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February 28, 1997
6710-97-2059

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

Dear Sir:

Subject: Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
LER 97-002-00

The purpose of this letter is to transmit TMI-1 Licensee Event Report (LER) No. 97-002-00.
The abstract provides a brief description of the event.

This event did not adversely affect the health and safety of the public.

Sincerely,

M. J. Ross
Director, TMI (Acting)

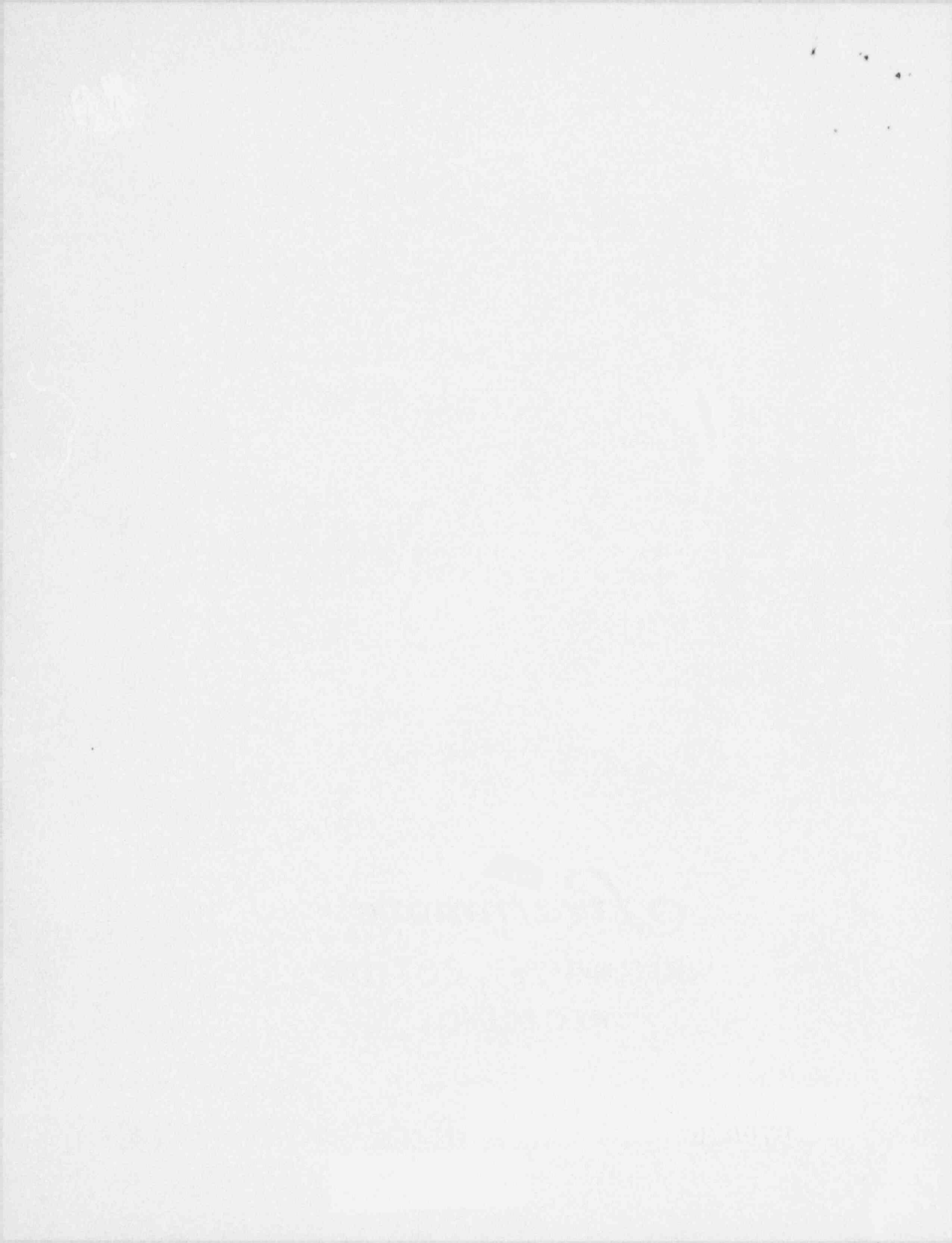
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Attachment

cc: Administrator, NRC Region I
TMI Senior NRC Resident Inspector
TMI Senior NRC Project Manager

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS
MANDATORY INFORMATION COLLECTION REQUEST 50.0 HRS
REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE
LICENSING PROCESS AND FED BACK TO INDUSTRY FORWARD
COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION
AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR
REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO
THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF
MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

THREE MILE ISLAND, UNIT 1

DOCKET NUMBER (2)

05000289

PAGE (3)

1 OF 4

TITLE (4)

POTENTIAL INABILITY OF THE STARTUP FEEDWATER BLOCK VALVES TO FULLY CLOSE
FOLLOWING A MAIN STEAM LINE BREAK DUE TO MOV PROGRAM WEAKNESSES

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	29	97	97	-- 002	-- 00	02	28	97	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		100	20.2203(a)(1)		20.2203(a)(2)(v)		X		50.73(a)(2)(i)	50.73(a)(2)(viii)
			20.2203(a)(2)(i)		20.2203(a)(3)(i)				50.73(a)(2)(ii)	50.73(a)(2)(x)
			20.2203(a)(2)(ii)		20.2203(a)(3)(ii)				50.73(a)(2)(iii)	73.71
			20.2203(a)(2)(iii)		20.2203(a)(4)				50.73(a)(2)(iv)	OTHER
			20.2203(a)(2)(iv)		50.36(c)(1)				50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(v)		50.36(c)(2)				50.73(a)(2)(vi)	

LICENSEE CONTACT FOR THIS LER (13)

NAME

M. R. KNIGHT, TMI REGULATORY AFFAIRS ENGINEER

TELEPHONE NUMBER (Include Area Code)

(717) 948-8554

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED
SUBMISSION

MONTH DAY YEAR

YES

(If yes, complete EXPECTED SUBMISSION DATE).

NO

X

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 29, 1997, GPU Nuclear reviewed the operability of Feedwater Startup Block Valves, FW-V92 A/B. Improvements to the GL 89-10 program had led to more conservative assumptions being used in the valve thrust calculations. The new assumptions increased the calculated thrust requirements for the valves. Although calculations were not yet design verified, there was reason to believe the valves may not close fully during a Main Steam Line Break (MSLB). FW-V92A/B are required to close by a signal from the Heat Sink Protection System (HSPS) when Once Through Steam Generator (OTSG) pressure decreases to less than 600 psig. Technical Specification 3.5.1.9 requires HSPS operability when the reactor is critical and establishes a 72 hour allowable outage time with a single train inoperable. With FW-V92A/B inoperable for greater than 72 hours, this condition is an event which is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition in which the plant was not in compliance with its Technical Specifications. The torque switch settings for FW/V92A/B were increased to ensure full valve closure during a MSLB. The root cause was weakness of the Motor Operated Valve (MOV) Program. All valves in the GL 89-10 MOV program are being reevaluated using justifiable and conservative assumptions. The safety consequences associated with this event were minimal.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

POTENTIAL INABILITY OF THE STARTUP FEEDWATER BLOCK VALVES TO FULLY CLOSE
FOLLOWING A MAIN STEAM LINE BREAK DUE TO MOV PROGRAM WEAKNESSES

I. Background

In parallel with the 20" line containing the feedwater block and control valves, a 6" line containing a Feedwater Startup block valve (FW-V92) in series with a Feedwater Startup Control Valve (FW-V16) supplies feedwater to each OTSG during low flow conditions and remains open during higher flow conditions including full power operation. Following a postulated Main Steam Line Break (MSLB), the Heat Sink Protection System (HSPS) would isolate feedwater flow to both Once Through Steam Generators (OTSGs) when OTSG pressure decreases to less than 600 psig by sending a signal to close each of the control and block valves. Normally, the Startup Control Valves (FW-V16A/B) would close before the Startup Block Valves (FW-V92A/B), however if the control valves [SJ/FCV]* failed to close, the FW-V92 valves would have to close against full differential pressure. This is required in order to isolate feedwater to the OTSGs in a worst case scenario to prevent an overcooling event that could lead to a return to core criticality. The current MSLB analysis assumes flow isolation is achieved within 30 seconds.

In accordance with NRC Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," a Motor Operated Valve (MOV) program was established to ensure that the MOVs perform their safety functions. This program utilizes certain assumptions to calculate the thrust required from the valve operator. As part of the effort to improve the MOV program, more conservative assumptions have recently been used to calculate valve thrust requirements.

II. Plant Operating Conditions Before Event:

TMI-1 was operating at 100% power.

III. Status of Structures, Components, or Systems that were Inoperable at the Start of the Event and Contributed to the Event:

None.

IV. Event Description:

On January 29, 1997, GPU Nuclear reviewed the potential inoperability of the Feedwater Startup block valves, FW-V92A/B. Improvements of the GL 89-10 MOV program has led to more conservative assumptions being used in the valve thrust calculations. The new

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assumptions resulted in increased calculated thrust requirements for these valves. Although the calculations were not yet design verified, there was reasonable evidence that the calculations would no longer prove that the valves would close fully during a MSLB.

The Technical Specifications (Tech Specs) were then reviewed for applicability. Although Tech Spec 3.5.1.9 requirements for HSPS [JB/--] operability addresses only the HSPS logic and not the actuated components, GPU Nuclear concluded that the component is required to perform its function when actuated by the HSPS. Since the Tech Specs require both the startup block and control valves to be operable, and because the startup block valves may not fully close on an HSPS feedwater isolation, the FW-V-92 A/B valves [JS/ISV] were declared inoperable.

One of the two valves in series supplying feedwater to each OTSG [AB/SG] through the startup feedwater flowpath is inoperable as a result of the revised MOV assumptions. The redundant valve is unaffected by these calculations. The Limiting Condition for Operation (LCO) put the plant in a 72 hour Tech Spec allowable outage time (AOT) for each valve. Since the inoperable condition was pre-existing and had existed for longer than the 72 AOT allowed by Tech Specs, GPU Nuclear concluded that TMI-1 had been in a condition prohibited by Tech Specs and which was reportable under 10 CFR 50.73(a)(2)(i)(B).

Upon determining that FW-V92A/B were inoperable, the torque switch setting for both valves were adjusted to ensure they would satisfy their safety function. This restored both valves to an operable status.

V. Component Data:

The affected components were the Feedwater Startup Block valves, FW-V-92 A/B. These valves are 6" Crane Model 783-U with Limitorque Model SMB-00-25 motor operators.

VI. Identification of Root Cause:

The root cause was a programmatic weakness in the MOV program. Previous MOV calculations, using less conservative assumptions, had incorrectly led to determining that the FW/V92A/B valves would be able to perform their safety function during a worst case MSLB.

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VII. Automatic or Manually Initiated Safety System Response:

No safety system responses occurred or were required to occur.

VIII. Assessment of the Safety Consequences and Implications of the Event:

The safety consequences of this event were minimal. The Startup Control Valves (FW-V16A/B), in series with FW-V92A/B along with the actuating logic in each flow path remained operable. Therefore, if an event occurred which required isolation of feedwater to the OTSGs had occurred and the FW-V92A/B valves failed to close, the safety function of isolating the OTSGs would have been successfully performed by the FW-V16A/B valves. The health and safety of the public was unaffected.

IX. Previous Events of a Similar Nature:

There have been no previous LERs at TMI-1 related to the inoperability of MOVs due to non-conservative thrust calculations or for any other reason associated with the GL 89-10 MOV program.

X. Corrective Actions:

Torque switch [SJ/JS] settings on the valve operators for FW-V92A/B were increased. These new settings ensure that the FW-V92A/B valves will close fully on an HSPS feedwater isolation signal even if the redundant valves were to fail. Additional modifications are being considered to further increase the margin for these valves during the cycle 12 refueling (12R) outage, which is scheduled to begin in September 1997. All valves in the GL 89-10 MOV program are being reevaluated using justifiable and conservative assumptions.

- * The Energy Industry Identification System (EIIIS), 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).

