

U. S. NUCLEAR REGULATORY COMMISSION

Report No. 50-320/85-12

Docket No. 50-320

License No. DPR-73 Priority -- Category C

Licensee: GPU Nuclear Corporation

P.O. Box 480

Middletown, Pennsylvania 17057

Facility Name: Three Mile Island Nuclear Station, Unit 2

Inspection At: Middletown, Pennsylvania

Inspection Conducted: May 18, 1985 - July 1, 1985

Inspectors:

R. Cook, Senior Resident Inspector (TMI-2)

7/25/85
date signed

T. Mostak, Resident Inspector (TMI-2)

7/24/85
date signed

J. Bell, Senior Radiation Specialist

7/24/85
date signed

D. Collins, Radiation Specialist

7/24/85
date signed

Approved By:

C. Cowgill, Chief, TMI-2 Project Section

7/26/85
date signed

Inspection Summary:

Areas Inspected: Routine safety inspection by site inspectors of plant operations (long term shutdown) including licensed operator training, a defect identified in the flange of a fuel transfer system isolation valve, liquid waste transfers, surveillance testing, load testing of Reactor Building Service Crane, Fire Watch Procedures, and implementation of radiological controls. The inspection involved 343 inspector hours.

Results: No violations were identified.

8508050102 850730
PDR ADOCK 05000320
Q PDR

DETAILS

1.0 Ongoing Recovery Operations

a. Routine Plant Operations

Inspections of the facility were conducted to assess compliance with the requirements of the Proposed Technical Specifications and Recovery Operations Plan 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 switching and tagging, and fire protection; licensee control of routine and special evolutions, including control room personnel awareness of these evolutions; control of documents, including log keeping practices; radiological controls; and security plan implementation.

Random inspections of the control room during regular and back shift hours were routinely conducted. The Shift Foreman's Log and selected portions of the Control Room Operator's Log were reviewed for the period May 18 through July 1, 1985. Other logs reviewed during the inspection period included the Submerged Demineralizer System (SDS) Operations Log, Radiological Controls Foreman's Log, and Auxiliary Operator's Daily Log Sheets.

Operability of components in systems required to be available for response to emergencies was reviewed to verify that they could perform their intended functions. The inspectors attended selected licensee planning meetings. Shift staffing for licensed operators, non-licensed personnel, and fire brigade members was observed.

During plant walk arounds, the inspector noted that improvements have been made in overall plant housekeeping.

No violations were identified.

2.0 Control Room Operator Required Reading File

On June 25, 1985, the inspector reviewed new and revised procedures placed in the Control Room Required Reading File that are required to be read by all control room personnel. The scope of the review was to determine if the procedures were being read in a timely manner, if the procedures were adequate and technically correct, and if specific procedures were reviewed and approved by the NRC prior to implementation, in accordance with Technical Specification 6.8.2. Procedures/documents selected from the Required Reading File were:

- 4000-ADM-3000.03, Tie-In Control
- 4210-SUR-3244.01, Containment Integrity Verification
- Recovery Operations Plan Change No. 27

- 4211-OPS-3252.02, Canister Transfer System Abnormal Operations
- 4210-EAP-4000.01, Excessive Radiation Levels

The inspector identified an inconsistency in the Emergency and Abnormal Procedure 4210-EAP-4000.01. The procedure stated in three different paragraphs that if an airborne concentration of 1×10^{-5} mCi/cc (millicurie per cubic centimeter) occurred in a plant area, a Radiation Work Permit (RWP) would be required before personnel would be permitted to enter that area. This activity concentration is inconsistent with the value of 1×10^{-5} uCi/cc (microcurie per cubic centimeter), stated in the Radiological Control Procedure (RCP) 9200-ADM-4212-02, Air Sample Counting, Handling, and Actions. The inspector informed the Plant Operations Manager of this. The Plant Operations Manager informed the inspector that he had previously been informed of the inconsistency but he would take immediate action to process a Procedure Change Request (PCR) to correct it. Since the concentration value was placed in the procedure for information only and not as a limit or precaution for decision making, the inspector determined the inconsistency would not impact actions taken by plant operations during an emergency or abnormal condition. Procedure 9200-ADM-4212-02, is the controlling document for determining if an RWP is required based on airborne radioactivity concentrations. The inspector verified that a PCR (No. 85-05-44) was processed correcting the inconsistency.

No violations were identified.

3.0 Operator Training

On June 4 and 6, 1985, the inspector evaluated Senior Reactor Operator (SRO) and Fuel Handling Limited SRO (FHSRO) training pertaining to systems to be used in defueling operations. On these dates, the inspector attended presentations describing the components and operation of the Fuel Transfer System, Fuel Transfer Canal Dam, Dewatering Station and Canister Handling Bridges/Trolleys. The inspector determined that the presentations met the lesson objectives by providing the students sufficient detail to understand how the respective components of the defueling systems would be arranged and their basic principles of operation. The instructors were cognizant design engineers from the Bechtel organization on temporary assignment to the GPU Nuclear Training Department.

The inspector determined that the references used for the development of the lesson plans were system descriptions, design drawings, and testing documents.

Through discussions with the licensee's Operator Training Manager, the inspector determined that a task analysis is presently being performed, using the references to identify the critical activities (e.g., component startup or shutdown), so that system operating procedures and on-the-job training (OJT) packages can be developed.

These procedures and OJT packages will subsequently be used in the practical hands-on training using mockups and installed systems to complete the final phase of SRO/FHSRO defueling training.

The NRC will continue to monitor the licensee's training program for qualifying SRO/FHSRO's to perform core alterations.

4.0 Fuel Transfer System Isolation Valves

While tightening a nut on the packing gland (Unit Work Instruction 4220-3252-85-F071) on a fuel transfer system isolation valve (FH-V-1A), licensee maintenance personnel discovered a crack on the face of the valve's outlet flange (the flange secures the valve body with the piping penetrating the south wall of the "A" spent fuel pool to the Reactor Building). The surface crack measures approximately 4½" in length and approximately 1/16" in width, and is orientated circumferentially along the flange face. The crack is in the heat affected zone of a weld, securing a horizontal brace, stiffener support plate, to the outlet flange. The stiffener plate measures approximately 18" x 3" x ¼" and is welded to the valve's inlet flange on one end and the outlet flange at the other end. Plant Engineering was notified by Maintenance personnel of the flange condition and upon examination of the crack, initiated a Material Nonconformance Report (MNCR No. 147-85) to the Quality Assurance Department. Subsequently, Quality Control personnel placed a "Hold" tag on the valve and performed a dye penetrant test to initially characterize the crack. Later attempts to establish crack depth by ultrasonic testing were unsuccessful due to the porosity of the cast material.

The inspector examined the crack and observed no water leakage. The crack appears to be restricted solely to the flange face and does not appear to impact the pressure boundary of the valve body. Since the integrity of the system is being maintained, the system should remain leak tight under present service conditions. Presently, the valve serves as an isolation barrier separating the dry "A" spent fuel pool (316' elevation) from the filled deep end of the refueling canal (maximum water level 328' elevation). The leak tightness is required for a short term, approximately two months, until modifications are completed in the "A" pool. Following completion of the modifications, the pool will be filled and the isolation valves maintained opened for transferring fuel canisters.

The inspector reviewed the MNCR, Dye Penetrant Test Data, and applicable UWIs and determined that the licensee was systematically assessing the defect. Through discussions with Plant Engineering personnel, the inspector determined that the licensee will postpone repairs, since immediate rework may further degrade the condition of the flange.

No violations were identified.

5.0 Sump Transfers

On June 5, 6, and 9, 1985, the inspector was notified, per procedure, by the licensee of liquid waste transfers from the Turbine Building Sludge Sump, Waste Module Sump, Control and Service Building Sump, and Control

Building (M-20) Sump, respectively, to the Industrial Waste Treatment System (IWTS). Subsequent to the notifications, the inspector determined that concentrations of radioactive materials were within the regulatory limits, that the sump was recirculated prior to initial sampling and that a mid-batch sample was taken during pump down. The inspector also determined that the licensee performed an evaluation to identify the sources of water and contamination and evaluated the options of storing, processing, or discharging the water. The inspector determined that the management notifications were made in accordance with 4212-CHM-3011.99 prior to discharging the sumps.

No violations were identified.

6.0 Surveillance Testing

The inspector reviewed the following surveillance testing documents performed during the past 12 months to verify that the frequency of testing met Technical Specification (TS) requirements, that test data met TS acceptance criteria, and that equipment operability was demonstrated:

- Source Range Channel Functional Test 4221-SUR-3623.02
- Intermediate Range Channel Functional Test, Surveillance Procedure 4303-M5.

No violations were identified.

7.0 Reactor Building Service Crane

On June 25, 1985 the Resident Inspector made an entry into the Reactor Building to witness the load testing of the 5 ton service crane. The crane is an overhead style crane which had previously been assembled and functionally tested in the yard prior to assembly in the Reactor Building. The test load weight was imposed by the lifting tripod. The test weight was 13,500 pounds - the upper limit for testing the 5 ton crane. The Resident Inspector witnessed the test load being moved in the north and south directions and trolled in the east and west directions. No abnormal vibrations, swaying or displacement of the supported rails was detected.

The Resident Inspector witnessed the five minute brake hold load testing. No excessive slippage was noted.

The Resident Inspector witnessed the setting of the hoist overload control. The final setting was 11,200 pounds. However, there appeared to be some difficulty in stabilizing the load while attempting to set the overload control.

The Resident Inspector also examined a portion of the west rail mounted on the D-ring that had a metal protrusion. The rail lengths are installed with a mitered joint and it appeared that the "pointed edge" had become impacted and caused the metal to become off set about 1/4 inch. When the trolley wheel went over this location, it gave the illusion of "bumping" the off set metal.

The licensee is in the process of resolving some Material Noncompliance Reports associated with the 5 ton Reactor Building Service Crane and completing the final QA reviews. The Resident Inspectors will review these activities at a later time. (50/320/85-12-01)

8.0 Observation of Fire Watch

During a tour of the Auxiliary Building by the NRC Projects Section Chief and an H. P. Inspector on June 26, 1985 a welding fire watch was observed without a portable fire extinguisher. The fire watch was asked what he used for an extinguisher and the workman indicated that the permanently installed fire extinguisher would be used. Meetings with the licensee subsequent to discussion with the fire watch revealed that the welding fire watch had been terminated and that the fire watch was making a final check as required by procedure 1410-Y-26 "Welding, Cutting, Grinding and Open Flame Work" procedure for Fire Safety to ensure that there were no flames 30 minutes after securing welding. The inspector had no further questions regarding this matter.

9.0 Routine Health Physics and Environmental Review

a. Plant Tours

The NRC site radiation specialists performed routine plant inspection tours. These inspections included all radiological control points and selected radiologically controlled areas. Items inspected included:

- Access control to radiologically controlled areas
- Adherence to Radiation Work Permit (RWP) requirements
- Proper use of respiratory protection equipment
- Adherence to radiation protection procedures
- Use of survey meters, including personnel frisking techniques
- Cleanliness and housekeeping conditions
- Fire protection measures.

The inspector observed preparations for decontamination work in an area of the fuel handling building that includes high beta radiation levels. It was noted that, in addition to the standard protective clothing and equipment, the workers were equipped with locally fabricated plastic hoods to help reduce exposure to the beta radiation. This action demonstrates licensee awareness of the need to further reduce worker dose in accordance with the ALARA principle. The licensee is pursuing additional ways to further reduce individual dose. The inspector will continue to follow licensee actions to reduce worker exposure.

b. Measurement Verification

Measurements were independently made by the inspector to verify the quality of licensee performance in the areas of radioactive material shipping, radiation and contamination surveys, and onsite environmental air and water sampling analyses. Licensee data was consistent with the NRC measurements.

The inspector reviewed the radiological controls applied within the plant. Appropriate postings, surveys, and controls were observed during inspector tours during day-shift and off-shift hours. Off-shift tours were made on May 23, June 20, June 21, and June 27, 1985.

No violations were identified.

c. Reactor Building Entries

The site staff monitored RB entries conducted during the inspection period. The inspection activities included review of selected documents and direct observations of RB entries. The following items were verified on a sampling basis.

- The RB entry was properly planned and coordinated to assure that task implementation including adequate As Low As Is Reasonably Achievable (ALARA) review, personnel training, and equipment testing.
- Radiological precautions were planned and implemented including the use of a RWP and specific work instructions.
- Specific procedures were developed for unique tasks and were properly implemented.

Entries 615 through 643 were conducted during this inspection period.

A radiation specialist made an entry on May 31, 1985 to observe radiological conditions in the Reactor Building.

No violations were identified.

d. Radioactive Material Shipments

The NRC site radiation specialists inspected TMI-2 radioactive material shipments during the inspection period to verify the items listed below.

- The licensee had complied with approved packaging and shipping procedures.

- The licensee had prepared shipping papers, which certified that the radioactive materials were properly classified, described, packaged, and marked for transport.
- The licensee had applied warning labels to all packages and had placarded vehicles.
- The licensee had controlled the radioactive contamination and dose rates below the regulatory limits.

Inspector review of this area consisted of (1) examination of shipping papers, procedures, packages, and vehicles, and (2) performance of radiation and contamination surveys of shipments on May 31, June 12, June 17, June 20, and June 26, 1985.

No violations were identified.

e. Records Review

The inspector reviewed selected Radiological Awareness Reports (RAR) and Incident/Event Reports (IER).

No violations were identified; however, IERs 50-320-85-046 and 50-320-85-068, concerning potential unmonitored release paths, will continue to be followed as the licensee completes its internal review. (320/85-12-02)

10.0 Inspector Follow Items

Inspector follow items are inspector concerns or perceived weaknesses in the licensee's conduct of operation (hardware or programmatic) that could lead to violations if left uncorrected. Inspector follow items are addressed in paragraphs 7.0 and 9.e.

11.0 Exit Interview

The inspectors met periodically with licensee representatives to discuss inspection findings. On July 1, 1985, the inspector summarized the inspection findings to the following personnel at the exit meeting:

J. Auger, Licensing Engineer
 J. Byrne, Manager, Licensing, TMI-2
 J. Hildebrand, Radiological Controls Director, TMI-2
 B. Leonard, Operator Training Manager
 S. Mervine, Fire Protection Engineer, TMI-2
 A. Miller, Manager, Plant Operations
 P. Newkirk, Deputy Manager, Radiological Field Operations
 R. Sheppard, Licensing Engineer
 M. Slobodien, Manager, Radiological Engineering

At no time during the inspection was written material provided to the licensee by the TMIPO staff except for procedure reviews pursuant to Technical Specification 6.8.2.