

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 82-16

Docket No. 50-289

License No. DPR-50

Category C

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

Facility Name: Three Mile Island Nuclear Station, Unit 1

Inspection At: Middletown, Pennsylvania

Inspection Conducted: September 7-10, 1982

Inspectors: *E. Thomas Shaul for* 9-27-82  
G. W. Meyer, Reactor Inspector date

Approved By: *D. L. Caphton for* 9/29/82  
D. L. Caphton, Chief, Management Programs Section, DETP date

Inspection Summary:

Inspection conducted on September 7-10, 1982; Inspection Report 50-289/82-16

Areas Inspected: Routine, unannounced safety inspection by a region based reactor inspector of licensee action on previous items. There were 29 hours of inspection.

Results: No violations were identified.

## DETAILS

### 1. Persons Contacted

F. Faist, Babcock & Wilcox (B&W) Resident Engineer  
W. Heysek, Supervisor, Site Quality Assurance (QA) Audits  
R. Knief, Manager, Plant Training  
M. Nelson, Supervisor, Review Program  
S. Newton, Operator Training Manager  
M. Ross, Manager, Plant Operations  
\*C. Stephenson, Licensing Engineer  
C. Smyth, Supervisor, Licensing  
\*R. Toole, Operations and Maintenance Director

### NRC

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

\*denotes those present at exit interview.

### 2. Licensee Action on Previous Items

(Closed) Feedback of operating experience; TMI Action Plan (TAP) I.C.7. NUREGs 0660 and 0737, references 3 and 5, respectively, specified that licensees have procedures that ensure that operating information pertinent to plant safety from within and outside the licensee's organization is continually provided to operators and is incorporated into training programs. This aspect had been previously recommended by the NRC in NUREG 0585, reference 2. In Supplement 2 to NUREG 0680, March 20, 1981, the NRC concluded that the licensee had made adequate provisions for the feedback of operating experience information, but that Region I would review the final version of licensee procedure EP-017 to verify that the provisions of procedure EP-030, which had been reviewed, were not degraded. The inspector reviewed procedure EP-017, "Review of Industry/GPUN Operating Experience", Revision 1, December 15, 1981. In addition, the inspector reviewed EP-030, "Review of Industry/GPUN Operating Experience", December 22, 1980, the previous version of the procedure, and concluded that the provisions for handling the operating experience information were not degraded in issuing EP-017. This item is closed.

(Open) Inspection Follow item (289/82-BC-57) and (Closed) Inspection Follow item (289/82-SC-06); Verification of testing and maintenance activities; TMI Action Plan (TAP) I.C.6. In NUREG 0660, reference 3, the NRC requested that each licensee utilize an effective system of verifying the correct performance of testing and maintenance activities to prevent adverse effects on reactor operation. It was further clarified in NUREG 0737, reference 5 and had been included in a recommendation of NUREG 0585, reference 2. The requested system for verification had been incorporated by the licensee into revised procedures under the Recommended

Requirements for Restart of TMI-1, reference 1, and supplements to it. The NRC reviewed the system and the revised procedures in NUREG 0680, reference 4, as part of the resolution of IE Bulletin 79-05A, item 10 (verification of safety system operability before and after maintenance and surveillance testing). The NRC concluded that appropriate administrative controls had been implemented for verification of safety system operability concerning maintenance and surveillance testing.

The administrative control of safety system operability during maintenance is controlled by means of the licensee's tagging order system, prescribed by Administrative Procedure (AP)-1002. The inspector reviewed AP-1002 and three maintenance procedures (1405-3.2, 1410-P-14, and 1460-V-14) to verify consistent, adequate provision for verification of safety system operability. The inspector found the licensee's administrative control during maintenance to be acceptable.

The administrative control of safety system operability during surveillance testing is specified in the procedure for the specific surveillance test (tagging orders are not normally issued). The inspector reviewed the following procedures and completion records:

- 1302-5.30, Diesel Generator Protective Relaying; completed on June 12, 1982.
- 1303-4.1 to 4.10, Reactor Protective System; completed on November 9, 1981
- 1303-4.16, Emergency Power System; completed June 9, 1982, and August 12, 1982
- 1300-3I A/B, NSRW (Nuclear Service River Water) Test; completed June 14, 1982.
- 1300-3K A/B, RB (Reactor Building) Emergency Cooling Test; completed April 17, 1982, and July 9, 1982.

The inspector found that the licensee was performing verification of the safety system operability after maintenance and surveillance testing. However, in some examples the inspector found the instructions for and the documentation of the verifications to be confusing. Specifically, for the surveillance tests performed as part of the inservice testing (IST) program, i.e., surveillance procedures 1300-3I A/B and 1300-3K A/B above, the inspector concluded that clarification was needed for the following:

- How the verification was performed independently. The IST procedures utilize a step-by-step procedure with sign-offs, together with an attached "independent position verification" sheet. The verification sheet has a listing of valves with proper position, and a space to initial as each valve position is verified. At the bottom, the verification sheet has "Independent verification by" signature and the date.

In the three completed IST procedures reviewed, the inspector found examples of three operators executing the two initialing areas and the signature, one operator initialing in both initial areas and a second operator signing, and three operators initialing on the verification sheet and signing the sheet at the bottom.

- Which valves had been tested and subsequently verified. The IST procedures typically have an arbitrary designation as an "A" test (pumps and valves) or as a "B" test (valves only). Therefore, the "A" test includes the "B" test as a portion of the "A" test procedure. Further, the tests are performed on the "A" and/or "B" trains of safety system components. The "independent position verification" sheet had columns labeled "A" and "B" for "A" and "B" tests. In all three examples, both "A" and "B" columns were filled in, although only the "A" or "B" test would have been done. Procedure 1300-3I A/B had a "C" column for the "C" test, although there appeared to be no "C" test. This terminology was inherently confusing, and the documentation which resulted was also confusing.

The inspector requested three licensed operators to interpret what IST testing had been performed and verified based on the completed IST test procedures. None could fully explain the differences between the three completed test procedures and their explanations were often inconsistent with each other.

The inspector stated that there appeared to be independent verification, in that at least two operators had been involved in all the reviewed examples of surveillance testing and its verification. However, the instructions for verification and its documentation needed to be improved. Based on prior NRC review of and the evidence of independent verification of safety system operability following maintenance and surveillance testing, Open Item (289/82-SC-06) regarding TAP I.C.6 is closed. Based on the problems noted above with implementation and documentation of the independent verification, Open Item (289/82-BC-57) for compliance with the revised procedures remains open.

(Closed) Nuclear Steam System Supplier (NSSS) vendor review of procedures; TMI Action Plan (TAP) I.C.7; Open Item (289/82-BC-60). NUREG 0660, reference 3, identified the need for NSSS vendor review of procedures for low power testing, power ascension and emergency operation to verify the adequacy of the procedures. The licensee Recommended Requirements for Restart for TMI-1, reference 1, included procedures revised utilizing Babcock & Wilcox (B&W) recommendations. These revised procedures were reviewed by the NRC in NUREG 0680, reference 4. Licensee letter LIL 111 dated April 14, 1981, described the licensee program utilizing B&W representation on the Test Working Group for review of the low power testing and power ascension portions of the TMI-1 restart and utilizing a separate B&W review of selected emergency procedures. In a letter dated April 22, 1981, the NRC evaluated the licensee program for B&W review of procedures and concluded that it was in conformance with TAP item I.C.7. The inspector

selectively sampled from the program to verify its implementation. The inspector reviewed the B&W comments and the licensee resolution of B&W comments for emergency procedures 1202-35, Loss of Decay Heat Removal System, and 1203-15, Loss of RC Makeup, and reviewed the B&W signoffs for the test procedures and the test results for Test Procedures 645/1, T sat Functional Test, and 664/2, Pressurizer Operation Test. This item is closed.

(Closed) Training Department Administrative Manual; Inspector Follow-up Item (289/80-19-11). Inspection Report 50-289/80-19 noted that a Training Department Administrative Manual was under development. A licensee representative stated the Training Department Administrative Manual had been developed and was implemented. He stated that the three volumes of the manual provided organizational responsibilities (e.g., position descriptions and qualifications, organizational structure, etc.); training program descriptions (e.g., auxiliary operator training, fire protection training, chemistry technician training, etc.); and administrative procedures (e.g., Training Department indoctrination, review and approval of lesson plans, etc.). The inspector reviewed the manual's table of contents and selectively sampled six procedures to verify that the applicable procedures had been developed and issued and that the procedures were consistent in format. This item is closed.

(Closed) Additional operator training on the TMI-2 accident; Open Item (289/82-BC-53). During the Atomic Safety and Licensing Board (ASLB) review of training, the licensee committed to perform three additional days of training on the TMI-2 accident for licensed operators. A licensee representative stated that the training was completed during the period from July to November, 1981. The inspector reviewed the lesson plans for mitigating core damage, the TMI-2 accident transient, and the small break Loss of Coolant Accident (LOCA) guidelines; the training materials used during the training presentation; and the attendance sheets and examination for a selective sample of sixteen operators. The inspector concluded that the licensee commitment had been met. This item is closed.

### 3. Management Meetings

Licensee Management was informed of the scope and purpose of the inspection at the entrance interview conducted on September 7, 1982. The findings of the inspection were periodically discussed with licensee representatives during the course of the inspection. An exit interview was conducted on September 10, 1982 (see paragraph 1 for attendees) at which time the findings of the inspection were presented.

#### References:

1. Recommended Requirements for Restart of Three Mile Island-1, September 12, 1979
2. NUREG 0585, TMI-2 Lessons Learned Task Force Final Report, October, 1979

3. NUREG 0660, NRC Action Plan Developed as a Result of the TMI-2 Accident, May, 1980
4. NUREG 0680, TMI-1 Restart; Evaluation of Licensee's Compliance with NRC Order dated August 9, 1979, June, 1980
5. NUREG 0737, Clarification of TMI Action Plan Requirements, November, 1980
6. Partial Initial Decision (Management and Training) of Atomic Safety and Licensing Board, August 27, 1981
7. Partial Initial Decision (Procedures and Plant Design) of Atomic Safety and Licensing Board, December 14, 1981