U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket/Report No. 50-289/89-11 License: DPR-50

Licensee: GPU Nuclear Corporation
P. O. Box 480
Middletown, Pennsylvania 17057

Facility: Three Mile Island Nuclear Station, Unit 1

Location: Middletown, Pennsylvania

Dates: May 10 - June 9, 1989

Inspectors: D. Johnson, Resident Inspector, TMI
T. Moslak, Resident Inspector, TMI
F. Young, Senior Resident Inspector, TMI

Approved by: Francis Young for
C. Cowgill, Chief, Reactor Projects Section No. 1A

6/28/89
Date

Inspection Summary:

Areas Reviewed: The NRC staff conducted routine safety inspections of power operations activities. The inspectors reviewed the following functional areas: plant operations, equipment operability (maintenance and surveillance), and licensee action on previous inspection findings.

Results: Plant operations were conducted in a safe manner. One minor plant transient occurred due to an anomaly in the unit load demand module of the integrated control system (ICS). Operator response to the transient was good and resulted in minimizing the plant transient. Maintenance and surveillance activities were conducted satisfactorily. One non-cited violation was noted concerning performance of a PORV surveillance. Failure to follow procedures was partially attributable to technicians inability to perform the required maintenance and testing within a limited amount of time. Additionally, another non-cited violation was noted in the security surveillance area. This failure to follow procedure was considered to be an oversite on the part of the technician conducting the surveillance. In both cases, management involvement was timely and effective. Corrective action for security surveillance, which included procedure change and equipment modification, was noted as a positive indication of licensee ability to recognize and correct problems. No unresolved items were identified. Licensee action on previous inspection findings was adequate.

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DETAILS

1.0 Introduction and Overview

1.1 Licensee Activities

The licensee operated the plant at full power during the report period except for a brief time during the ICS transient. No major plant transients occurred. As of June 9, 1989, the TMI reactor was at 100 percent power.

1.2 NRC Staff Activities

The purpose of this inspection was to assess licensee activities for reactor safety, safeguards and radiation protection. The inspectors made this assessment by reviewing information on a sampling basis through actual observation of licensee activities, interviews with licensee personnel, or independent calculation and selective review of applicable documents. Inspections were accomplished on both normal and back shift hours.

NRC staff inspections are generally conducted in accordance with NRC Inspection Procedures (NIPs). These NIPs are noted under the appropriate section in the Table of Contents to this report.

Back shift inspections were accomplished during the following periods:

Day/Date		Time
Saturday	May 13, 1989	10:00 pm - 12:30 am
Monday (H)	May 29, 1989	10:00 am - 1:00 pm
Wednesday	June 7, 1989	9:00 pm - 12:00 am

1.3 Persons Contacted

-- *G. Broughton, Operations/Maintenance Director
-- J. Colitz, Manager, Plant Engineering
-- *J. Enders, Security
-- J. Fornicola, Manager, Quality Assurance
-- *C. Hartman, Manager, Plant Engineer
-- *W. Heysek, Licensing Engineer
-- *H. Hukill, Vice President and Director, TMI-1
-- C. Incorvati, Audit Manager
-- M. Nelson, Manager, Safety Review
-- A. Palmer, Manager, Radiological Field Operations
-- M. Ross, Plant Operations Engineer
-- H. Shipman, TMI-1 Operations

-- D. Shovlin, Plant Material Director
-- *P. Snyder, Manager, Plant Material Assessment
-- C. Smyth, Manager, Licensing

* Denotes attendance at final exit meeting (see Section 6.0)

2.0 Plant Operations

2.1 Criteria/Scope of Review

The resident inspectors routinely inspected the facility to determine the licensee's compliance with the general operating requirements of Section 6 of Technical Specifications (TS) in the following areas:

-- review of selected plant parameters for abnormal trends;

-- plant status from a maintenance/modification viewpoint, including plant housekeeping and fire protection measures;

-- control of ongoing and special evolutions, including control room personnel awareness of these evolutions;

-- control of documents, including log keeping practices;

-- implementation of radiological controls; and,

-- implementation of the security plan, including access control, boundary integrity, and badging practices.

Specific findings are addressed below.

2.2 ICS Transient

On June 4, 1989, the unit load demand module of the integrated control system (ICS) failed to the mid field value (500 megawatts). This failure caused the ICS to demand a power decrease from approximately 880 megawatts (100% power) to 500 megawatts. However, the on-shift control room operator recognizing the problem, took manual control of the ICS system and stopped the power decrease at 90% reactor power. Investigation of the problem by the licensee indicated a contact in the unit load demand module had failed open. The module was repaired immediately and the plant was returned to normal ICS alignment.

Review of the event showed operator action to be prompt and plant response to be as expected. The inspector noted that the plant has experienced similar contact/connection problems with the ICS in the last few months. The inspector further noted that a failure of this type does not cause audible alarms in the control room. The operator's attentiveness to the panel limited this transient.

The inspector expressed his concern to licensee management about the plant's susceptibility to this type of transient. A discussion with the licensee's management indicated that they were very aware of and sensitive to the problem associated with contact problems in the ICS. The ICS contact problem is being actively reviewed and worked by the licensee's maintenance organization. Proposed corrective action include increased inspection frequencies of all critical ICS modules. The long term solution to the problem is being studied by the B&W owners group with resolution several years away. At the conclusion of the inspection report, the inspector reiterated his concern about the sensitivity and susceptibility to this type of problem. The licensee acknowledged the inspector's concern.

2.3 Operations Summary

The licensee continues to exhibit positive control over the various operational, maintenance, surveillance, and other work related activities that were conducted during this period. The inspector's review of the ICS transient indicated plant response was as expected and operator reaction was good in minimizing the transient caused by the ICS failure. In general, the inspector determined that the licensee, from a housekeeping and fire protection perspective was maintaining the plant in good condition. Overall, proper management attention toward plant safety was noted.

3.0 Maintenance/Surveillance

3.1 Criteria/Scope of Review

The inspectors reviewed selected activities to verify proper implementation of the applicable portions of the maintenance and surveillance programs. The inspector used the general criteria listed under the plant operations section of this report. A more detailed review of equipment operability is addressed below.

3.2 Inadvertent Pressurizer Relief Valve Lift

On June 1, 1989, while performing Surveillance Procedure SP-1303-11.45, licensee personnel momentarily lifted the electrically operated pressurizer relief valve (RC-RV-2). A technician was in the process of performing the setpoint check of the relief valve, following maintenance, to replace a sliding link terminal block in the valve control cabinet.

The technician performing the setpoint check inadvertently left a volt-ohm meter (VOM) installed across test jacks when reinstalling the valve control fuses. The meter set up a current flow path which

allowed the valve to open for approximately 5 seconds. An internal circuit protective device in the VOM actuated to break the circuit and allow the valve to de-energize and close.

All valve indicators functioned normally (flow delta pressure, acoustical and tail pipe delta temperature.) The valve tail pipe temperature returned to normal the following day, June 2, indicating that the valve had reseated fully.

Control room operators identified the problem immediately and took action to monitor the valve status. As the valve reseated almost immediately, no action was required to shut the block valve RC-V-2.

In accordance with administrative procedure AP-1029, the licensee convened a Plant Review Group (PRG) meeting on June 8, 1989 and subsequently issued a report detailing corrective action. These corrective actions consisted of a PCR to SP 1303-11.45 to reemphasize the need to take additional care in restoring the system to normal. Maintenance was to review the need for additional procedure walkdowns when inexperienced technicians are used and operations was to review the practice concerning closing the block valve when the one hour time limit for an inoperable PORV is approached. Additionally, the licensing group is evaluating a possible technical specification change to reduce the frequency of PORV testing to be more in line with standard technical specifications.

The inspector reviewed the PRG report per AP-1029 (No. 89-02) and conducted discussions with various licensee personnel. The procedure correctly specified that test equipment be removed prior to reinstalling system fuses. The inspector determined that the technician failed to follow the applicable steps in the procedure as required by TMI-1 Technical Specifications, Section 6.8.1.

Enforcement discretion is being exercised in not issuing a violation because the criteria specified in section V.G of the Enforcement Policy were satisfied. This non-cited violation is being tracked as (NCV 289/89-11-01)

The inspector concluded that this problem was an isolated incident limited to this surveillance test, which was aggravated by the time restraints of the technical specifications. Pending technical specifications improvements for this surveillance, the inspector concluded that corrective action was adequate. The inspector had no other safety concerns on this item. For the purpose of open item tracking, NCV 289/89-11-01 is closed.

3.3 Equipment Operability Summary

Generally, maintenance and surveillance activities continue to be conducted safely. Additional management attention is needed to ensure surveillances, that are accomplished with time restraints, are performed without detracting from overall safe plant operations.

4.0 Security

4.1 In-Operable Explosive Detector

On May 22, 1989 at approximately 11:45 pm, the licensee security force determined that the Unit 1 Processing Center explosive detector had been left in the calibrate mode following a previously performed surveillance. This was found when a technician opened the cabinet to perform the same surveillance procedure on the detector. The last time the cabinet had been entered was on the previous day, approximately 24 hours earlier.

The licensee security organization reviewed the event and determined that the detector, in this mode, was not fully functional. The licensee declared the detector inoperable for this period of time and notified the NRC of the event via telephone to the NRC headquarters operational duty officer. The resident inspector was also informed of the event at approximately the same time. The licensee also discussed this event with regional security personnel as to the reportability requirements of this type of event and after consultation, determined that the event should not be classified as a one hour reportable event, but should be recorded as an event to be captured in their quarterly report made to the NRC. The determination regarding reportability was provided by the NRC Headquarters Operational Duty Officer.

The licensee security personnel immediately reviewed the event to determine the cause and corrective actions to prevent recurrence.

From their review, the licensee determined the cause to be failure of the technician to follow the surveillance procedure. Specifically, Surveillance Procedure IMP 1530.05 required that the technician return the functional mode switch to the operation position at the completion of the surveillance. To prevent reoccurrence, the licensee instituted a second verification by an independent individual on shift to ensure that the equipment had been returned to an operational status. In addition, the licensee modified the explosive detector by adding an additional external light that informed the security guard when the detector was not in the operational mode.

The inspector reviewed and discussed the event with licensee security management. From the review, the inspector concurred with the licensee's finding that the event had been caused by the technician's

failure to follow the procedure as required by TMI technical specifications, section 6.8.1. The inspector also noted that the licensee, on its own initiative, had increased the surveillance frequency from weekly to daily. This was due to instrument drift that had been noted during previous surveillances. This increase in frequency and routine performance of this surveillance contributed to the technicians failure to follow the procedure.

The inspector concluded that increasing the frequency and routine performance of this surveillance by the licensee was a positive attempt by licensee's organization to improve the performance of the equipment. Review of test data and discussions with the security organization, indicated that this failure to follow a procedure was an isolated case. Based on this information, and the minimal safety significance, the inspector considered the violation to be licensee identified. No Notice of Violation is being issued because the criteria specified in section V.G of the Enforcement Policy were satisfied. This non-cited violation is being tracked as (NCV 289/89-11-02) and for the purpose of open item tracking is considered closed.

5.0 Licensee Action on Previous Inspection Findings

The inspector reviewed licensee action on previous inspection findings to ensure that the licensee took appropriate action in response to the findings or by self-initiative and that the licensee's action was timely.

5.1 (Closed) Unresolved Item (50-289/85-09-01): Licensee Perform Independent Safety Review of Limitorque Motor Operated Valves

This item was initially opened to track licensee corrective action for a problem with motor operated valves which was described in IE Information Notice 84-10. The licensee subsequently tested 22 valves which had the potential for failure if the motor torque switch settings were not proper. Several deficiencies were identified which were subsequently evaluated. This evaluation was reviewed in NRC inspection reports 50-289/85-12 and 86-06. The remaining action on this item was the licensee development of a plan to evaluate additional safety related motor operated valves and to include them in the same test and evaluation program. In an internal memorandum dated June 11, 1985, the licensee established a program and schedule to test 219 Limitorque MOVS with the MOVATS System. The list, in addition to a licensee calculation C1101-900-536-003 dated 10-27-86, which provided MOV Delta P and basis for torque switch setting on several limitorque motor operated valves that were to be tested during outage 6R was reviewed by the inspector.

From this review the inspector determined that the licensee had taken adequate action to include the remaining MOV's in their test program and additionally provide documentation for valve Delta-P values for design basis conditions. Additionally, the inspector reviewed licensee planned action for a Limitorque Corporation 10 CFR Part 21 report

dated November 3, 1988. The issue in that report concerned certain DC motor operated valve operating temperature limitations and also failure of some Melamine torque switches. The licensee was planning to correct these problems during the upcoming 8R outage.

The inspector concluded that the licensee action for maintaining a program for motor operated valves testing and evaluation was adequate. This item is closed.

5.2 (Closed) Unresolved Item (50-289/85-21-03): NRR to Review Design Adequacy With Respect to Post Accident Instrumentation

This item concerned the adequacy and reliability of the power supplies for plant instrumentation used for post accident situations. This instrumentation is described in Regulatory Guide 1.97. The NNI power supplies were modified during 7R to provide a more reliable source of power to this instrumentation. Previously, power for the NNI system was provided from primarily the "A" 115 vac vital bus and the "A" station battery. Loss of this one bus could have, in some situations, caused incorrect or misleading information in the control room. NRR staff additionally reviewed the licensee class IE power supply for an evaluation of licensee compliance to the requirements of IE Bulletin 79-27. A memo from the NRC staff, dated May 2, 1989 to the licensee, documented this review. In this review, the NRR staff determined that the ICS/NNI power supplies were adequately designed to withstand the loss of any single class 1E or non-class IE bus that supplies power to these plant instrumentation systems.

Additionally, in a final safety evaluation report, dated August 24, 1987, the staff determined that power supplies for Regulatory Guide 1.97 instrumentation were adequate. Based upon recent modifications to the ICS/NNI power supplies and NRR evaluations noted above, this item is closed.

5.3 (Closed) Unresolved Item (50-289/86-19-01): Procedure Complaince Task Group Corrective Action

The remaining action on this item was documenting the completion of the long term corrective actions that resulted from the review of procedure compliance issues. The licensee issued a final report on this issue on December 16, 1988. The completion of action for the remaining seven "long term" issues was discussed. The inspector reviewed these corrective actions and considered them acceptable. Additionally, the licensee has formed an Administrative Procedures Compliance Task Group to further refine their administrative procedure system to eliminate noncompliances. Administrative procedure problems have been the main source of procedure non-adherence. This group is in the initial stages of review of all site and corporate and administrative procedures.

The inspector regards the licensee efforts in resolving procedure non-adherence problems as sufficient. No other concerns were generated as a result of the inspector review. This item is closed.

6.0 Management Meeting

The inspectors discussed the inspection scope and findings with licensee management weekly and at a final meeting on June 9, 1989. Those personnel marked by an asterisk in paragraph 1.3 were present at the final management meeting.