

U.S. NUCLEAR REGULATORY COMMISSION

Region I

TE HQ FILE COPY

Report No. 50-289/82-24
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: November 8, 1982 - December 6, 1982
Inspectors: R. Conte 12/14/82
R. Conte, Senior Resident Inspector (TMI-1) date signed
F. Young 12/14/82
F. Young, Resident Inspector (TMI-1) date signed
Approved by: R. Keimig 12-17-82
R. Keimig, Acting Chief, Reactor Projects date signed
Section No. 2C, Projects Branch No. 2, DPRP

Inspection Summary:

Inspection conducted on November 8, 1982 - December 6, 1982, (Inspection Report Number 50-289/82-24)

Areas Inspected: Routine safety inspection by resident inspectors of licensee action on previous inspection findings; plant operations including steam generator repairs; and TMI-1 restart modification. The inspection involved 84 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
- 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
- M. Ross, Manager Plant Operations TMI-1
- *C. Rowe, QA Engineer, Nuclear Assurance
- H. Shipman, Engineer III, 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. Szczech, 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. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (289/81-17-03): Resolve conflict in different proposed Technical Specification (TS) action statements for Emergency Feedwater operable flow paths. The conflicting statements were noted in NUREG 0680, TMI-1 Restart Safety Evaluation Report (Page C1-3) and licensee TS Change Request (TSCR) No. 103, dated May 18, 1981, (page 3-25). The licensee reiterated their TSCR proposed wording in TSCR No. 103, Revision 1, dated November 13, 1981, and it was evaluated and found acceptable by the NRC staff. Licensee Amendment No. 78, dated October 20, 1982, was issued, which resolves this matter.

(Closed) Inspector Follow Item (289/82-BC-30): Installation of Restart Modification RM-5C, Reactor Building Isolation on Reactor Trip and High Reactor Building Pressure. Details are addressed in paragraph 4.

(Closed) Inspector Follow Item (83-BC-04) and NRC Task Action Plan Item (TAP II.K.2.9). Long term upgrade of integrated control system/non-nuclear instrumentation (ICS/NNI). NRC letter, dated August 2, 1982, from J. Stolz, NRR, to H. Hukill, GPUNC, documented the supplemental safety evaluation for the licensee response to this TAP item. The conclusion of this evaluation was that the licensee

satisfactorily completed required licensing action related to ICS Failure Mode and Effects Analysis. Specific NRC review of licensee modifications is being followed separately (289/82-BC-01, 04, and 36).

The NRC letter also stated that ICS failure will no longer be pursued on a plant basis. All vendor designs and all control systems that effect plant safety will be reviewed under Unresolved Safety Issue (USI No. A-47).

This also completes NRC staff actions required per NRC Temporary Instruction (TI) 2515/45 item No. II.K.2.9.

3. 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 for 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 the 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 November 8, 1982, to December 6, 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 November 9, 12, 16, 17, 19, 22, 23, 29 and December 1, and 3, 1982. Selected licensee planning meetings were also observed.

No violations were identified.

b. Steam Generator Tube Leak Repairs

Production work of the kinetic expansion repair process continued in the upper portion of the tube in the upper tube sheet area of the "A" and "B" Once Through Steam Generators (OTSGs) (NRC Inspection Report 50-289/82-21). This work is about 50 percent complete, excluding post repair testing.

Licensee evaluation of the 12 anomalies found during the initial phase of kinetic expansion process continued. A final evaluation was not yet issued.

A problem was noted from the kinetic expansion process which caused metal pieces from these stubs to break free from the tube. Tube stubs are tube sections that protrude approximately 1/8 inch above the primary side of the tube sheet with welds between the tube and the tube sheet. These stubs, which have circumferential cracks, are not a part of the reactor coolant system boundary. Licensee is evaluating the need to mill (grind) down all or selected tube stubs to prevent loose pieces during power operations (if permitted).

After the completion of kinetic expansions, the licensee plans to stabilize certain tubes that cannot be repaired by the kinetic expansion procedure. In addition, the licensee plans on performing a reactor coolant cleanup to remove the sulfur contamination. The licensee expects the steam generators to be operable by April 1983.

Due to the significance and severity of the OTSG tube degradation, the inspector frequently observed various aspects of the repair process. On several occasions the inspector observed the kinetic expansion being performed in the OTSGs. A selected review was conducted of portions of records filled out at the job site. The adequacy of the procedures used at the time of observation was also conducted. In addition, discussions were conducted with several craftsmen and supervisors on different shifts to assess the knowledge level and understanding of key individuals.

No violations were observed. However, while observing the kinetic expansion process inside the reactor building, the inspector noted that one health physics technician (HP Tech) was wearing dosimeters inside his protection clothing (PCs) instead of on the outside of the PCs. Based on a discussion with the HP Tech, the inspector determined that the HP Tech was permanently assigned at TMI-2 and only temporarily assigned at TMI-1 for the OTSG work. Further, the HP Tech was apparently unaware of the TMI-1 policy to wear personnel dosimetry outside PCs.

Apparently at TMI-2, in certain instances, certain types of personnel dosimetry is worn inside the PCs for reactor building entries, due to unique radiological conditions; and other measures, such as digital dosimeters, are used for monitoring during entries.

The observation was brought to the attention of the Unit-1 Radiological Protection Manager (RPM) who issued an internal memorandum to all Health Physics Technician Foremen restating the policy, unless specifically exempted.

No violations were identified.

4. TMI-1 Restart Modification - Implementation

a. General

The inspector reviewed facility modification RM-5C, Reactor Building (RB) Isolation on Reactor Trip and on High Pressure (30 psig) in the RB. This review was to verify that the new designs provided are consistent with the following.

- 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 the 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, and/or other inspection records and other related documentation. Specific modification task observations and records reviewed by the inspector are identified below.

b. Description

The purpose of task RM-5C is to modify the number of parameters used directly to establish reactor building isolation provisions. The reactor trip signal and reactor building pressure are two of the modified or added signals used to isolate selected containment isolation valves.

The reactor trip signals are derived from the reactor protection system and then interfaced with the safeguard actuation system. The output signal from each of the RCS channels is a 2 out of 4 signal

to deenergize the undervoltage trip coil of the reactor trip breaker. This is where the new circuits, through buffer relays, were installed. These signals are routed within the safeguard actuation system and interface with existing selected valve isolation circuitry.

Some of the reactor building penetrations servicing the reactor coolant pumps and the reactor building normal cooling unit have been selected to be isolated on a 30 psig reactor building pressure signal only. Pressures above 30 psig would indicate a major pipe rupture within the reactor building requiring establishment and maintenance of containment integrity by closing all containment penetrations. New reactor building pressure switches were added and interfaced directly with the existing safeguards actuation system controlling relays in the bistable actuation racks.

c. Review/Observation

The inspector reviewed selected portions of GPU Nuclear Corporation (GPUNC) ECMs 070, 164 and 109 accepted 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-5C. The inspector observed the installed equipment and verified the component location and installation was as described in applicable modification documentation.

d. Findings

In a review of the revisions to ECM 070, the inspector noted that Revisions 5 and 6 were missing from the turn-over package (Revisions 5 and 6 of ECM 070 deal with corrections to landing of certain leads). The inspector immediately identified the discrepancy to the licensee representative. The representative, within two hours, located the missing documents and placed them into the turnover package. The missing ECM documentation was the subject of a previous apparent violation (50-289/82-21) and this is being reviewed by NRC and the licensee.

One significant incomplete work list (IWL) item for this task was noted. This IWL was to reconduct preoperational test procedure, TP 250/2.2, Containment Isolation on Reactor Trip Retest. The TP was to test the work done by Revisions 5 and 6 of ECM 070 as noted above. The test results review is separately tracked by NRC and will be reviewed in a subsequent inspection.

5. Inspector Follow Item

Inspector follow items identified in this report are items that required NRC verification of licensee action as a result of the TMI-1 Restart Hearings.

6. Exit Interview

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