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(717) 948-8005

February 6, 1994 C311-94-2005

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

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1) Operating Licensing No. DPR-50 Docket No. 50-289 LER 93-008-01

This letter transmits Licensee Event Report (LER) No.93-008-01. Laboratory test reports indicate that a Pressurizer Code Safety Valve (PCSV) may have been outside of the Technical Specification limits during Cycle 9 operation due to an inadequate test procedure. This supplement provides the results from testing the other PCSV which was in service during Cycle 9.

The laboratory test procedure has been upgraded. Pressurizer Code Safety Valves currently installed have been tested in accordance with the revised testing program. Public health and safety were not affected.

The abstract provides a brief description of the event. For a complete understanding of the event, refer to the text of the report.

Sincerely,

HSroughton

T. G. Broughton Vice President and Director, TMI-1

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Attachment

cc: Region I Administrator TMI-1 Senior Project Manager TMI Senior Resident Inspector

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GPU Nuclear Corporation is a subsidiary of the General Public Utilities Corporation

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previous vendor test procedure could introduce setpoint errors. Therefore, the setpoint may have been outside the required TS tolerance during the last fuel cycle (November 14, 1991 through September 10, 1993). This event is reportable under 50.73.a.2.i.B, as an operation or condition prohibited by the plant's TS. Reanalysis shows that Reactor Coolant System pressure would not have exceeded the safety limit if the most limiting pressure transient had occurred. The test procedure has been revised. Spare Pressurizer Code Safety Valves (PCSVs), whose actuation setpoints had previously been set using the revised test procedure, were installed prior to the startup for Cycle 10. The "As found" test results for the other PCSV in service during Cycle 9 were below the 2500 psig setpoint.

NRC FORM 386A (6-89)	US LICENSEE EVENT REPORT TEXT CONTINUATION	NUCLEAR REGULATORY COMMISSION	APPRO ESTIMATED BURDEN INFORMATION COLLE COMMENTS REGARDIU AND REPORTS MANA REGULATORY COMMI THE PAPERWORK RE OF MANAGEMENT ANI	EVED OMB NO. 315 EXPIRES 4/30/92 PER RESPONSE T CTION REQUEST IG BURDEN ESTIM SEMENT BRANCH SSION, WASHINGT DUCTION PROJEC D BUDGET WASHING	0-0104 0.00 HRS. 1 ATE TO THE (P-530), U.S. 0N, DC 20561 T (3150-0104 NGTON, DC 2	WTH THIS ORWARD RECORDS NUCLEAR 5, AND TO 1, OFFICE 0503					
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II.	Status of Structures, Compo the Start of the Event and	nents, or Systems that Contributed to	hat were Inop the Event:	erable at							
	None.										
III.	Background:										
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The PCSVs [AB/RV]¹ protect the RCS against overpressurization during transients and accidents which involve a mismatch between the primary plant heat source and the secondary plant heat sink. Effluent from the PORV and PCSVs discharges to the Reactor Coolant Drain Tank (RCDT).

Technical Specification (TS) 3.1.1.3 requires that both PCSVs be operable with a lift setting of 2500 psig plus or minus 1 percent whenever the reactor is critical. When the reactor is subcritical one PCSV must be operable if all RCS openings are closed.

TMI-1 has four Model 31739A PCSVs manufactured by Dresser Industries with two in service during operation. GPU Nuclear uses the services of vendors to perform PCSV testing. Tests are performed at Wyle Laboratories, with a Dresser representative present, in accordance with GPU Nuclear Specification and Wyle procedures. During plant operation two of the four valves are installed on the Pressurizer as PCSVs (tagged RC-RV-1A and RC-RV-1B) and the other two valves are spares. Hence the individual valves "rotate" through their assignment as PCSVs on a once per fuel cycle basis between tests. Although TMI-1 TS Table 4.1-2 requires that only one of the two installed valves be tested each refueling interval, due to Code requirements and current operating schedules, both valves are removed at the end of each operating cycle, sent out for testing, and the two valves which had been tested and stored at the site since the previous cycle are installed on the pressurizer.

During startup following the 10R Outage in October 1993, one of the installed Pressurizer Code Safety Valves began leaking. Therefore, in order to ensure that a spare was available at the site, only one of the two valves that had been operating during Cycle 9 was sent out for testing and the other valve (BL-08897) was retained at the site as a spare.

IV. Event Description:

On November 3, 1993 GPU Nuclear received the test report from Wyle Laboratories with the results of "as found" setpoint testing for PCSV bearing Serial Number (S/N) BR-06613. This valve had been installed on the Pressurizer as RC-RV-1B during Cycle 9 operation from November 14, 1991 through September 10, 1993 and was sent to Wyle Laboratories for testing during the Cycle 10 Refueling (10R) Outage. The test report shows that the valve was lifted several times before making adjustments. The highest lift pressure recorded (2617 psig) was 4.7

¹ The Energy Industry Identification System 'EIIS), System Identification (SI) and Component Function Identification (CFI) Codes are included in brackets, "[SI/CFI]", where applicable, as required by 10 CFR 50.73(b)(2)(ii)(F).

NRC FORM 366A (6-89)	U.S. NUCLEAR REGULATORY COMMISSION				APPROVE	ED ON	48 NO. 315 8: 4/30/92	0-0104			
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percent above the TS setpoint, (3.7 percent higher than the TS allowable lift pressure of 2500 psig plus 1 percent).

Based on problems with Pressurizer Code Safety Valve setpoints at the Duke Power Company, Catawba and Oconee² Nuclear Stations, the NRC issued Information Notice (IN) 91-74, "Pressurizer Safety Valve Setpoints," dated November 25, 1991 which notified licensees that the procedures used by Wyle Laboratories in the past may have resulted in out-of-tolerance setpoints after the valve has been returned to the plant for installation. This was due to the practice of setting setpoints first and then checking for leakage. If leakage was present the valve seat would undergo a "jack and lap" process to stop the leakage. This process involves partial disassembly of the valve while maintaining the spring pressure in order to polish the valve seats. After the "jack and lap" process, the vendor was not checking the setpoint again before returning the valve to the plant owner.

TMI-1's evaluation of the IEN at the time concluded that none of the four code safety valves at TMI-1 was affected by this information. Because of either a miscommunication or a misinterpretation, this conclusion was incorrect. Recent re-evaluation shows that both BR-06613 and BL-08897 (installed during Cycle 9 Operation) were tested before the vendor revised its procedures to include a setpoint check after any "jack and lap" process was performed on the valve seat.

The basis for our belief that TMI-1 valves would not have undergone the "jack and lap" process without a subsequent setpoint test is that TMI-1's Specification (SP) 1101-12-103, (Revision 0, 1/87) Section 4.3.1.3 states: "If refurbishment is required, the valve shall exhibit an "as Left" setpoint pressure verification of 2500 plus or minus 1 percent for three consecutive actuations using saturated steam." Therefore, the action GPU Nuclear found necessary, upon review of IN 91-74, was to delete the requirement for a gaseous nitrogen seat leakage test which was found to subject the valve to then regarded as unnecessary work on the valve seat with the sole purpose of passing the nitrogen test. Discussions with Wyle at that time dealt primarily with the acceptability of deleting the nitrogen seat leakage test. These discussions did not reveal that TMI-1 valves had not been receiving a setpoint test after "jack and lap." Further review of the Wyle Laboratories Test Reports on BR-06613 and BL-08897 (dated 3/89 and 2/90) revealed that the test sequence did not include a setpoint check after "jack and lap."

Dresser representatives have previously stated that the "jack and lap"

Oconee Nuclear Station LER 270/92-02, dated March 25, 1992.

NRC FORM 366A (6-39)	U.S. NUCLEAR REGULATORY COMMISSION				APPROV	ED ON XPIRE	MB NO ES: 4/3), 316 30/92	0-0104			
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process could adversely affect the valve setprint. Because valve BR-06613 was subjected to the improper sequence of testing described above and the "as found" setpoint of the valve was found to be higher than 2500 µrig plus or minus 1 percent at the completion of Cycle 9 operation, GPU Nuclear concludes that this out-of-tolerance setpoint condition could have existed during Cycle 9 when valve BR-06613 was installed on the pressurizer as RC-RV-1B. This event is reportable under 50.73.a.2.i.B, as an operation or condition prohibited by the plant's TS.

The root cause of this event is defective procedures used by Wyle Laboratories, in the past, to test the PCSVs. As a result of their experiences with code safety valve setpoint shifts resulting from the "jack and lap" process as described in IN 91-74, Wyle has informed us that their test procedures have been changed. Dresser representatives have also informed us that their policy has changed such that neither Wyle nor Dresser would release a PCSV without a setpoint test following the "jack and lap" process. The TMI-1 PCSV Specification, (SP 1101-12-103) will be revised to clarify Section 4.3.1.3 to ensure that the statement cannot be interpreted to allow the release of a Code Safety Valve without a setpoint test following the "jack and lap" process.

Review of Pressurizer Code Safety Valve history from Cycle 9 operation to the present shows the following, in addition to the above:

- S/N BR-06612 is presently installed for Cycle 10 operation. This valve was tested using the revised test procedures which ensure that setpoint testing is performed after work which could affect the setpoint, including the "jack and lap" process.
- S/N BL-08898 was a spare valve during cycle 9 operation after having been tested using the revised Wyle Laboratories test procedures. This valve was installed at the beginning of Cycle 10 operation. Because this valve leaked the plant was shutdown and this valve was replaced by BR-06613 which had been received back from Wyle after tests using the revised test procedures.
- S/N BR-06613 (the subject of this LER) was installed during Cycle 9 operation. This valve has been returned to TMI-1 from Wyle, having been tested using the revised test procedures and installed in place of valve S/N BL-08898 (the leaking valve) for the remainder of Cycle 10 operation.
- S/N BL-08897 was the other valve in operation during Cycle 9. The Wyle test reports indicate that this valve was also subjected to the same improper sequence of testing. This valve was removed from the pressurizer during the IOR Outage and shipped to Wyle for testing. During the "As found" test of S/N BL-08897 conducted at Wyle

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	Laboratories on Decemb	er 15, 1993 the val	ve lift	ted at 24	4) psig	. 1		1		
	GPU Nuclear concludes that (BR-06612 and BR-06613) we procedure.	the valves current re set correctly us	ly inst ing the	talled du e revised	iring Cy I test	cle 1	0	1		
V. C	omponent Failure Da a:									
	The component which failed Safety Valve manufactured	TS test requirement by Dresser Industrie	ts was es.	a Model	31739A	Code				
VI. A	utomatic or Manually Initia	ted Safety System Re	espense	is:						
	No safety system responses	occurred or were re	equired	d to occu	ır.					
VII. A	ssessment of the Safety Con	sequences and Implic	ations	of the	Event:					
	There were no safety conse Safety Valve Setpoint of 2 of design pressure) repres- the RCS under the ASMI. Cod	quences associated v 617 psig. The safe ents the maximum tra e Section III.	with a ty limi ansien1	Pressuri it of 275 t pressur	zer Cod 60 psig re allow	e (110% able	in			
	The most limiting RCS over startup accident, represen to rod withdrawal from hot event assuming one PCSV op open. The analysis was pe The results show that the of 2750 psig.	pressure transient ted by an uncontrol zero power. GPU 3 ens at 2625 psig and rformed using conse peak pressure does i	in the led rea clear d the c rvatice not exc	TMI-1 FS activity has rear other val e FSAR as used the	AR is t additio alyzed ve does sumptio safety	he n due this not ns. limit				
	Additionally, there were no "as found" setpoint lower transients occurred during If a transient had occurred the PORV (set at 2450 psig pressure and thereby preve possibility of a transient only potential safety consultively event that it mig associated with a PCSV stu	o safety consequence than the specified i the operating cycle d to challenge the) would not have had nt the PCSV from lif challenging the PC equences of lifting ht fail to close. ck open is bounded i	es asso 2500 ps e that PCSV w d the c fting. SV wou the P(The los by the	ociated w sig setpo approach ith its s opportuni In such Id be gre CSV would ss of cod safety a	with the bint. N hed 2440 setpoint ity to r a case eater. i be the blant analysis	PCSV psig low, educe , the The				

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VIII. Previous Events of a Similar Nature:

There have been no previous LERs related to PCSV setpoint "as found" tests outside the TS plus or minus 1 percent tolerance. A review of TMI-1 history for PCSV "as found" test results from 1988 shows that a considerable number of these tests (around 50 percent) have been higher than 1 percent above the 2500 psig setpoint. This event is the first occurrence of an "as found" test result greater than 3 percent³ above the 2500 psig setpoint.

IX. Corrective Actions Planned:

Although we understand that Wyle Labs has instituted a change to their test procedures that will preclude a code safety valve to be released without a setpoint test following the "jack and lap" process, GPU Nuclear will revise the TMI-1 Pressurizer Code Safety Valve Specification, (SP 1101-12-103) to clarify Section 3.1.3 to ensure that this statement in our specification can not be interested to allow the release of a Code Safety Valve without a setpoint test collowing the "jack and lap" process. This and other improvements which are being considered will be incorporated into TMI-1 SP 1101-12-103 prior to PCSV testing following Cycle 10 operation, which is scheduled to end in September 1995.

³ The ASME Code, which is referenced in the bases of the TS, has been revised in OM-1 to allow a larger bild of sets int tolerance (3 percent).