subsequent review indicated that FCR-25182 had added these conductors. Additional review of the Q.C. Cable Inspection Checklist and the Cable Determination Card for cable 2VA720, dated November 16 and 11, 1987, respectively, indicated the following discrepancies:

(1) The referenced wiring diagram in the Q.C. termination checklist was a Unit 1 drawing instead of a Unit 2 drawing.

(2) The Q.C. checklist indicated "acceptable" for item 3.1.1., "cable termination is correct" while review of the cable termination card indicated that the referenced drawing on the card as used during this activity did not exist.

(3) The remarks column referenced termination points in a Unit 1 panel for the 2VA720 cable. The cable was actually determinated in a Unit 2 panel.

Subsequent to the findings noted above, the inspector interviewed L.K.C. craft and supervisory personnel to determine the reason for the deficiencies noted. The L.K.C. Supervisor explained that the Q.C. inspector conducted the activity in the panel with the lights off and documented his inspection findings when he returned to his office. Therefore, he made the errors noted.

Based on the findings above, the inspector informed the licensee that failure to correctly document and reflect completed inspections as required by L.K.C. Procedure 4.8.9 is another example of a violation of 10 CFR 50, Appendix B, Criterion V (457/87036-02C(DRS)).

e. Full Length Rod Control MG Sets Swgr 2RD03E. Drawings used - Elevation drawing No. 20E-2-4209, Revision A, Internal-External wiring diagrams 20E-2-4210 and 4210 A through C.

During this inspection, the inspector noted the following discrepancies:

(1) An additional internal conductor was found terminated at device 9SW, terminal 11A top. Drawing 20E-2-4210C, Revision "C," showed only one conductor at point 11A.

(2) Drawing 20E-2-4120C, Revision C, showed two conductors terminated at device 7IL (code 611), while only one wire was found terminated to this point in the field.

These discrepancies were discussed with the licensee. The panels were identified by the licensee to be non-safety related.

f. 2A and 2B Diesel Generator Skids and Panels. Documents used - L.K.C. procedure 4.3.9 "Cable Termination Installation, Revision G; Engineering Change Notice No. 37138, dated September 28, 1987; revision/work request traveller no. 22816, dated December 12, 1987; internal/external wiring diagrams Diesel-Generator 2A Auxiliary Skid drawings 20E-2-4094A through D; Diesel Generator 2A control panel 2PL07J 20E-2-4093 series drawings and the system construction to operation Turnover Review Package.

The review and inspection indicated that the as-built configuration of the skid termination boxes and Panel 2PL07J wiring generally conformed to the requirements delineated in the applicable electrical and instrumentation design drawings and documents. However, the following deficiencies were noted:

(1) Horizontally mounted skid termination box 2DG01KA contained a backplate which should have been bolted down using four bolts. This plate supports eight terminal blocks. The backplate was

observed to be bolted down by only one loose bolt; the other three bolts were missing. In addition, the skid metal cover plate, which is normally tightly closed using 16 bolts (seismic qualification), was observed to be open; all 16 bolts were missing.

(2) The metal cover plate on skid box 2DG01KA-P was observed to be open. The six bolts were found inside the box.

(3) The cover plate on power driven potentiometer 90M0C, which is part of the D.G. voltage regulator assembly, was loosely held in place by only one of four screws.

Subsequent review to determine the circumstances associated with the findings noted above indicated that on October 1, 1987, the DG rooms had been inspected for incomplete construction prior to turning the DG system to operations. The results of this inspection were documented in the "Electrical Maintenance Department Area Turnover Review Checklist," dated October 1, 1987. None of the deficiencies noted above were identified during this inspection. The Turnover Package was signed off and the DG system was turned over to operations.

Based on the findings noted in (1) through (3) above, the inspector informed the licensee that this was another example of failure to adequately execute a program for inspection of activities affecting quality and that this was an example of a violation of the requirements of 10 CFR 50, Appendix B, Criterion X (457/87036-04C(DRS)).

(4) The shields of instrument cables to devices F82 and F83 in panels 2PL07J and 2PL08J were observed to be bolted to each other and laying untaped inside the wireway, (Ref. ECN-37138). L.K.C. Procedure 4.3.9., dated November 12, 1986, Attachment 13, described the proper way to perform a splice; however, the shield configuration observed in the wireway was not included in any procedure. The latest inspection checklist indicated that the connections were acceptable. The inspector informed the licensee that this was another example of failure to adequately execute a program for inspection of activities affecting quality and that this was an example of a violation of the requirements of 10 CFR 50, Appendix B, Criterion X (457/87036-04D(DRS)).

(5) Nameplates above D.G. control switches in panels 2DG01KA and B were handwritten and did not appear to be permanent. Also, some of the markings on the nameplates were scratched out and rewritten, for instance, "remote" was crossed out and "local" was handwritten above it. Disposition of this item is identified in Section 10.b of this report.

g. Using the applicable design drawings, portions of the following selected Main Control Room and Auxiliary Equipment Room Control and Instrument Panels were inspected:

- Main Control Panel 0PM02J
- Main Control Board Containment Isolation Panel 2PM11J
- Main Control Board Gen and Aux Power Panel 2PM01J
- Auxiliary Equipment Room Panels 2PA13J, 2PA15J, 2PA24J, 2PA27J, and 2PA29J

The inspector concentrated on inspecting attributes associated with the termination of safety related circuits and the as-built configuration of the panels. During this review, the inspector noted the following:

(1) A very loose termination at point 1F of Auxiliary Exhaust Fan OC switch OHS-VA007 at panel 0PM02J.

(2) Label above ESS SWGR Vent Fan Switch 2HS-VX001 in Panel 0PM02J was designated HF4 instead of JF4. Disposition of this item is identified in Section 10.b. of this report.

(3) Auxiliary Safeguards Relay Cabinet 2PA27J drawing 20E-2-4148E, Revision G, indicated that the black conductor and white conductor of cable 2MS662 were terminated at TB930 points 8 and 7, respectively; however, in the panel they were reversed. This cable was classified as non-safety related therefore no QC inspections were performed on this cable.

The visual inspection indicated that the equipment installations generally conformed to the applicable design requirements and standards. However, it appeared that loose terminals still existed in the panels subsequent to the licensee's completion of work and subsequent to Q.C. inspections in these panels. The licensee could not determine the root cause of the identified loose terminals. To address this concern, the licensee requested that L.K.C. Q.C. perform a sample inspection of 100 randomly selected cables in various locations of the plant.

The following visible attributes were inspected by the licensee on December 3, 1987:

- Cable terminated per current revision of wiring diagram
- Conductors properly color coded
- Shield/drain wire terminated correctly

- Correct size lug
- Lugs tight at terminal point
- Cable correctly identified
- Cable separation
- Cable free from damage/term block free from damage

Of the cables inspected, one chipped terminal block was found in panel 2PA31J.

On December 16, 1987, Westinghouse engineers performed another inspection at CECo's request. The inspection was performed on a random selection of safety related devices. The selection was based on the accessibility and visibility of these devices in the MCB. The final results of this inspection indicated that no loose termination existed in the approximately 228 terminations inspected.

Concurrent with the Westinghouse effort, the licensee's PCD engineers together with L.K.C. engineers conducted an additional inspection of randomly selected panels and identified the following:

AREA INSPECTED	APPROXIMATE NUMBER OF TERM POINTS INSPECTED	NUMBER OF LOOSE TERMINALS FOUND
Remote Shutdown Panel	1,200	1
Main Control Room Panels -		
Safety-Related	4,800	6
Non Safety-Related	7,800	14
Auxiliary Equipment Room Panels - 2PA27J and 2PA28J	1,700	1
Auxiliary Equipment Room Panels - 2PA31J and 2PA32J	2,400	5
Main Control Room	200	No defects
Random Cable Inspection	600	No defects

A review of four of the loose safety related conductors indicated that the following could have been affected:

(a) Schematic diagram 203-2-4030DG31, wire code DG2A4B, which is the common conductor for all three DG 2A status indicating lights.

(b) Schematic diagram 20E-2-4030C[illegible]8, wire code 8116C4, which is used in the automatic cir t to close the Centrifugal Charging Pump Miniflow Isolation Valve 2CV8116.

(c) Schematic diagram 20E-2-4030SD03, wire code SD2BA0, which is used in the open circuit of Steam Generator 2A Blowdown Isolation Valve 2SD002B.

(d) Schematic diagram 20E-2-4030P531, wire code PS228AC1, which is used in the Auto Start circuit to close Post Accident Hydrogen Monitor Containment Isolation Valve 2PS228A.

As a result of the loose terminations identified above and in Section 5.6 of this report, the inspector informed the licensee that this was another example of failure to adequately execute a program for inspection of activities affecting quality and that this was an example of a violation of the requirements of 10 CFR 50, Appendix B, Criterion X (457/87036-04E(DRS)).

During this inspection, as documented above, the licensee implemented prompt corrective action to inspect, identify, and correct additional problems with loose terminations. The inspector reviewed the corrective action and determined that it was satisfactory to resolve this issue. Therefore, no further response from the licensee is necessary and this item (457/87036-04E(DRS)) is closed.

(4) Relative to the issue of loose terminations, the inspector was informed that in November 1987, various deficiencies were identified in the vendor internal wiring of Auxiliary Equipment Room panels 2PA31J and 2PA32J as documented in L.K.C. NCR-5751, dated September 16, 1987. Typical findings included: bad crimps, lugs twisted, bad wire insertions, and strands under screwheads. The disposition of these findings were documented in NCR No. 949 dated November 16, 1987. Possible Deficiency Report PDR No. 0020 were written to inspect the identical panels in Unit 1 (1PA31J and 1PA32J) for identical deficiencies noted in the Unit 2 panels.

This is an open item pending licensee action and NRC review (455/87038-06(DRS); 457/87036-06(DRS)).

9. Critical Drawings Control

The control room critical drawings are required to reflect the current as-built conditions of the plant. They are used by operating personnel during trouble shooting and in emergency situations.

During this inspection, the inspector reviewed the control room drawings to determine if modifications, design changes, and temporary modifications were reflected on the drawings. The review included selected systems and drawings, field walkdown of selected critical drawings to determine adequacy of as-built conditions, and examination of applicable procedures, control room logs, and design change documents. Also discussions and interviews were held with control room operators, supervisors and technical staff engineers. The following observations were made during this review:

a. Procedure BwAP 1340-14, Revision 4, "Critical Drawing Control," did not require that as-built mark-ups on the critical drawings be circled, dated, and signed so that one can trace the markings to the initiating change document and to the person that placed the markings on the drawings in the control room. The current methodology of marking the drawings did not ensure that all necessary markings were on the drawings neither did it ensure that the existing markings had been placed on the drawings by the Technical Staff Critical Drawing Coordinator as required by the procedure. In addition, the procedure required, in Section 5.a., that Central File retain a completed Critical Drawing Change Record Form BwAP 1340-14B which was used by the Critical Drawing Coordinator to record the date of the drawing change and signatures. During the review, the inspector noted that control room critical drawing M-46, sheets 1B and 1C, "Core Spray System," contained red (addition) and green (deletion) markings; however, the Critical Drawing Change Record Form BwAP 1340-14B could not be located in Central File as required by the procedure, neither could it be found in the coordinators personal file. Furthermore, no permanent change document has been initiated for this change. Field inspection of these drawings in Unit 1 indicated that the drawings reflected the as-built configuration. Review of identical drawings for Unit 2, M-129, sheets 1B and 1C revealed that the Unit 2 field configuration was identical to the Unit 1 field configuration; however, the Unit 2 critical drawings had not been marked to reflect these changes. Subsequent to these findings the licensee corrected the Unit 2 drawings to reflect the noted changes.

b. "Temporary Alterations" procedure BwAP-330-2, Revision 1, addresses lifted leads, electrical jumpers, and temporary mechanical alterations. Per Section 2.e.(5), when an alteration is ready to be installed, the SCRE is to make a copy of the Log sheet for the Log Book and send the marked-up Critical Drawings, if any, and a copy of the log sheet to the Technical Staff design review group. An interview with a SCRE in the control room indicated that he had not known that this requirement existed in the procedure. This portion of the procedure was revised on October 8, 1987. However, on December 12, 1987, it appeared that the SCRE and another operator were not aware of this change. In addition, temporary changes affecting Critical Drawings were not addressed by the procedure prior to the October 8, 1987 revision.

Subsequent to these findings, licensee management informed the inspector that a review would be conducted on all control room critical drawings to assure that the appropriate temporary changes have been reflected on the drawings and that changes that have been removed from the field do not appear on the control room drawings.

c. A review of recently marked-up Critical Drawing No. M-95, "Auxiliary Building HVAC System," identified several errors. During a walkdown of system VA-11, the operations engineer documented identified deficiencies on the "Release to operation" document. These deficiencies required that changes be made to applicable Critical Drawings. The required changes were identified in the comments on the walk-down documents. The errors were made by the Critical Drawing Coordinator while transferring the comments from the VA-11 walk-down documents to the applicable Critical Drawings.

The inspector noted that the critical drawing procedure does not require that the Cognizant System Engineer verify and confirm that the Critical Drawings have been correctly marked to reflect the as-built condition of the system prior to the drawings being placed in the control room.

d. Several Critical Drawings were stamped "Revision Pending," indicating that a design change document was pending against the drawing; however, review of Central File's Open List indicated no change documents listed against these drawings. Examples were drawings M-48, Sheet 1, Revision "AN" and M-60, Sheet 8, Revision "AB."

e. Temporary Alteration Log Sheets LL-1-525, dated January 30, 1987, and EJ-1-612, dated July 19, 1987, referenced connection diagrams as being the affected drawings rather than the applicable schematic diagram. Since there are no connection diagrams in the Critical Drawing List in the control room, these Temporary Alteration Sheets should contain reference to the schematic diagrams affected by the listed connection diagrams so that the appropriate critical drawings could be marked up to reflect the temporary change.

During this inspection period, the Unit 2 Critical Drawings in the control room were hatched out and not updated; therefore, Unit 2 Critical Drawing Control could not be adequately reviewed during this inspection.

Items 8.a. through 8.e. are considered unresolved pending licensee action and additional NRC review (456/87038-07(DRS); 457/87036-07(DRS)).

10. Review of OAD Construction Activities

a. OAD document, Thermal Overload Relay Sizing, Revision 0, dated October 9, 1986, stated in Paragraph 1.c.2. that if the valve motor measured running current exceeded the nameplate full load current by more than 30%, engineering evaluation was required.

While reviewing OAD's Electrical Data Form No. 1, "Motor Sheets for Safety Related Motor Operated Valves," the inspector noted that running amps measured on RCP 2B Seal Injection Isolation Valves 2CV8355B, 2CV8355C, and several other smaller valves have exceeded the manufacturer nameplate Full Load Amps by more than 30%. Subsequently, OAD engineers performed a review of the Unit 2 valves to determine if any exceeded the allowable value. The inspector was informed by OAD engineering that all deviations for Unit 2 valves had been resolved; however, they could not assure the inspector that Unit 1 valves have been reviewed. This is considered an open item pending additional review by the inspector (456/87038-08(DRS); 457/87036-08(DRS)).

b. The inspector conducted a visual field inspection of ESF MCC 232X5 to verify thermal overload sizes, starter sizes, circuit breaker trip settings, and nameplate data. Tabulation of Trip Settings, drawing 20E-2-4000AD, Revision M, and OAD motor data sheets were used for this review. The inspector noted that although MCC compartments C1, C2-A, F4, and F5 were shown as unused on drawing 20E-2-4000AD, they all contained nameplates in the field designated for 2SI02PB, 20G03J, 2MS018E, 20G053A, and 20G058, respectively. Discussions with PCD supervisors and review of engineering verification walkdown packages, which were completed by the licensee at the end of 1986, revealed that the licensee had been made aware of nameplate and designation deviations during the verification walkdown in 1987; however, as of the time of this inspection, no documented evidence was available for review to indicate that corrective action to resolve this issue had been initiated.

Based on the above findings and the findings previously identified in Sections 4.d, 5.c, 6.c, 8.c, 8.f.(5) and 8.g.(2) of this report, the inspector informed the licensee that failure to take corrective action and ensure that conditions adverse to quality such as the noted deficiencies are promptly corrected and resolved was an example of a violation of 10 CFR 50, Appendix B, Criterion XVI (456/87038-05(DRS); 457/87036-05(DRS)).

11. Training

The effectiveness of the licensee's training program was reviewed by the inspector during the witnessing of ongoing field activities and during interviews with plant personnel. Licensee personnel appeared to be knowledgeable of the task being performed. No violations or deviations were identified.

12. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involves some action on the part of the NRC or licensee or both. Open items disclosed during this inspection are discussed in Paragraphs 4.c, 4.e, 4.g, 8.g.(4), and 10.a.

13. Unresolved Items

An unresolved item is a matter about which more information is required in order to ascertain whether it is an acceptable item, an open item, a deviation, or a violation. An unresolved item disclosed during this inspection is discussed in Paragraph 9.e.

14. Exit Interview

The Region III inspector met with licensee representatives (denoted under Paragraph 1) at the conclusion of the inspection on December 22, 1987. In addition, additional discussions were conducted telephonically on January 19, February 18 and 26, 1988. The inspector summarized the purpose and findings of the inspection. The licensee acknowledged this information. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary.