

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON 20426

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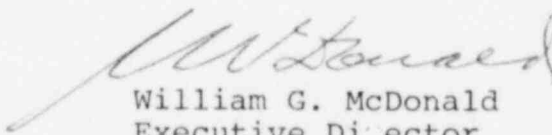
Mr. Mitchell Rogovin  
Director  
Three Mile Island Special  
Inquiry Group  
Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Rogovin:

This supplements my September 11, 1979 response to your letter of August 29, 1979.

Enclosed is a revised answer to one of the questions regarding the testing period for TMI-2.

Sincerely,

  
William G. McDonald  
Executive Director

Enclosure

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REVISED ANSWER TO NRC INQUIRY  
ON TMI-2

- Q. Did the owners of TMI-2 file a report justifying a test period in excess of 120 days?
- A. A complete report covering the testing period, as required by Electric Plant Instruction No. 9(D) of the Uniform Systems of Accounts, was not filed by the owners. However, by letter dated August 18, 1978 (copy attached), the owners advised the Chief Accountant, FERC, of problems encountered during the third day of the initial start-up of the plant.

The owners proposed that the initial start-up date not be used for the purpose of commencing the 120 day testing period referred to in Electric Plant Instruction No. 9(D).

No written response was made to the owners' proposal. Instead, on September 29, 1978, Mr. E. J. Holcombe, Vice President and Comptroller of General Public Utilities Service Corporation, was contacted by telephone. He was advised that after the plant was placed in service, the owners should submit the data required by Electric Plant Instruction No. 9(D), irrespective of whether the testing period might end up being less than 120 days if the owners' proposal was accepted.

Mr. Holcombe was contacted September 28, 1979, and he stated that the requested data was assembled prior to the accident of March 29, 1979, but was not forwarded to FERC. He promised to mail the data to FERC promptly.

Attachment



GPU Service Corporation  
260 Cherry Hill Road  
Parsippany New Jersey 07054  
201 263-4900

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FEDERAL POWER  
COMMISSION

August 18, 1978

Federal Energy Regulatory Commission  
825 N. Capitol Street, N.W.  
Washington, D.C. 20426

Attention: Mr. L. H. Drennan, Jr., Chief Accountant  
Subject: Three Mile Island Nuclear Generating Station Unit 2  
Gentlemen:

In accordance with Electric Plant Instruction No. 9D of your Uniform System of Accounts prescribed for Public Utilities and Licenses, as amended by Order 475, we submit the following information concerning the test period for Three Mile Island Nuclear Generating Station Unit 2 in order that we establish the commencement of the official test period with the synchronization that is expected to take place in September 1978. This request is made on behalf of our three subsidiary operating companies: Jersey Central Power & Light Company, Metropolitan Edison Company and Pennsylvania Electric Company.

Three Mile Island Nuclear Generating Station Unit 2 consists of (a) one reactor vessel utilizing high pressurized water, steam generators, and other necessary auxiliary equipment to produce steam; and (b) one 900 MW turbo generating unit.

The turbo generator was first synchronized to the Company's system on April 21, 1978 and began test operation for two days until April 23, 1978, when the main steam safety valves failed to function within prescribed limitations (a detailed technical report is attached). During these two days only 1100 MWH of generation was provided. This failure required that the unit be shut down and the 12 steam safety valves and related piping be replaced by 20 steam safety valves of a different design. A total of 140 days of additional construction time is expected to be required prior to the next attempted synchronization in September.

Due to these extenuating circumstances, we believe that it is appropriate that the test period as outlined in Instruction No. 9D of the Uniform System of Accounts should commence with the synchronization that is expected to occur in September 1978.

Very truly yours,

GPU SERVICE CORPORATION

E. J. Holcombe  
Vice President and Comptroller

EJH:mb  
Attachment

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SUMMARY  
OF  
THREE MILE ISLAND NUCLEAR GENERATING STATION UNIT 2  
STEAM SAFETY VALVE MALFUNCTION AND RECOVERY PROGRAM

A formal start-up testing program was planned and organized for Three Mile Island Nuclear Generating Station Unit 2 similar to the one that was conducted very successfully on Three Mile Island Nuclear Generating Station Unit 1. The program was scheduled for forty (40) weeks. The first event in the test program, functional testing of component parts, but without any power generation, was completed in October 1977, in time to support the May 31, 1978 in-service date scheduled at that time. The test program is planned to fully exercise all of the plant equipment under carefully controlled and monitored conditions so that any deficiencies in design or construction can be identified. The end objective of the test program is to verify that the plant performs in full conformance with all operating and licensing specifications. While it is anticipated that some problems will occur during the test program, for administrative reasons the program schedule makes no explicit provision for delays.

Fuel loading into the reactor began during February 1978. The reactor first became critical on March 28, 1978 and was synchronized to the system on April 21, 1978, to begin the testing of actual power generation. By April 23rd, the test program had progressed to the "15-40 per cent power escalation" phase. In so doing the plant has operated at full temperature and pressure at a maximum electrical output of about 200 MW and has produced about 1100 MWhrs. of net generation.

On April 23, 1978, the reactor tripped while operating at 28 per cent power during the conduct of the start-up program. This type of transient leads to an increase in pressure in both the reactor plant and the steam plant. The pressure increase is controlled by main steam safety valves. The main steam safety valves open as a result of the increase in main steam pressure and relieve this pressure to the atmosphere; however, the main steam safety valves did not reclose when the pressure returned to its normal range. As a result of the safety valves failing to close appropriately, excessive heat was removed from the main steam system, cooling down the steam generators and thereby causing the reactor coolant system to cool down excessively. The rapid cool-down of the reactor coolant system, and the associated decrease in reactor coolant pressure, initiated injection of emergency cooling water in a manner similar to that expected during a loss of coolant accident.

During the course of this event, it was noted that liners from expansion joints in the discharge piping from the main steam safety valves had failed and were ejected into the air through the main steam safety valve discharge stacks.

Met-Ed and GPU Service Corporation established a Task Force to review and evaluate the causes and implications of this event and to recommend specific action to be taken to preclude such an occurrence in the future. It was well recognized by the Task Force and others that the main steam safety valves blew down excessively and while corrective action was necessary,

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it was believed at that time that normal adjustments to the valves would remedy that problem. The major thrust of the initial action was to correct the deficiencies in the discharge piping expansion joints, and such corrective action was completed about the middle of May. Concurrent with the repairs to the safety valve discharge piping, the plant was cooled down for cleanup of the chemicals added to the reactor coolant system in conjunction with injection of emergency cooling water and correction of other minor problems identified by the test program.

Upon return of the plant to normal operating temperature and pressure without nuclear power, main steam safety valve testing was initiated on May 18, 1978, with the expectation of adjusting the reclosure pressure of the valves to correct the excessive blowdown. It became apparent about May 20th that the allowable adjustments were not correcting the reclosure problem with the main steam safety valves.

On May 23, 1978, a meeting was held with engineering executives of the Lonergan Company (designers and manufacturers of the safety valves), and GPU Service Corporation, to determine the course of action that would be taken to correct the deficient valve operation. The Lonergan Company stated that two specific changes would result in acceptable valve performance. One change was a reduction of the back pressure caused by the design of the valve discharge piping and the second involved internal modifications to the valve. These changes were made on two valves and testing was resumed on May 26, 1978, with the modified discharge piping, and on May 31, 1978, with the modified valves.

Concurrent with the joint effort with Lonergan, Burns and Roe (the Architect-Engineer for TMI 2) was directed to start engineering work to design modifications to the plant which would be necessary if the Lonergan valves had to be replaced. GPUSC personnel began immediately to canvass valve suppliers to identify the availability of replacement valves.

In the first part of June, a testing facility in Huntsville, Alabama became available for modification to permit off-site testing of the valves, and arrangements were made to test both modified and unmodified valves at that facility. In the meantime, testing at the plant continued through the 4th of June. Fifty-one (51) valve tests were accomplished in the period from May 18 through June 4, sixteen (16) of which were with modified valves. One hundred eleven (111) tests were conducted at Huntsville through June 22, 1978. None of the tests at Huntsville or at the plant site resulted in acceptable valve performance.

During the period of evaluation and testing from mid-May through June 23, 1978, many alternatives were considered for resolution of the problem. The search made throughout the United States for available replacement valves resulted in no valves being found that were available immediately that would fit the TMI 2 steam line configuration. The Forked River Nuclear Generating Station is being supplied valves of the same size as the Lonergan valves but which are made by another valve manufacturer but those valves will not be available until the end of November 1979. Smaller valves were located that were available immediately and which are similar to the valves used for TMI 1.

On June 22, 1978, it was apparent that the valve testing at Huntsville was non-productive and that further testing of the Lonergan valves would not achieve satisfactory results. It was decided, therefore, to purchase twenty (20) smaller valves of the TMI 1 design to replace the twelve (12) Lonergan valves which did not perform adequately. By that time, the necessary modifications to the main steam lines had been identified and the necessary material to accomplish these modifications had been located, and procurement had commenced.

The steam line modifications involve welding into the four (4) main steam lines, a total of twenty (20) new nozzles. Welding the nozzles into place requires cutting holes in the main steam pipes, precision fit up of the new nozzles with the holes and completion of the welding process which must include in-process and post-weld inspections and post-weld heat treatment. In addition, the safety valve discharge piping inside the building has to be removed and replaced with different piping with a different configuration. All of this work must be accomplished in an elevated and congested area of the plant. Following completion of the piping modifications, the valves must be installed, the steam line insulated, the system hydrostatically tested, and the safety valves lift and reseal pressures tested.

The main steam safety valve modification was initiated June 23, 1978, and is expected to be complete by the end of August. Completion of the main steam safety valve modification in August will permit a return to power in mid-September, a delay of about one hundred forty (140) days in the project.

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