U. S. NUCLEAR REGULATORY COMMISSION
REGION 1

Report Nos.	91-16 91-10
Docket Nos.	50-289 50-320
License Nos.	DPR-50 DPR-73
Licensee:	GPU Nuclear Corporation P.O. Box 480 Middletown, PA 17057
Facility:	Three Mile Island Station, Units 1 and 2
Location:	Middletown, Pennsylvania
Inspection Period:	June 23 - July 20, 1991
Inspectors:	Francis I. Young, Senior Resident Inspector David P. Beaulieu, Resident Inspector David T. Diec, Resident Intern

Approved by: for James E Beall — AUG 06 1991
William Ruland, Chief — Date
Reactor Projects Section No. 4B

Inspection Summary

The NRC Staff conducted routine and reactive safety inspections of Unit 1 power operations and Unit 2 cleanup activities. The inspectors reviewed plant operations, maintenance, radiological practices, security measures and engineering support activities as they related to plant safety.

Results: An overview of inspection findings are in the executive summary.

TABLE OF CONTENTS

EXECUTIVE SUMMARY
Three Mile Island Nuclear Power Station
Report Nos. 50-289/91-16 & 50-320/91-10

Plant Operations

Overall, Unit 1 plant operations were conducted in a safe manner. The Unit-2 accident generated water evaporator has vaporized approximately 530,000 gallons of AGW to atmosphere at the close of the inspection period. A composite sample valve, V-86, used to collect a sample to determine evaporator decontamination factor was found closed. The licensee was issued a violation for the same concern in Inspection Report 50-289/91-08 and 50-320/91-05. The licensee will address both incidents when responding to the violation.

One resistor on each of two Degraded Grid Voltage Relays (used to start emergency diesel generators) were damaged while performing preventative maintenance. With two relays inoperable, technical specifications require action to be taken within one hour to place the unit in hot standby. However, it could not be determined from drawings whether the resistors were in a test circuit and therefore did not render the relays inoperable. By the time a test was conducted to determine that damaged resistors did in fact make the relay inoperable (nearly four hours later), one relay had been repaired, taking the licensee out of the shutdown action statement. The inspector reviewed the licensee's drawings and actions taken and had no concerns.

The draining of condensate pump "B" for maintenance led to air introduction into the operating condensate pumps through a leaking pump suction valve. The condensate system pressure drop resulted in a slight temporary underfeeding of the steam generators, causing a reactor coolant system pressure increase and pressurizer spray valve actuation. The spray valve was manually closed at 2125 psi, 30 psi below setpoint and this is still being evaluated. No other operator actions were required and the inspector had no other concerns.

Maintenance and Surveillance

Scaffolding was installed against a high pressure injection discharge valve (MU-V-16D) handwheel such that manual operation of the valve was difficult. The safety significance of the improperly installed scaffolding was minimal since operation of the valve's handwheel was still possible. The inspector concluded this incident demonstrated a lack of attention to detail by the utility personnel installing the scaffolding and constituted a weakness.

Engineering and Technical Support

A ground locating device used to find grounds on energized DC busses caused the spurious opening of the reactor building purge exhaust outer isolation valve. An older design of this device had been proven effective in locating grounds without actuating components. The newer design, used for the first time the day the purge valve opened, was not fully evaluated by engineering to determine the differences in design and the effects these differences could have on plant components.

DETAILS

1.0 SUMMARY OF FACILITY ACTIVITIES

1.1 Licensee Activities

The licensee began the inspection period operating at 93 percent power. Reactor power was limited to 93 percent due to once through steam generator (OTSG) operation at the high level limit because of secondary side fouling.

The Accident Generated Water (AGW) evaporator continued to vaporize AGW to the atmosphere and at the close of the inspection period approximately 530,000 gallons had been vaporized.

1.2 NRC Staff Activities

This inspection assessed the adequacy of licensee activities for reactor safety, safeguards and radiation protection. The inspectors made this assessment by reviewing information on a sampling basis. Information was obtained through actual observation of licensee activities, interviews with licensee personnel and documentation reviews.

Inspections were conducted on both normal and backshift hours: 47 hours of direct inspection were conducted on backshift; 6.75 hours were conducted on deep backshift. The times of backshift hours were adjusted weekly to assure randomness.

1.3 Persons Contacted

D. Atherholt, Operations Engineer
*R. Bensel, Lead Electrical Engineer
G. Broughton, Vice President and Director
J. Byrne, Manager, TMI-2 Engineering
W. County, Manager, QA Audit
C. Faust, Technical Analyst
*K. Garthwaite, Electrical Engineer III
S. Giacobbe, Manager, Plant Engineering
G. Giangi, Manager, Corp. Emergency Preparedness
R. Harper, Director, Plant Material
C. Hartman, Manager, Plant Engineering
*W. Heysek, Licensing Engineer
G. Kuehn, Site Operations Director, TMI-2
R. Knight, Licensing Engineer
R. Long, Director TMI-2/CS
*R. Maag, Manager, Plant Material
A. Miller, Manager, Program Controls
M. Nelson, Manager, Nuclear Safety
J. Paules, Senior Operations Engineer

M. Press, QA Auditor
*R. Rogan, Director, Licensing and Nuclear Safety
M. Ross, Director, Plant Operations and Maintenance
*J. Schork, Manager, Licensing, TMI-2
*T. Seaver, QA Auditor
*H. Shipman, Director, Plant Operations
G. Simonetti, Manager, Emergency Preparedness
R. Skillman, Director, Plant Engineering
P. Snyder, Manager, Plant Materiel Assessment
C. Smyth, Manager, TMI-1 Licensing
J. Stacy, Manager, Security

Other persons present at exit meeting:

R. Cook, Commonwealth of Pennsylvania, DER
D. Diec, Resident Intern, DRP, NRC

*Denotes attendance at final exit meeting (see section 8.0)

2.0 PLANT OPERATIONS

2.1 Operational Safety Verification

The inspectors observed overall plant operation and verified that the plant was operated safely and in accordance with licensee procedures and regulatory requirements. Regular tours were conducted of the following plant areas:

--Control Room
--Switch Gear Areas
--Access Control Points
--Protected Area Fence Line
--Fuel Handling Building
--Diesel Generator Building
--Auxiliary Building
--Turbine Building
--Intake Structure
--Yard Areas
--Containment Areas

Plant conditions were observed through routine control room tours. Operability of engineered safety features, including onsite and offsite power sources, were verified. Selected safety significant valves were checked for proper alignment. Operator response to alarm conditions was observed to assure actions taken were in accordance with plant operating procedures. Compliance with Technical Specifications, including implementation of appropriate action statements for equipment out of service, was verified. Instrumentation and plant computer indications were observed for correlation between channels. Fire protection, meteorological, and seismic monitoring systems were also inspected.

Logs and records were reviewed to determine if entries were accurate and identified equipment status or deficiencies. These records included operating logs, turnover sheets, and system safety tags.

The inspector observed various other control room activities. Shift turnovers were witnessed and staffing requirements were confirmed. Operators were interviewed concerning their understanding of why annunciators were in an alarm condition and their knowledge of current plant conditions and out-of-service equipment. The inspector verified adherence to approved procedures for observed activities. The inspectors observed control room access to assure it was properly controlled and a professional atmosphere was maintained. Inspector comments or questions resulting from these reviews were resolved by licensee personnel.

The inspector conducted detailed walkdowns of accessible areas, of both Unit 1 and Unit 2. Major components were visually inspected for leakage, proper alignment, proper lubrication, proper cooling water supply, and any general condition that might prevent fulfillment of their safety function. Plant housekeeping controls were monitored, including control and storage of flammable material and other potential safety hazards.

Particular attention was paid to ensuring log keeping practices were in accordance with Administrative Procedure 1012, "Shift Relief and Log Entries." No concerns were identified.

2.2 Containment Integrity Checklist

Selected portions of Operating Procedure 1101-3 "Containment Integrity and Access Limits" was performed to verify containment integrity and conformance with plant technical specifications. Valve lineups were performed on containment isolation valves outside containment. Other items used to ensure containment integrity such as locking devices, blank flanges and pipe caps/plugs were verified installed. Containment isolation valves were inspected to ensure they were conspicuously marked as required by technical specification 3.6.5.

Several minor discrepancies were noted concerning the marking of containment isolation valves. This included not drilling out non-applicable information on several metal tags used to mark the isolation valves. The inspector had no other concerns.

2.3 Damaged Degraded Grid Voltage Relays

On July 7, 1991, the licensee performed preventative maintenance on breaker ISA-D2 on the 1D bus (safety related, 4160V). At 8:11 p.m., while racking in the breaker, the breaker shifted and one resistor on each of two Degraded Grid Voltage Relays (27-1 and 27-3) were damaged. The Degraded Grid Voltage Relays are installed to protect safety-related loads from sustained off-site degraded grid voltage. The associated emergency diesel will start when 2 of 3 relays sense a degraded grid voltage (3760 volts for 10 seconds). Technical Specification Table 3.5-1, item 5.a, requires 2 channels (relays) to be operable with a

minimum degree of redundancy of one. Since two relays were inoperable, Technical Specification 3.0.1 applied, which requires action to be taken within one hour to place the plant in hot standby in 6 hours.

The licensee was aware of the above requirement, however, it could not be immediately determined whether the damaged resistors affected the operability of the relays. Electrical schematics and a vendor manual were reviewed and the licensee initially concluded that the resistors were part of a test circuit and, therefore, would not affect the operability of the relays. However, because this determination was not certain, plant engineering was called to the plant to make this determination. Plant engineering was also uncertain about relay operability and recommended that one of the damaged resistors be replaced while the other relay was tested for operability. By 11:35 p.m., one resistor was replaced and the relay was properly tested. The second relay was tested before replacing the damaged resistor and the relay failed to operate when voltage was reduced, demonstrating that the damaged resistors had caused the relays to become inoperable. This test was completed at 11:55 pm. However, with one relay repaired, the licensee was no longer in a technical specification action statement. The remaining damaged resistor was then replaced and the relay was tested satisfactorily, thus restoring all three relays to an operable status at 12:05 a. m. on July 8, 1991.

The Plant Review Group (PRG) concluded that, if more information had been known at the time, the two damaged relays would have been declared inoperable and Technical Specification 3.0.1 would have applied. The PRG determined that the actions taken following the damage to the resistors were prudent and appropriate. The PRG concluded that this event was reportable under 10 CFR 50.73 (a)(2)(i)(B) (any operation or condition prohibited the plant's Technical Specifications)

If the licensee had actually entered Technical Specification 3.0.1 and begun a plant shutdown, an NRC notification would have been required within one hour, under 50.72 (b)(1)(i)(A) (initiation of a plant shutdown required by Technical Specifications). Although no plant shutdown was initiated, an Emergency Notification System call was made by the licensee describing the event that occurred.

The inspector reviewed this event and found the licensee's actions to be reasonable based on the information available to the licensee at the time. The inspector conducted an independent review of the vendor manual drawing showing the damaged resistor and was also unable to determine whether or not the resistor was part of the test circuit or not. Based on this, the inspector found the licensee's actions of repairing one resistor while making preparations to test the other relay for operability to be appropriate. The inspector had no other concerns associated with this event.

2.4 Transient Due to Air Entry in Condensate Pumps Suction

On July 16, 1991, condensate Pump B (CO-P-1B) was undergoing maintenance and the pump's suction and discharge valves were closed. The pump had been drained through the drain valve (CO-V-113B), and the drain valve remained shut. The drain valve was maintained shut because air in-leakage to the condensate system through the condensate pump suction valve (CO-V-11B) had been noted as evidenced by an increase in condensate system dissolved oxygen. An attempt was made to stop the suction valve from leaking by shutting the suction valve with more force. The suction valve, a butterfly valve, closed an additional one and one-half turns. The pump drain valve was then opened to determine if air could be felt being drawn in through the drain pipe. The drain valve was open less than one minute. Shutting the suction valve with more force apparently caused the air leak to worsen, resulting in air being drawn into the suction of the two operating condensate pumps (CO-P-1A and CO-P-1C). The air in-leakage caused a plant transient that lasted approximately four minutes and is described as follows:

- The operating condensate pumps (CO-P-1A and CO-P-1C) indicated amperage of less than 50 percent (normally 78 percent).

- Computer alarms were received for low condensate booster pump discharge pressure and low feedwater regulating valve differential pressure.

- Condensate booster pump discharge pressure decreased to 200 psig (normally 510 psig).

- Both feed pump speeds increased approximately 900 rpm to 4900 rpm.

- The resultant slight decrease in steam generator level caused reactor coolant system pressure to increase to approximately 2205 psig causing the pressurizer spray valve (RC-V-1) to open.

- After the air passed through, condensate system pressures recovered but before the feedwater regulating valves could recover, the B steam generator was overfed and indicated slightly greater than 100 percent for approximately 40 seconds.

The pressurizer spray valve, whose setpoint to reclose is 2155 psi, was manually shut when the RCS wide range (0-3000) digital display read 2125 psig. A plot of the RCS narrow range (1700-2500 psi) pressure instrument also indicated a pressure reduction to 2125 psi. The Director of Operations indicated that this discrepancy had occurred before and when tested electronically, the setpoint was verified correct. Based on this, the Director of Operations indicated that the licensee did not intend to reverify the setpoint because of this latest incident. The licensee indicated if the valve had closed at 2125 psi, this would have been acceptable. However, it is unknown whether the valve actually began to close at 2125 psi. The licensee has committed to verifying the setpoint during the next refueling outage.

The inspector reviewed the plots of various parameters associated with this transient and interviewed the shift supervisor. Except for the pressurizer spray valve setpoint, the inspector had no concerns associated with the plant's response to the transient. The inspector will review the test results for the pressurizer spray valve setpoint when the test occurs next refueling outage. The inspector reviewed the initiating events for this transient and concluded that the transient was not caused by unsafe licensee activities. A decrease in suction valve leakage would have been expected when more force was placed in the shut direction and, therefore, shutting the valve should have contributed to plant safety by reducing the oxygen introduction into the condensate system. Operator response to the transient appeared to be adequate, and the inspector had no other concerns.

3.0 EVAPORATION OF TMI UNIT 2 ACCIDENT GENERATED WATER

The inspectors observed overall evaporator operation and verified that the evaporator was operated in accordance with licensee procedures and regulatory requirements. Events that occurred were reviewed to assure that the evaporator was operated safely and did not adversely affect the environment or the public. During the inspection period, the evaporator was shut down several times due to various mechanical difficulties. At the close of the inspection period, 530,000 gallons of the 2.3 million gallons of AGW had been evaporated. One concern was identified as described below.

3.1 Repeated Misposition of Accident Generated Water (AGW) Vaporizer Composite Sample Valve

On June 26, 1991, the AGW evaporator was restarted following maintenance on the blender/dryer. The evaporator had been operating approximately 15 minutes when a licensee engineer noted that the vaporizer subsystem exhaust composite sample valve, V-86, was not open as required by "Processed Water Disposal System Operating Procedure," 4215-OPS-3185.05, revision 1, steps 4.24 and 6.2.14. The vaporizer exhaust composite sample is used to verify that the evaporator system is meeting its required average decontamination factor (DF) of 1000. The sample is not used to determine environmental releases.

Upon being notified of the event, the Site Operations Director of TMI-2 ordered the evaporator shut down until the event could be analyzed and corrective actions implemented. The corrective actions included:

- Replacing opaque sample tubing and an opaque composite sample container with clear materials so that sample flow could be easily observed and verified.

- Checking the position of V-86 on an hourly basis.

- Requiring that two separate individuals independently verify and sign off procedure steps for key valve positions, including V-86.

The inspector determined that the safety significance of V-86 being closed was minimal since (1) the sample is not used to determine environmental releases, (2) the valve was closed only 15 minutes during operation and (3) the contents of the evaporator system were being diluted with domestic water during the event. However, the licensee was issued a Notice of Violation in Inspection Reports 50-289/91-08 and 50-320/91-05 when V-86 was found closed. Technical Specification 3.9.13 requires that "Accident Generated Water shall be disposed of in accordance with NRC approved procedures." The NRC approved operating procedure 4215-OPS-3185.05, revision 1, "Processed Waste Disposal System Operating Procedure" requires that valve V-86 be throttled open with a steady rapid drip into the collection bottle when the vaporizer heaters are energized. The licensee has committed to respond to both events when responding to the Notice of Violation.

3.2 Conference Call With NUPAC Concerning AGW Evaporator Operations

On July 9, 1991, a conference call, requested by the NRC, was held to discuss the poor evaporator operator performance since Accident Generated Water (AGW) evaporation began in January, 1991. The following persons participated in this call:

NRC
J. Wiggins, Deputy Director, DRP
E. Wenzinger, Chief, Projects Branch, No. 4, DRP
W. Ruland, Section Chief, Projects Branch No. 4B, DRP
W. Pasiak, Chief, Facilities Radiation Protection, DRSS
J. Kottan, Laboratory Specialist, DRSS
D. Beaulieu, TMI Resident Inspector
D. Diec, TMI Resident Intern
P. Harris, Reactor Engineer, DRP
S. Weiss, NRR/PDNP
M. Masnik, NRR/PDNP
L. Thonus, NRR/PDNP

GPUN
R. Long, Vice President and Director, TMI-2
G. Kuehn, TMI-2 Site Operations Director
R. Rogan, TMI Licensing Director
J. Byrne, Manager, TMI-2 Engineering

NUPAC
T. Thomas, Vice President/General Manager
C. Fellhauer, Vice President, Operations
D. Murnane, Regional Operations Manager
M. Carson, Consultant

The meeting began with a brief discussion by the NRC regarding each of the various problems that have occurred with evaporator operations since evaporation began in January 1991. All of these concerns have been documented in the resident inspector monthly inspection reports.

GPUN and NUPAC discussed the various corrective actions that have been taken to improve operations. These corrective actions included rewriting the cumbersome evaporator operating procedure. They also indicated that the problem with the composite sample valve, V-86, being closed may be caused by valve stem expansion during heatup. Replacing the valve with a different type of valve or an orifice was being considered.

The TMI-2 Site Operations Director indicated that he was convinced that NUPAC was able to properly operate the evaporator. One goal was to increase evaporator availability such that vaporization of all AGW will be completed by April, 1993. For this to occur, an availability of 75 percent is required. The licensee currently has an availability of 41 percent.

4.0 RADIOLOGICAL CONTROLS

4.1 Routine Radiological Controls

Posting and control of radiation and high radiation areas were inspected for both Units 1 and 2. Radiation Work Permit compliance and use of personnel monitoring devices were checked. Conditions of step-off pads, disposal of protective clothing, radiation control job coverage, area monitor operability and calibration (portable and permanent) and personnel frisking were observed on a sampling basis. No noteworthy observations were made.

5.0 MAINTENANCE AND SURVEILLANCE

5.1 Maintenance Observations

The inspector reviewed selected maintenance activities to assure that:

- The activity did not violate Technical Specification Limiting Conditions for Operation and that redundant components were operable;

- Required approvals and releases had been obtained prior to commencing work;

- Procedures used for the task were adequate and work was within the skills of the trade;

- Activities were accomplished by qualified personnel;
- Where necessary, radiological and fire preventive controls were adequate and implemented;
- QC hold points were established where required and observed; and,
- Equipment was properly tested and returned to service.

Maintenance activities reviewed included:

- Corrective Maintenance Procedure 1420-DC-1B, "Locate Grounds on 'B' DC Distribution System." Inspected July 11, 1991.
- Corrective Maintenance Procedure 1420-DC-5B, "Locate Grounds on 'B' DC Distribution System Using the Groundbuster." Inspected July 11, 1991.
- Corrective Maintenance Procedure 1420-LTQ-7, "Dynamic Testing of Motor Operated Valves Using MOVATS Series 3000 Valve Analysis System," for valve RR-V-4B. Inspected July 12, 1991.
- Corrective Maintenance Procedure 1420-LTQ-7, "Dynamic Testing of Motor Operated Valves Using MOVATS Series 3000 Valve Analysis System," for valve NS-V-16A. Inspected July 2, 1991.

The inspector had several concerns with the use of the Groundbuster and these are documented in section 7.1 of this report.

5.2 Make-up and Purification System Injection Valve

On July 15, 1991, while performing a plant tour, the inspector noted that the scaffolding was erected in the reactor coolant seal injection area of the Auxiliary Building. One of the vertical support members of the scaffolding structure was touching the handwheel of make-up valve MU-V-16D such that the ability to move the handwheel was in question. MU-V-16D is one of four motor operated valves which open on a Emergency Safeguards Actuation System signal to supply high pressure injection to the reactor coolant system. The handwheel is not normally engaged and would only be used if remote operation of the valve failed.

The inspector also noted that the scaffolding had not yet received its post-installation inspection by plant operations and the scaffolding had been installed approximately three days. This inspection is designed to ensure the scaffolding does not interfere with the operation of equipment.

The inspector brought the concern to the licensee management's attention. A functional test of the hand wheel indicated that the handwheel could be moved but with some difficulty. The licensee moved the vertical support member of the scaffolding away from the valve and certified that the scaffolding was seismically supported and did not prevent safety related equipment and components from performing their intended functions.

The inspector concluded that the safety significance of the improperly installed scaffolding was minimal since operation of the valve's handwheel was still possible. However, this incident demonstrated a lack of attention to detail when installing the scaffolding and was considered a weakness. It also appears that the installation inspection by plant operations should have been more timely.

5.3 Surveillance Observations

The inspectors inspected/reviewed selected surveillance tests to determine whether properly approved procedures were in use, details were adequate, test instrumentation was properly calibrated and used, Technical Specifications were satisfied, testing was performed by qualified personnel, and test results satisfied acceptance criteria or were properly dispositioned.

Surveillance activities reviewed included:

- Surveillance Procedure 1301-4.6, "Station Storage Battery Weekly." Inspected on July 11, 1991.

- Surveillance Procedure 1301-5.8, "Station Storage Battery Monthly." Inspected on July 11, 1991.

- Surveillance Procedure 1300-3J, "IST of NS Pumps and Valves." Inspected on July 16, 1991.

No noteworthy observations were made.

6.0 SECURITY

6.1 Routine Security Observations

Implementation of the Physical Security Plan was observed in the following plant areas:

- Protected Area and Vital Area barriers were well maintained and not compromised;

- Isolation zones were clear;

- Personnel and vehicles entering and packages being delivered to the Protected Area were properly searched and access control was in accordance with approved licensee procedures;

- Persons granted access to the site were badged to indicate whether they have unescorted access or escorted authorization;

- Security access controls to Vital Areas were being maintained and that persons in Vital Areas were properly authorized;

- Security posts were adequately staffed and equipped, security personnel were alert and knowledgeable regarding position requirements, and that written procedures were available; and,

- Adequate illumination was maintained.

No noteworthy observations were made.

7.0 ENGINEERING AND TECHNICAL SUPPORT

7.1 Use of Groundbuster in Detecting Grounds on DC Busses

On July 11, 1991, the inspector observed the performance of Corrective Maintenance Procedure (CMP) 1420-DC-5B, "Locate Grounds on 'B' DC Distribution System Using the Groundbuster." The Groundbuster is designed to locate ground faults in ungrounded DC battery systems without having to deenergize the system. The Groundbuster injects a 25 Hz AC signal between the battery bus and station ground. The AC current will only flow in circuits in which a ground exists. The amplitude of the signal current is measured with a clamp-on ammeter on the various loads to trace and locate the ground fault. A resistance and capacitance bridge located on the transmitter determines the value of capacitance and resistance of the suspected ground fault.

Later that day, the licensee found that AH-V-1A, the Reactor Building purge outer isolation valve, was open. The control circuit for this valve is powered from the "B" station battery bus. The valve opening was later attributed to a ground existing in a relay for an AH-V-1A interlock in combination with using the Groundbuster. The Reactor Building purge exhaust inner isolation valve was found closed as required. The control room indication that outer purge valve was open went unnoticed for approximately three hours when an end of shift review of computer alarms by the control room operators indicated the valve was open.

The Groundbuster was originally designed by Commonwealth Edison and has been used for several years at TMI and other plants. Commonwealth Edison has used their design on about 100 grounds and only one instance of actuation of a protective relay occurred. However,

Commonwealth Edison sold the rights to the Groundbuster to Biddle Instruments who then manufactured the device commercially. The Biddle Instruments' Groundbuster was used at TMI for the first time the day AH-V-1A was found open.

Investigation by the plant engineering revealed two differences with the Biddle Instruments Groundbuster. The Commonwealth Edison design limited the maximum AC current to one-half amp whereas the Biddle Instruments design allowed 2 amps (1.7 amps was applied when AH-V-1A opened). Also, the Commonwealth Edison design had slow charge capacitors to limit component actuations.

The inspector noted that there was a minimal amount of plant operations involvement required by Corrective Maintenance Procedure 1420-DC-5B. The procedure currently instructs the technicians to notify the control room operators when the Groundbuster is tied into each DC bus. However, plant operations was not required to check the applicable components for actuation. This was evidenced by the control room operators not noting that the purge valve was open until the computer alarms were reviewed three hours after the opening. The Manager of Electrical Engineering indicated that having plant operations check all applicable components while using the Groundbuster would be inappropriate and ineffective. However, the licensee plans to revise the Groundbuster procedure to strengthen communications with plant operations. Other corrective actions include modifying the Biddle Instruments Groundbuster to limit the current and slow charge the capacitors.

The licensee concluded that no other component had actuated besides the purge valve because AC current will not flow unless a ground exists. The inspector reviewed the data and determined all other DC loads indicated a resistance of greater that 200,000 ohms.

The inspector concluded that the plant engineering review to determine if the Biddle Instruments' Groundbuster was equivalent to the Commonwealth Edison Groundbuster was not extensive enough. The licensee indicated that the Biddle Instrument's Groundbuster will not be used until the planned modifications, described above, to the instrument and the procedural change to the CPM 1420-DC-5B are completed. Consequently, the inspector had no additional concerns.

8.0 EXIT MEETING

A summary of inspection findings was further discussed with the licensee at the conclusion of the report period on July 22, 1991. Persons designated with an asterisk in Section 1.3 were present at the exit meeting.