



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PUMP AND VALVE INSERVICE TESTING PROGRAM

METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER AND LIGHT COMPANY
PENNSYLVANIA ELECTRIC COMPANY
GPU NUCLEAR CORPORATION

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-289

INTRODUCTION

An Inservice Testing (IST) Program for pumps and valves is required by the provisions of 10 CFR 50.55a(g) to be revised every 120 months. The IST interval for the first ten years of Three Mile Island Unit 1 (TMI-1) operation ended in September 1984 and was evaluated by NRC letter to GPUN dated October 23, 1984. In accordance with NRC regulations, GPUN submitted, on July 10, 1984, an updated IST Program for the second ten-year interval running from September 1984 until September 1994. This submittal was intended to follow ASME Boiler and Pressure Vessel Code, Section XI, Division 1, 1980 Edition and Addenda through Winter 1980, except for a number of specific requests for relief from Code testing requirements.

After a preliminary review, the NRC staff had notified GPUN by letter dated December 11, 1984, that the updated IST Program should be implemented pending completion of a detailed staff review. However, the staff did reaffirm denial of several GPUN requests for relief from Code requirements that were previously denied for the first ten-year interval. On May 3, 1986, GPUN submitted a supplement to their proposed IST Program for the second ten-year interval which provided additional information and commitments in response to NRC guidance. The NRC staff subsequently issued a Safety Evaluation (SE) dated October 3, 1986, which concluded that the updated TMI-1 Pump and Valve IST Program (as supplemented) was acceptable with the exception of certain requests for relief which were denied.

A technical meeting was held between GPUN and the staff on October 27, 1986, to discuss the outstanding open items identified in Appendix D of the SE dated October 3, 1986, as well as denied relief requests. In response to this meeting, GPUN submitted, on December 24, 1986, a supplement to the IST Program. Following a preliminary review of this supplement, the staff conducted a conference call with GPUN and EG&G Idaho (an NRC contractor) on January 15, 1987 to further discuss SE open items. As a result, GPUN submitted a letter dated February 19, 1987, which provided additional information and commitments necessary to resolve NRC staff concerns. In a telephone conference call on March 12, 1987, the licensee made further commitments to include certain diesel generator support system valves in the IST Program. Finally, by letter dated March 13, 1987, GPUN committed to a schedule to resolve the remaining open items under review.

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EVALUATION

Attached is a Supplemental Technical Evaluation Report (TER) for the TMI-1 IST Program for Pumps and Valves. The TER was prepared by EG&G Idaho, Inc., under contract to the NRC. With the exception of items discussed below, the TER is approved by the NRC staff and becomes the NRC staff position on the various items discussed. Exceptions and/or further explanation of various sections of the TER are provided as follows:

1. TER Items 2.2.1 and 2.10.1, Boric Acid Pumps CA-PI A/P and Boric Acid Recycle Pumps WDL-P13 A/B

By letters dated February 19, 1987 and March 13, 1987, GPUN has agreed to perform plant modifications necessary to perform quarterly testing of these pumps, including the measurement of flow rate in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (i.e., the Code). The licensee has requested relief from performing this testing until such time that the plant modifications are installed. After negotiations between GPUN and the NRC, which considered the total Integrated Living Schedule for plant modifications, the NRC staff accepts the licensee's commitment to complete the modifications prior to startup from the 8R refueling outage. Interim relief from performing the quarterly testing is granted until the modifications are complete. In the interim, the licensee's current program which tests the pumps each refueling interval is acceptable.

2. TER Appendix D, Item D.1.20, Spent Fuel Cooling System Valves

Because of the importance of the Spent Fuel Cooling System in mitigating certain accidents, the staff has continued to require that the valves in this system be included in the IST Program and tested to the requirements of the Code since the licensee does not have a safety-grade source of makeup water to the pool. The licensee has already included the system pumps in previous IST submittals. The licensee has agreed, by letter dated February 19, 1987, to include the required Spent Fuel Cooling System valves in the IST Program for testing. The licensee has stated that procedural changes necessary to commence testing of these valves will be implemented prior to six months after February 19, 1987. The staff finds this acceptable since this will provide for the first testing in August 1987, or approximately three months (the Code required testing frequency) after startup for the next fuel cycle. Therefore, interim relief is granted from testing these valves until the end of August 1987.

3. TER Appendix D, Item D.1.23, Diesel Generator Fuel Oil Transfer Pumps and Valves and Diesel Generator Air Start Valves

Because of the importance of these diesel generator auxiliary systems to the operation of the diesel generators, the staff has continued to require that the system pumps and valves be included in the IST Program and tested to the requirements of the Code. The staff has specifically required that flow rate measurement capability be installed for these pumps in order to assess hydraulic performance. The licensee has agreed, by letters dated February 19, 1987 and March 13, 1987, to install

flow rate instrumentation or tank level indication to measure flow rate during quarterly tests of these pumps. The licensee has requested relief from the Code requirements to measure differential pressure, inlet pressure, and testing for a five minute run time. Further, the licensee requests relief from measuring flow rate until such time that the necessary modifications are installed.

The staff grants relief from measuring differential pressure and inlet pressure since these may be calculated based on fluid levels, and grants relief from testing for a five minute run time. Because of the particular design of these pumps, relief is also granted from the measurement of lubricant level and vibration. The staff also agrees that relief should be granted from performing flow rate measurement until such time that necessary modifications are installed. After negotiations between the NRC and GPUN, which considered the total Integrated Living Schedule of TMI-1 plant modifications, the NRC staff accepts a commitment from GPUN to complete these modifications prior to startup from 7R refueling outage. Until the modifications are complete, interim relief is granted from performing the flow rate measurement.

The licensee's February 19, 1987 letter did not provide information regarding the testing of Diesel Generator Fuel Oil Transfer valves or the Air Start valves from the air receivers to the solenoid air start valves. A conference call was conducted March 12, 1987 to resolve this issue. For the Diesel Generator Fuel Oil Transfer system, a total of six check valves must be added to the IST Program. Specifically, valves DF-V-23-A/B, DF-V7-A/A, DF-V7-R/A, DF-V7-A/B, and DF-V7-B/P are to be added to the program. However, testing of these check valves is integral to the flow rate measurement discussed above. The licensee has agreed to add these six valves to the IST Program when the modifications for flow rate measurement are completed (i.e., prior to startup from the 7R refueling outage). This is acceptable to the NRC staff. Interim relief is granted from testing these valves until the modifications are complete.

For the Diesel Generator Air Start system, a potential of two valves (EG-V17-A/P) must be added to the IST Program. In the conference call of March 12, 1987, GPUN agreed to add these valves to the IST Program within six months of the date of this SE. However, if within that six-month period, GPUN determines that failure of these two valves would not cause degradation of diesel generator performance, a letter will be sent to the NRC justifying that the valves should not be included in the IST Program. Additionally, GPUN may determine a need for specific relief requests from certain tests on these valves. If such a need for relief is determined, the relief request should be submitted during this six-month period. Interim relief from performing IST on these two valves is granted for the six-month period starting from the date of this SE.

4. TER Item D.1.19, PORV Testing

The licensee has agreed to test the PORV at a frequency and with a method which is acceptable to the NRC staff. There is a point of disagreement between GPUN and the NRC on what category the PORV valve should be classified. GPUN prefers to classify it as a Category C valve. The NRC staff believes it should be more appropriately classified a Category B valve. However, the valve does not clearly fit either category, so there is room for disagreement. Nevertheless, the actual testing committed to by GPUN is more restrictive than the testing required for either Category B or C. So the actual classification of the valve is somewhat moot. But, if in the future the generic testing done for Category B valves becomes more restrictive than the actual testing done at TMI-1 and GPUN elects not to change the PORV testing, the licensee is requested to justify this decision in a letter to the NRC.

5. Implementation Schedules

The licensee requested clarification of implementation schedules for reliefs approved by our October 3, 1986 SE. Specifically, our SE stated that testing for the Control Building Chilled Water pumps (AH-P3/A/B) and the Screen House Ventilation Equipment pump (SW-P2 A/R) would require plant modifications to be completed during the 7R refueling outage. Apparently, the wording of the NRC SE left some confusion on whether the schedule for the modifications was acceptable. The TER attempts to rectify this problem. But to clear up any confusion which may exist, where physical modifications have to be completed prior to doing testing and the NRC has accepted the licensee's modification schedule, interim relief is granted until the physical modifications are complete. The schedule for these modifications for the 7R refueling outage is acceptable to the NRC.

The licensee has made a series of commitments to add components to the IST Program which only require the development of testing procedures. The licensee has committed to develop and implement these procedures within six months of the commitment letter date (specifically GPUN letters dated December 24, 1986 and February 19, 1987). This schedule is acceptable to the NRC, and interim relief is granted for these components until the procedures are implemented.

CONCLUSION

The licensee's IST program for the second ten-year interval as described in this SE and its attached TER is acceptable.

Dated: March 19, 1987

Principal Contributors:

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