

U.S. NUCLEAR REGULATORY COMMISSION

Region I

Report No. 50-289/82-14
Docket No. 50-289
License No. DPR-50 Priority -- Category C
Licensee: GPU Nuclear Corporation
P.O. Box 480
Middletown, Pennsylvania 17057
Facility: Three Mile Island Nuclear Station, Unit 1
Inspection at: Middletown, Pennsylvania
Inspection conducted: August 7, 1982 - September 7, 1982
Inspectors: *R. Conte* 9/21/82
R. Conte, Senior Resident Inspector (TMI-1) date signed
F. Young 9/20/82
F. Young, Resident Inspector (TMI-1) date signed
Approved by: *A. Fasano* 9/21/82
A. Fasano, Chief, Three Mile Island Section date signed
Projects Branch No. 2

Inspection Summary:

Inspection conducted on August 7, 1982 - September 7, 1982, (Inspection Report Number 50-289/82-14)

Areas Inspected: Routine safety inspection by site inspectors of plant operations including steam generator repairs, and TMI-1 restart modifications. The inspection involved 92 inspector-hours.

Results: No violations were identified.

DETAILS

1. Persons Contacted

General Public Utilities (GPU) Nuclear Corporation

- B. Ballard, Manager, TMI Quality Assurance (QA) Modifications/Operations, Nuclear Assurance
- R. Barley, Lead Mechanical Engineer TMI-1
- D. Barry, Engineer Associate-I TMI-1
- J. Colitz, Plant Engineering Director TMI-1
- T. Hawkins, Manager TMI-1, Startup and Test, Technical Functions
- R. Harper, Corrective Maintenance Manager TMI-1
- W. Heysek, Supervisor Site QA Audit
- H. Hukill, Vice President and Director TMI-1
- *J. Kuehn, Manager, Radiological Controls TMI-1
- S. Levin, Maintenance and Construction Director TMI-1
- F. Paulewicz, Mechanical Engineer TMI-1
- I. Porter, Supervisor, Startup and Test TMI-1
- *W. Riethle, Deputy Manager, Radiological Controls TMI-1
- M. Ross, Manager Plant Operations TMI-1
- D. Shovlin, Manager Plant Maintenance TMI-1
- C. Smyth, Supervisor TMI-1 Licensing, Technical Functions
- *K. Stephenson, Nuclear Licensing Engineer, Technical Functions
- *R. Toole, Operations and Maintenance Director TMI-1

Other personnel in the operations, engineering, and quality assurance staffs were also interviewed.

*denotes those present at an exit interview.

2. Plant Operations During Long Term Shutdown

a. Plant Operations Review

Inspections of the facility were conducted to assess compliance with general operating requirements of Section 6 of Technical Specifications in the following areas: licensee review of selected plant parameters of abnormal trends; plant status from a maintenance/modification viewpoint including plant cleanliness; control of documents including log keeping practices; licensee implementation of the security plan including access controls/boundary integrity and badging practices; licensee control of ongoing and special evolutions including control room personnel awareness of these evolutions; control of documents including log keeping practices; and implementation of radiological controls.

Random inspections of control room during regular and back shift hours were conducted. The selected sections of the shift foreman's log and control room operator's log were reviewed for the period August 5, 1982, to September 7, 1982. Selected sections of other

control room daily logs were reviewed for the period from midnight to the time of review. Inspections of areas outside the control room occurred on August 10, 12, 16, 20, 24, and September 1, 1982. Selected licensee planning meetings were also observed.

On August 17, 1982, while touring the Reactor Building, the inspector observed an individual (vendor representative) entering into an area in the 'D' Ring over the 'A' Once Through Steam Generator (OTSG). The individual was walking, unaided by handrails or safety harness, on a steel 'I' beam that transverses 15 to 20 feet above the top of the 'A' OTSG. The inspector considered this practice to be very hazardous from a personnel safety aspect. The inspector also questioned the individual to determine if the Radiation Work Permit (RWP) used by the worker allowed him to be in that area. During discussions with radiological control management, the inspector determined that the boundaries of the worker's RWP were violated. Radiological Controls personnel wrote a Radiological Deficiency Report (RDR) on the incident (RDR No. 82-079, dated August 17, 1982).

On the same day the inspector also noted a second vendor individual who entered a high radiation area (tent covering upper manway cover for the 'B' OTSG) without a dose rate instrument. The inspector was unable to determine (from his observation point due to RWP boundaries) if the required dose rate instrument was present inside the tent or used by the individual upon entering the tent. Subsequent to discussions with Radiological Control personnel, licensee representatives reported to the inspector that this individual did not use a prepositioned dose rate instrument in the tent upon entering the tent. Licensee representatives initiated a RDR (No. 82-076, dated August 17, 1982) on this incident.

NRC onsite radiation specialists will be conducting a review of these RDR's and associated corrective action implementation during a subsequent inspection. This is unresolved pending completion of NRC review in this area (289/82-14-01).

b. Steam Generator Recovery Program

(1) Background

As a result of the presence of intergranular attack and stress corrosion cracking on the OTSG tubes identified in November 1981, the licensee has initiated an extensive investigation to determine the cause and repairs required to return the plant to service (see NRC Region I Inspection Report No. 50-289/82-07).

OTSG tube examinations have revealed a large number of tubes with defects within the upper tube sheet. The repair approach is to establish in those tubes where it is possible, a new primary system pressure boundary located below these defects.

This new boundary is to provide a seal against leakage between the tube and shell sides of the OTSG. A kinetic expansion of the OTSG tubes within the tube sheet will be the approach used to effect this repair.

The major steps in the kinetic expansion process are to flush the secondary side tube to upper tube sheet crevice, heat the crevice to drive out the moisture, use an explosive to kinetically expand the tubes and then clean the OTSG to grade B cleanliness. The secondary side tube sheet crevice has been flushed twice and this first major step is considered completed. Preparations are being made to dry the crevice, and actual drying of the crevice is expected to occur the week of September 13, 1982.

In order to qualify the OTSG repair, the licensee has been performing eddy current evaluations on the total length of all OTSG tubes. This data will be used as base line for followup eddy current examination to determine the effect of this process on the repair on the tubes and to provide assurance that the sulfur attack has been arrested. Eddy current probing is scheduled to be completed in the month of September and data evaluation completed by the beginning of October.

(2) Review

The inspector has continued to monitor the steam generator repair program to verify the following items.

- accuracy of information related to the event submitted to NRC
- procedures written in accordance with the specifications of the licensee programs
- adequacy of procedures used to control the activity

Selected sections of OTSG repair documents were reviewed and field operations of kinetic expansion preparation work were observed on several occasions. Licensee and contractor personnel demonstrated adequate control of the work being accomplished.

(3) Findings

No violations were identified.

3. TMI-1 Restart Modifications - Implementation

a. General

The inspector reviewed selected facility modifications (listed below) which are required to be completed prior to TMI-1 restart to

verify that the new designs are provided consistent with the following items:

- licensee commitments stated in the TMI-1 restart report, Report in Response to NRC Staff - Recommended Requirements for Restart of Three Mile Island Nuclear Station Unit 1
- requirements delineated in NUREG-0680 (and supplements), TMI-1 Restart Evaluation Report, to comply with NRC Commission Order of August 9, 1979
- requirements delineated in ASLB Partial Initial Decision (PID), Procedure Background and Management Issues, dated August 27, 1981
- requirements delineated in ASLB PID, Emergency Planning, and, Plant Design and Procedures and Separation Issues, both dated December 14, 1981
- TMI-1 Operational Quality Assurance Plan, Revision 9
- Administrative Procedure (AP) 1043, Control of Plant Modifications, Revision 3

On a sampling basis the inspector verified that each modification task was installed in accordance with the approved design based upon observation of completed work, review of related portions of the licensee's QA program, examination of installation records, review of nondestructive examination (NDE) and/or other inspection records, and other related documentation. Specific modification task observations and records reviewed by the inspector are identified below.

b. Modification Task RM-4A, Incore Thermocouples Extension Cables

(1) Description

The scope of this task (RM-4A) included the assembly of 52 interconnecting cables and their installation between the incore detector assemblies (52) and the existing extension cables. This Task RM-4A also corrected the reverse wiring of existing extension cable thermocouple leads on each of 52 connectors which is part of the incore monitoring system. The new interconnecting cables were to be installed within the Reactor Containment Building between the detector assemblies and the extension cables at elevation 347'.

(2) Review/Observation

The inspector reviewed selected portions of GPU Nuclear Corporation (GPUNC) Engineering Change Modifications (ECM) 002, 009, 012, and 152 accepted July 12, 1982. The inspector observed the

installed cables and verified the termination location and installation was as described in the applicable modification documentation.

(3) Findings

No violations were identified.

c. Modification Task RM-3B, Reactor Trip on Loss of Feedwater

(1) Description

Task RM-3B has resulted in the installation of a new anticipatory transient reactor trip system which receives signals upon the loss of main feedwater pumps or a turbine trip. This system uses four channel signals for loss of feedwater pumps or turbine trip as inputs to the existing Reactor Protection System and will result in a trip of the reactor on two of four signals. These anticipatory trips are designed to preclude reactor trips on high pressure for an anticipated heat up transient and to minimize challenges to the pressurizer PORV and safety valves.

(2) Review/Observations

The inspector reviewed selected portions of GPUNC ECM 068, Revisions 1 through 10, accepted June 14, 1982, by the plant staff.

In addition to the above documentation review, the inspector conducted a system walkdown of the plant modifications associated with Task RM-3B. The inspector observed the installed equipment and verified the component location and installation was as described in applicable modification documentation.

(3) Findings

No violations were identified.

4. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An unresolved item is addressed in paragraph 2.a.

5. Exit Interview

The inspectors met with the licensee representatives (denoted in paragraph 1) and at the conclusion of the inspection on September 7, 1982, to discuss the inspection scope and findings.