GPU Nuclear

GPU Nuclear Corporation
Post Office Box 480
Route 441 South
Middletown, Pennsylvania 17057-0191
717 944-7621
TELEX 84-2386
Writer's Direct Dial Number:

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U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Gentlemen:

Subject: Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Response to Generic Letter (GL) 90-06

Attached is GPU Nuclear's response to NRC Generic Letter (GL) 90-06, entitled, "Resolution of Generic Issue 70, 'Power-Operated Relief Valve and Block Valve Reliability,'and Generic Issue 94, 'Additional Low-Temperature Overpressure Protection for Light-Water Reactors.' pursuant to 10 CFR 50.54(f)."

GL 90-06 requested that PWR licensees advise the NRC staff whether they intend to follow the staff positions included in Enclosures A and B as applicable, or propose alternative measures. The technical findings and regulatory analysis related to Generic Issue (GI) 70, NUREG-1326, were included with the generic letter as Enclosure C. Enclosure A, in Attachment A-4, to GL 90-06 gives the staff position for B&W designed plants resulting from the resolution of GI-70. The recommendations of Enclosure B do not apply to B&W-designed plants such as TMI-1 and are not addressed in this response.

As demonstrated in the attached response, we believe that the current program of administrative controls (Technical Specification and Quality Assurance requirements) and testing for the PORV and block valve are adequate to provide the assurance they will function as required and are sufficient to resolve GI-70 for TMI-1.

Item No. 3 of the attached response evaluates each of the three design basis safety functions of the PORV listed in GL 90-06 for TMI-1. Because the PORV is not used as the primary means of accomplishing any of the safety functions which are considered

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design basis, the proposed Technical Specification changes would be inconsistent with the NRC Interim Policy on Technical Specification Improvement.

Sincerely,

J. J. Broughton for

H. D. Hukill
Vice President and
Director, TMI-1

HDH/MRK

cc: Region I Administrator, NRC
Director, Project Directorate I/4, NRC
Senior Project Manager, TMI-1, NRC
Senior Resident Inspector, TMI-1, NRC

Sworn and subscribed to
before me this 24th
day of December, 1990.

Notary Public

Attachment

Response to Generic Letter 90-06

The following is in response to the NRC recommendations for "improvements to all PORVs and block valves for operating PWR plants and construction permit holders" as outlined in Section 3.1 of Enclosure A to Generic Letter 90-06:

Recommendation 1
Include PORVs and block valves within the scope of an operational quality assurance program that is in compliance with 10 CFR Part 50, Appendix B. This program should include the following elements:

a. The addition of PORVs and block valves to the plant operational Quality Assurance List.

b. Implementation of a maintenance/refurbishment program for PORVs and block valves that is based on the manufacturer's recommendations or guidelines and is implemented by trained plant maintenance personnel.

c. When replacement parts and spares, as well as complete components, are required for existing non-safety-grade PORVs and block valves (and associated control systems), it is the intent of this generic letter that these items may be procured in accordance with the original construction codes and standards.

Response
a. The PORV and block valve are included on the GPUN Component Quality Classification List and safety classified as Nuclear Safety Related. The GPUN Operational QA Plan identifies that Nuclear Safety Related items are within the scope of the QA Plan.

b. PORV maintenance and refurbishment are handled by a contract through Dresser Industries. The contract imposes the appropriate QA requirements and QA surveillance of Dresser activities. Typically, each refueling the inplace PORV is swapped with the spare, refurbished valve and the valve that was removed is sent to Wyle Labs for testing under a GPUN contract. All work is performed by Dresser Industries at Wyle Labs facilities. Appropriate QA requirements are also imposed in the Wyle Labs contract with testing also under QA surveillance.

The PORV Block valve was repacked in 1987 as part of the Chesterton valve repacking program. A schedule for repacking the valve has been established in accordance with the Chesterton recommendations.

All maintenance/refurbishment work performed on the PORV or block valve at TMI-1 would be in accordance with the manufacturer's recommendations by maintenance personnel trained in accordance with GPUN's Maintenance Training Program which is fully accredited by INPO.

c. TMI-1 has non-safety grade PORV and block valves. PORV and block valve parts are procured in accordance with the original construction codes and standards.

Recommendation 2
Include PORVs, valves in PORV control air systems, and block valves within the scope of a program covered by Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants," of Section XI of the ASME Boiler and Pressure Vessel Code. Stroke testing of PORVs should only be performed during Mode 3 (Hot Standby) or Mode 4 (Hot Shutdown) and in all cases prior to establishing conditions where the PORVs are used for low-temperature overpressure protection. Stroke testing of the PORVs should not be performed during operation. Additionally, the PORV block valves should be included in the licensees' expanded MOV test program discussed in NRC Generic Letter 89-10, "Safety-Related Motor Operated Valve Testing and Surveillance," dated June 28, 1989.

Response
The PORV (RC-RV2), a 2½" Dresser Electromatic Relief Valve, does not use control air. The PORV block valve (RC-V2) is a 2½" Velan motor operated gate valve.

The PORV and block valve are tested in accordance with Section XI, Subsection IWV of the ASME Boiler and Pressure Vessel Code, as required by 10 CFR 50.55a. The Inservice Testing (IST) program requirements for the PORV and block valve were approved by the NRC's SER for the second ten year interval, dated March 19, 1987. Testing of the PORV block valve will be in accordance with the Motor Operated Valve Test Program in response to NRC Generic Letter 89-10.

Surveillance requirements for the PORV and block valve include:
1. Quarterly stroke time cycling of the block valve in accordance with Surveillance Procedure (SP) 1300-3Q, "Quarterly Inservice Testing of Valves During Normal Plant Operation."
2. Monthly testing in accordance with SP 1303-11.45, "PORV Setpoint Check" as required by TMI-1 Tech Spec 4.1-1, Item 48.

3. Refueling interval PORV setpoint calibration in accordance with SP 1302-6.16, "PORV Setpoint & Remote Position Check," as required by TMI-1 Tech Spec 4.1-1, Item 48.
4. Refueling interval testing of the PORV in accordance with SP 1300-3V, "PORV IST," which requires:
   a) Actuation during shutdown conditions, or
   b) Removal and bench testing, or
   c) Removal and replacement with a spare valve previously tested (typically by Dresser at Wyle Labs) within the last three years.[1]

Recommendation 3

For operating PWR plants, modify the limiting conditions of operation of PORVs and block valves in the technical specifications for Modes 1, 2, and 3 to incorporate the position adopted by the staff in recent licensing actions. Attachments A-1 through A-3 are provided for guidance. The staff recognizes that some recently licensed PWR plants already have technical specifications in accordance with the staff position. Such plants are already in compliance with this position and need merely state that in their response. These recent technical specifications require that plants that run with the block valve closed (e.g., due to leaking PORVs) maintain electrical power to the block valves so they can be readily opened from the control room upon demand. Additionally, plant operation in Modes 1, 2, and 3 with PORVs and block valves inoperable for reasons other than seat leakage is not permitted for periods of more than 72 hours.

Response

TMI-1 Tech Spec Amendment No. 78, dated October 20, 1982 incorporated PORV and block valve operability requirements in response to certain of the TMI-2 Lessons Learned Category "A" requirements and other short-term requirements identified in the Commission Order of August 9, 1979.

In accordance with Tech Spec 3.1.12.4, whenever the PORV is determined to be inoperable, the associated block valve must be shut and electrically isolated to allow continued operation. Likewise if the PORV block valve is inoperable, the PORV shall be

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[1]In addition, as-found and as-left visual examinations are performed. For in-place testing, the stroke time is determined by the use of the acoustic monitors. For bench testing, stroke time is determined by observation. Fail-safe testing is determined by valve closure upon removal of the open actuation signal.

closed and electrically isolated. Continued operation is permitted with the PORV and/or block valve shut since no credit is taken for these valves in the safety analyses (except for plant low-temperature overpressure protection which was addressed in Amendment No. 56, dated July 28, 1980).

GL 90-06 and NUREG-1316 list three design basis safety-related functions of the PORV. Each of these uses of the PORV are evaluated for TMI-1 as follows:

1. Mitigation of a design-basis steam generator tube rupture accident

   In the event of a steam generator tube rupture (SGTR), RCS leakage into the secondary system may eventually lift the Main Steam Safety Valves (MSSVs), allowing a release directly to the environment. To prevent this situation from occurring, RCS pressure must be decreased to minimize primary-to-secondary leakage. The OTSG will not pressurize until filled with water. Minimizing the leakrate will minimize the OTSG fill rate and the gaseous release rate to the atmosphere. In this event, it is necessary to depressurize the RCS below the lowest MSSV setpoint so that if the OTSG fills and becomes pressurized, the MSSV will not lift.

   In accordance with Abnormal Transient Procedure (ATP) 1210-5, "OTSG Tube Leak/Rupture," control of the event is accomplished by steaming the OTSGs through the turbine bypass valves (TBVs) or through the atmospheric dump valves (ADVs) if the condenser is not available. The TBVs and ADVs are controlled to assure that OTSG pressure is kept below the MSSV lift setpoint. The RCS is depressurized by turning off the pressurizer heaters and using pressurizer spray if reactor coolant pumps (RCPs) are available. If a rapid reduction is necessary or if RCPs are not available, the pressurizer vent valve is used. The PORV is only used as a last option. The primary method of preventing MSSV lift is by steaming to maintain OTSG pressure less than 1000 psig.

2. Low-temperature overpressure protection of the reactor vessel during startup or shutdown

   For the case of the low-temperature overpressure protection (LTOP), NUREG-1326 states that B&W plants have been excluded from Generic Issue 94 because "these units have not experienced any low temperature transients and, based on theoretical risk, do not contribute to the overall risk of LTOP events. B&W plants do not operate in a water solid

condition. A steam or nitrogen bubble is maintained in the pressurizer. This bubble provides a minimum of 10 minutes for the operator to respond to anticipated low-temperature overpressure events. NUREG-1316 states, "B&W plants use the pressurizer gas space as a primary means of controlling overpressure and the single PORV as a backup." It is for this reason that GL 90-06 states that Enclosure B, which addresses the GI 94 concern for low-temperature overpressure protection, does not apply to B&W plants.

3. Plant cooldown in compliance with Branch Technical Position RSB 5-1 to SRP 5.4.7, "Residual Heat Removal (RHR) System."

NUREG-1316 references Branch Technical Position (BTP) RSB 5-1 in SRP 5.4.7 which states "current PWRs should have safety grade systems capable of maintaining the RCS in hot shutdown condition for four hours followed by a cooldown to the cold shutdown condition. In Westinghouse, B&W, and CE plants with PORVs, depressurization of the RCS is accomplished by using a combination of either RCS fluid contraction caused by the cooldown and heat losses from the pressurizer to ambient or by a safety-related PORV."

In accordance with Operating Procedure (OP) 1102-11, "Plant Cooldown," in the natural circulation cooling mode, RCS pressure decreases without spray flow result from pressurizer ambient losses and cooldown due to insurges of cooler reactor coolant. RCS cooldown rate is controlled using the TBVs or ADVs to prevent the formation of excessive voids in the RV head and to prevent the violation of the Nil Ductility Temperature (NDT) limits. Use of the PORV for RCS pressure control is not specifically allowed by OP 1102-11.

NUREG 1316 references a Brookhaven National Laboratory study that estimated the risk reduction from improved PORV and block valve reliability. The referenced study showed only a small potential decrease in core melt probability due to increased PORV and block valve reliability. The study did not include consideration of bleed and feed capability. This was because use of the PORV for bleed and feed is considered beyond the design basis and not within the scope of GI-70.

GPU Nuclear does not intend to incorporate the Technical Specification changes proposed in Enclosure A, Attachment A-4 to GL 90-06. We believe that the current Operability and Surveillance requirements for the PORV and block valve are adequate and we do not believe that the proposed changes are needed to resolve GI 70 for TMI-1. It should also be pointed out that because the PORV is not used as the primary means of

accomplishing any of the aforementioned safety functions which are considered design basis, the proposed changes are inconsistent with the NRC Interim Policy on Technical Specification improvement.