

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-289/84-21

Docket No. 50-289

License No. DPR-50 Priority - Category C

Licensee: GPU Nuclear Corporation
Post Office Box 480
Middletown, Pennsylvania 17057

Facility Name: Three Mile Island Nuclear Station, Unit 1

Inspection At: Middletown, Pennsylvania

Inspection Conducted: July 12-20, 1984

Inspectors:	<u><i>D. Gregg</i></u>	<u>8/17/84</u>
for	A. Finkel, Lead Reactor Engineer	date
	<u><i>D. Gregg</i></u>	<u>8/17/84</u>
	H. Gregg, Lead Reactor Engineer	date
	<u><i>D. Gregg</i></u>	<u>8/17/84</u>
for	R. Paolino, Lead Reactor Engineer	date
	<u><i>U. Cheh</i></u>	<u>8/20/84</u>
	U. Cheh, Reactor Engineer	date
Approved by:	<u><i>D. Gregg</i></u>	<u>8/17/84</u>
for	C. J. Anderson, Chief	date
	Plant System Section, EPB	

Inspection Summary:
Inspection on July 12-20, 1989 (Inspection Report Number 50-289/84-21)

Areas Inspected: Routine, unannounced inspection by region-based inspectors of licensee action on previous inspection findings; restart items, and test results evaluation. The inspection involved 65 inspection hours by four region based inspectors.

Results: No violations were identified.

Details

1.0 Persons Contacted

1.1 General Public Utilities (GPU) Nuclear Corporation

- *P. Dotka, Instrumentation and Controls Engineer
- **W. Prendak Instrumentation Engineer
- **C. Hartman, Lead Electrical Engineer
- **N. Hollerbush, Supervisor, Technical Support
- ***C. Incorvati, Quality Assurance Audit Supervisor
- ***D. McGettrick, Technical Functions Site Liaison Engineer
- *V. Orlandi Lead Instrumentation and Controls Engineer
- **S. Otto, Licensing Engineer
- ***I. Porter, Start-Up and Test Manager
- **M. Press, Quality Assurance Lead Auditor
- *C. Smyth, Licensing Manager
- *G. Sadauskas, Manager Instrumentation

1.2 U.S. Nuclear Regulatory Commission

- *R. Conte, Senior Resident Inspector
- *F. Young, Resident Inspector

A single * denotes those personnel present at the exit meeting of July 12, 1984, the double ** denotes those personnel present at the exit meeting of July 18, 1984 and the three *** denotes those personnel present at the exit meeting of July 20, 1984.

2.0 Licensee Action on Previous Inspection Findings

(Open) Unresolved Item No. 83-14-03 pertaining to 25°F subcooling margin reduction from 50°F. The inspector reviewed the following licensee documents:

- a. 25° Subcooling Margin GPUN 5211-83-250 dated September 7, 1983
- b. Memo to Hukill, GPUN from J.F. Stolz, NRC dated June 14, 1983
- c. GPUN Board Notification dated July 11, 1984 GPUN telecopy 8-488-1323

The inspector determined the above data to be incomplete in that component tolerances were not specified and the source and validity of the data from GPUN test input was not identified.

Discussions with the licensee indicate the above data is no longer valid since the test data was based on the original control grade system which has been upgraded to safety grade. New test data is being generated for the installed safety grade system. The revised system and test data will be submitted to the NRC for review.

This item remains open pending NRC review of revised test data and verification of installed system.

(Closed) Main Steam Line Rupture Detector Pressure Switch and Relay Wiring.

One purpose of the Main Steam Line Rupture Detector System (MSLRDS) is to prevent containment pressure from exceeding its design pressure in the event of a main steam line rupture inside containment.

The designed main steam break detection pressure switches, PS-006/7 were installed in a harsh environment and were not environmentally or seismically qualified. Replacement pressure switches have been installed (SOR Model 9TA-B45-CIA-JJTT-X6) which are environmentally and seismically qualified. The replacement pressure switch contacts are not rated at the same electrical load value as the originally installed switches therefore circuit modifications were also required. The new configuration allows each pressure switch to energize one relay coil respectively, while utilizing the spare contacts of that relay to energize the remaining relay coils, solenoid valves and indicator lights in their appropriate string. The inspector verified that the drawings were changed and that the installation was verified by the quality control inspection organization.

Static "O" Ring (SOR) Control Device Inc. provided information on qualified SOR switches in Nuclear use in Action's Qualification Report No. 17344-82N Revision 3 dated October 2, 1982 and Report No. 17344-82N-D. (Reference SOR Letter of September 8, 1983 to GPU).

SOR Model 12N6-B4-NX-CIA-JJTTX6 and 12TA-B4-NX-CIA-JJTTX6 were qualified to the requirements of IEEE 323-1974, IEEE 344 1975 and NUREG-0588. The TA series of switches have been qualified for in-containment use while the N series of switches are qualified to accident conditions of lower values.

Quality control verification of installation, calibration and testing was accepted on January 4, 1984. Leak test and operability test per FCR-22167 for PS-600 thru 607 were accepted by QC on April 5, 1984

This item is closed.

(Closed) Licensee Event Report (LER)-81-60-09.

This LER describes an event wherein if offsite power is lost during a period when the diesel is idling, (upon receipt of an engineered safeguard actuation signal) the diesel generator breaker will close immediately following the energizing of the undervoltage relays and the tripping of the bus feeder breaker. The diesel generator breaker closure could occur while residual voltage remained on the bus and in certain cases before the bus load shedding has occurred.

To resolve the above concern the licensee has modified the diesel generator breaker closing logic by the addition of a time delay relay. The time delay relay (2.5 seconds delay) provides an additional delay to the system prior to the diesel breaker closure on to the bus thus allowing the load shedding and decay of motor residual voltage to occur.

The modification package (WA-A25A-30329) was installed in accordance with procedure TI-IS-412329-001, Revision 0. Quality Control verification of the installation was completed on April 11, 1984. (WA-ADL #44-1).

The inspector verified that the electrical elementary drawings for the 4160 volt switchgear, drawings ISK-E-1350 and ISK-E-1351, have been corrected to reflect the new installed delay relay for both the Safety-Related ID and 1E Buses.

Testing of the time delay relay was performed in accordance with TMI-I Tie-In Document 104B Revision 3. Time was verified on WA-ADL #24-1. Quality control verification of test was on WA-ADL #44-1.

This item is closed.

(Closed) IE Bulletin 83-08 pertaining to proper operation of circuit breakers with undervoltage trip attachments (UVTA's) being used in safety-related applications other than as reactor trip breakers (RTB's).

The licensee provided the following information when they responded to IE Bulletin 83-01 titled "Failure of Reactor Trip Breakers (Westinghouse DB-50) to open on Automatic Trip Signal" and IE Bulletin 83-04 titled "Failure of The Undervoltage Trip Function Of Reactor Trip Breakers."

IE Bulletin 83-01 The TMI Reactor Trip Breakers are General Electric AK-2 circuit breakers. These breakers are tripped by an undervoltage which has been tested and maintenance records are current.

IE Bulletin 83-04 The licensee performed tests on March 17, 1983 on the six breakers and they tripped within the allowable time. The licensee has maintenance procedures that reflect the vendors guidance in the supplied maintenance instruction manuals. The failure of the AC trip breaker on November 19, 1976 was attributed to binding caused by transporting and installing the breaker during the plant installation operation. The problem was corrected prior to returning the system to service.

At this time there are no safety related applications of circuit breakers with an undervoltage trip feature in use or planned for use at TMI-1 other than the reactor trip breakers which were discussed by the licensee in response to IE Bulletin 83-01 and 83-04. A review of the installation drawings by the NRC inspector verified the licensee's answers to the above bulletins to be correctly stated.

This item is closed.

(Closed) Emergency Feedwater (EFW) Flow Control Valve Converters

As part of the EFW system improvement modifications, the licensee committed to replace the E/P converters for the EFW flow control valves EF-V-30A and EF-V-30B with environmentally and seismically qualified I/P converters. In addition to increased reliability of qualified converters, with these new converters on loss of control power the flow control valves will fail to the open position to allow full EFW flow.

The inspector reviewed the licensee's documentation and verified that the details of the modification from the work authorization phase, including the installation specification (TI-IS-412024-002), through to the modification completion and sign-offs were in place.

The inspector reviewed the letter from Conoflow ITT Grinnell (the manufacturer of the converters) to the licensee dated April 25, 1984. This letter contained a certification that the modification supplied equipment was qualified to the requirements of IEEE 323-1974 and IEEE 344-1975, and an explanation of the converter model number change to GT45CA1826R (instead of GT25CA1826R). The inspector also reviewed the licensee's Plant Inspection Report 1C-23071A-84 which contained information that Bailey Controls Company was contracted to perform HELB testing on the converters and that the results were satisfactory.

The inspector performed a plant inspection of the EFW Pump Room (in the Intermediate Building). The inspector observed both EFW flow control valves EF-V-30A and EF-V-30B and verified that the I/P converter installation to each valve was completed. The inspector also visited the Control Room and observed the normal control for the EFW valves and the new back-up controls for these valves.

The inspector determined that the qualification test reports and records are at the GPUN headquarters and that an extensive review of this qualification data is being performed by the Equipment Qualification Branch of NRR.

This item is closed.

(Closed) Pressure Control Valve, Steam Supply to the Turbine Driven EFW Pump

The pressure control valve MS-V6, upstream of safety valves MS-V22A and MS-V22B, was modified to limit its travel to 65% of stroke to protect the EFW Pump turbine from overpressurization.

The inspector reviewed the licensee's documentation to determine how the modification to limit the valve stroke was to be performed. The stroke modification involved readjustment of the Fisher diaphragm actuator handwheel stem, then drilling the stem and inserting a cotter pin at the 1 1/4" stroke (instead of 2" stroke) position.

The licensee's work details for this modification also included reduction of the controller settings to reduce pressure downstream of the valve to 175 psig (from 200 psig), reduction of safety valve MS-V22A and MS-V22B set points to 200 and 220 psig (from 495 and 505 psig), and to lock open all three nozzle hand valves of the EFW Pump turbine.

The inspector performed a plant walkdown in the EFW Turbine Driven Pump Room. The inspector verified that valve MS-V6 was modified with the cotter pin installed in the actuator handwheel stem, that the Lonergan safety valves MS-V22A and MS-V22B nameplate setpoints were 200 and 220 psig, and that all three nozzle valves of the EFW pump turbine were locked open.

This item is closed.

(Closed) Electrical Terminations of EFW Pump Motors

The licensee committed to replace both EFW pump motor terminations with qualified terminations because the original terminations were not documented as qualified for the main steam line break environment.

The inspector reviewed the licensee's documentation file and determined that the details of this work to be performed and the appropriate sign-offs signifying completion of the work were in place. The inspector noted that the Construction Job Order Work Plan specified that the replacement of the existing termination was to be done with qualified material. The inspector noted from the documentation that the splice and insulating material is from the Kerite Company and that the splice is to Kerite Drawing S-5NS-NUC-DISC.

The inspector observed both of the termination boxes, discussed the installation of the Kerite splices with the plant electrical personnel and viewed photographs taken 7/16/84 of the completed terminations (of both A and B pump motors).

The inspector determined that the qualification test report records are at the GPUN headquarters and that an extensive review of this qualification data is being performed by the Equipment qualification Branch of NRR.

This item is closed.

(Closed) Emergency Procedure for Earthquake

The licensee committed to revise the TMI-1 Emergency Procedure for Earthquake (Procedure 1202-30), to instruct the operator to isolate the Condensate Storage Tanks (CSTs) from the EFW system when any recognizable seismic event occurs. This operator action is to be performed regardless of the CST level indication or alarm.

The inspector reviewed the licensee's Plant Emergency Procedure for Earthquake (TMI-1 Procedure 1202-30, Rev. 9 dated 9/8/83). The inspector verified that this procedure was revised to instruct the operator that for all earthquake conditions to close both CO-V-111A/B and both CO-V-14 A/B valves from the control panel and within 5 minutes to send an operator to close and/or to verify the valves have closed. The inspector further verified that this provision applied to the seismic conditions of operating basis earthquake not exceeded, operating basis earthquake exceeded, and safe shutdown earthquake exceeded.

This item is closed.

3.0 TAP II.F.2 Inadequate Core Cooling Instrumentation.

Modification package WA No.A25A-53072 is part of the TAP II.F.2 Inadequate Core Cooling Instrumentation subject. This modification package addressed the installation of 1E temperature inputs to the Saturation Margin Monitor (TSAT).

The necessary circuit components required for this change are in place in Signal Conditioning Cabinets A1 and B1 located on elevations 338' and 322' of the Control Building. The change required the deletion of internal wiring within the signal conditioning cabinets, disconnecting and sparing of existing circuits between the signal conditioning cabinets and the ICS, removal of Foxboro circuits modules from the signal conditioning cabinets and the calibration and testing of the saturation monitor circuits.

The inspector reviewed the quality control inspection records and verified that the inspection holds points were witnessed and signed by a quality control inspector. The open items in the inspection records were identified with the notation for engineering to provide a disposition. The open items identified by the licensee's quality control inspector would not prevent the item from performing its safety function, therefore the installation appears adequate.

The inspector reviewed the circuit schedule drawings listed below, and verified that the installed configurations reflects those on the listed drawings.

--R.C. System-Saturation Margin Monitor drawing No. 1B-660-19-002, Revision 0, 1B-660-19-001, Revision 0, and 1D-660-18-006, Revision 0.

In reviewing the calibration and test data sheets for the Saturation Margin Indication modification the inspector verified that the recorded data reflected the criteria of the Test Upgrade requirements of A25A-53072. (TP250/1 Revision 0).

No violations were identified.

4.0 Exit Meeting

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspections on July 12, 18 and 20, 1984. The inspectors summarized the scope and findings of the inspection as described in this report.

At no time during this inspection was written material provided to the licensee by the inspectors.