

GPU Nuclear Corporation

Route 441 South P.O. Box 480 Middletown, Pennsylvania 17057-0480 (717) 944-7621 Writer's Direct Dial Number:

(717) 948-8005

March 5, 1993 C311-93-2029

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 93-002-00

This letter transmits Licensee Event Report (LER) No 93-002-00. The event involves the January 29, 1993 performance of a periodic weekly operation of the Decay Heat River Water Pumps. The purpose of running the pumps weekly is to prevent the buildup of silt at the pump suction. During performance of the procedure on this date, personnel error resulted in a valve lineup which caused cooling water to bypass both Decay Heat Service Coolers. These Emergency Safeguards (ES) coolers are part of an emergency standby system which is not normally operated during power operation. Public health and safety were not affected.

This LER is being submitted pursuant to 10 CFR 50.73. The abstract provides a brief description of the event. For a complete understanding of the event, refer to the text of the report. Additional time for responding was provided by the NRC Region I Staff.

Sincerely,

Fighton

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

MRK

Attachment cc: Region I Administrator TMI-1 Senior Project Manager TMI Senior Resident Inspector 110055 9303110417 930305 PDR ADOCK 05000289 S PDR

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BYPASS OF BOTH DECAY HEAT SERVICE COOLERS DUE TO PERSONNEL ERROR

TMI-1 was operating at 100% power. On January 29, 1993 during the performance of a weekly procedure, not required by Technical Specifications (TS), the Auxiliary Operator (AO) failed to follow established operator work practices and established a valve lineup which caused river water to bypass both Decay Heat Service Coolers (DC-C-2A/B) simultaneously. When discovered, the proper alignment was immediately restored. The root cause of this event was personnel error.

TS 3.3.1.1.d requires two Decay Heat Removal Coolers (DH-C-1A/B) and their cooling water supplies, including coolers DC-C-2A/B, during plant operation. With both coolers bypassed, TS 3.0.1 was applicable. This condition is reportable under 50.73.a.2.i.B and also under 50.73.a.2.vii.

Bypassing both coolers simultaneously had no immediate safety significance during the event because the equipment was not called upon to be in operation. In the event of a worst case Loss of Coolant Accident, the safety systems would have fulfilled their intended function.

Management has reviewed this event with the affected crew. Procedures will be upgraded. Each Operating crew will review the event.

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I. Plant Operating Conditions before Event:

TMI-1 was operating at 100% rated power.

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

None

III. Event Description:

Operations Surveillance OPS-S227, "DR-P-1A/B Periodic Operation," is a weekly non-Tech Spec surveillance normally performed by the operating shift between 11:00 pm and 7:00 am. The purpose of this surveillance is to assure that each Decry Heat River Water (DR) Pump [BI/P] operates for at least one hour per week to avoid the potential for silt buildup at the pump suction. During the early 1980s, when the facility was in extended shutdown and core decay heat levels were extremely low, OPS-S227 provided guidance for bypassing a Decay Heat Service Cooler (DC-C-2A or DC-C-2B) [BI/CLR] if there was a concern for a thermal transient (extreme cooling) on the Decay Heat Removal (DHR) System or the Decay Heat Closed Cooling Water (DCCW) System. The option to bypass coolers in accordance with OPS-S22: has not been needed since restart in 1985 after the six year shutdown.

During the performance of OPS-S227 on January 29, 1993, the non-licensed Auxiliary Operator (AO) failed to follow established operator work practices and bypassed both DC-C-2A and DC-C-2B simultaneously at about 0100 hours. The DR System was not required to be in operation, so neither DR Pump was operating.

Control Room personnel were unaware that both coolers were bypassed until about 0330 hours when a licensed Control Room Operator (CRO) discovered this condition while attempting to determine the status of preparations for performing OPS-S227. During a later critique of the event, the AO stated that after bypassing both coolers he reported the condition to the Control Room so the surveillance could proceed. However, Control Room personnel do not remember receiving the report. When the CRO discovered that the DR valves (DR-V3A/B, and DR-V5A/B) [BI/V] were not in the required position, he immediately informed the Shift Supervisor who directed the crew to restore and independently verify the required Engineered Safeguards (ES) valve alignment. Realignment of the coolers

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	LICENSEE EVENT REPORT (TEXT CONTINUATION	(LER)	ESTIMATED BURDEN PER RESPONSE INFORMATION COLLECTION REQUEST COMMENTS REGARDING BURDEN ESTIN AND REPORTS MANAGEMENT BRANCH REGULATORY COMMISSION WASHINGT THE PAPERWORK REDUCTION PROJEC OF MANAGEMENT AND BUDGET, WASHI	TO COMPLY WTH TH SDD HRS. FORWAR ATE TO THE RECORD (1P530). U.S. NUCLEA TON DC 20585. AND T TT (3156-0104). OFFIC INGTON, DC 20503											
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EXT Iff more space is req	and independent verificati	on were completed b	y approximately 0355	hours.											
	DCCW is a closed loop cool water (ultimate heat sink) (DC-C-2A/B). DCCW cools the [BP/CLR] and the following	ing water system wh through the Decay I he Decay Heat Remov safety related pum	ich rejects heat to r Heat Service Coolers al System (DHR) Coole ps:	iver rs											
	 DCCW Pumps bearings [CC/P] (TS 3.3.1.4.c), DHR Pumps motor and bearings [BP/P] (TS 3.3.1.1.c), Reactor Building Spray (BS) Pumps motor and bearings [BE/MO] (TS 3.3.1.3.a), and Makeup Pumps (MU-PIA and C) motor [CB/MO], gear reducer [CB/RGR], and bearings (TS 3.3.1.1.b).¹ 														
	Technical Specification (T (DH-C-1A/B) [BP/CLR] and t Decay Heat Service Coolers is allowed to be removed f coolers inoperable (bypass (comparable to STS 3.0.3) under 50.73.a.2.i.B as an Technical Specifications, single cause or condition inoperable in a single syst the consequences of an acc	S) 3.3.1.1.d require heir cooling water (DC-C-2A/B), during rom service for up ed), TS 3.3.1.1.d way was applicable. Th event or condition p and also under 50.7 caused two independent tem designed to remaindent.	es two DHR Coolers supplies, which inclu g plant operation. O to 72 hours. With bo as not met. TS 3.0.1 is condition was repo prohibited by the Pla 3.a.2.vii as an event ent trains to become ove residual heat or	des the ne train th rtable nt's where a mitigate											
	The root cause of this event was personnel error. The AO bypassed both coolers at the same time in violation of established operator work practices. The AO failed to operate the equipment in accordance with Administrative Procedure (AP) 1029, "Conduct of Operations," which would have required authorization from the Shift Supervisor, Shift Foreman, or CRO prior to manipulating the valves. Additionally, operation of both trains of ESAS components was in violation of operator work practices. Further evaluation will determine to what extent communications, work preparation, and work control by the shift personnel contributed to this event.														
	To a lesser extent, clarit, The instructions in OPS-S2 thermal transient would oc time should be bypassed and of service and started a TS OPS-S227 that contributed	y of the procedural 27 did not provide y cur, did not specify d that bypassing a S time clock. Howe to this event could	guidance also contri guidance for determin y that only one coole cooler rendered the t ver, the instructions have been eliminated	buted. ing if a r at a rain out in											
(NSCCW	Makeup Pump MU-P1B is cool) and was unaffected by this	ed by Nuclear Servi s event.	ces Closed Cooling Wa	iter											

NRC FORM 256A	U.	S. NUCLEAR REGULATORY COMMISSION	AFIROVED OWR NO 315	0.0104									
4	LICENSEE EVENT REPORT	EXPIRES A/30/92 ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REGISTER AND UND FORMATION											
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TEXT If more spec	e is required, use additional NRC Form 3864 (s) (17)	10 10 10 10 10 F 10 P	<u> </u>	0 4 0 0 0 0									
	entirely since they are no guidance had been containe exposure to the biennial r enhanced presentation to c entirely.	ot applicable to an o ed in the appropriate review process could clarify the use of th	perating station. If Operating Procedure, have resulted in eith is option or removed	the er it									
IV.	Component Failure Data:												
	None.												
۷.	Automatic or Manually Initia	ted Safety System Re	sponses:										
	No safety system responses	were involved in th	is event.										
VI.	Assessment of the Safety Con	sequences and Implic	ations of the Event:										
	Bypassing both coolers had event since neither train	i no immediate safety was called upon to b	significance during e in operation.	the									
	GPU Nuclear has completed pressure versus time for t Coolant Accident (LBLOCA) performed using single tra assumptions regarding ambi Building (RB) initial cond calculations were performe temperature at 120°F, as w the event (70°F). The ass a time for switchover from minutes following an accid to switchover would be abo	calculations which p the containment durin with DR not available in availability and lent conditions, core ditions and equipment ed with Borated Water well as at the actual sumption of single tr h the BWST to sump re dent. Assuming all p but 30 minutes (minim	redict the temperatur g a Large Break Loss e. The analysis was other standard FSAR decay heat, Reactor operability. The Storage Tank (BWST) temperature at the t ain availability resu circulation of about umps are operable, th um time).	e and Of ime of 1ts in 72.5 e time									
	GPU Nuclear has concluded isolated, the core and con sump recirculation. Follo containment cooling would Suction Head (NPSH) would and BS pumps and the React [BK/FCU] would remove deca Room alarm on Main Annunci immediately after starting Cooler, DCCW outlet temper	that if a worst case tainment response wo wing sump recirculat be continued since s be available to the or Building Emergenc by heat from containm ator Panel C-2-8 [IB RB sump recirculati ature of 100°F.	LOCA were to occur w uld be unaffected pri ion, the core and ufficient Net Positiv Low Pressure Injectio y Cooling (RBEC) fan ent. The automatic C /TA] actuates almost on at a Decay Heat Se	ith DR or to e n (LPI) coolers ontrol rvice									
	The remaining concern is t term LPI and BS pump compo	o provide continuous ment cooling. The e	DCCW cooling to assu xact time period over	re long which									

NRC FORM 366A (6-89)		U.S. NUCLEAR REGULATORY COMMISSION	APPROVED OMB NO. 3	150-0104									
	LICENSEE EVENT REPO TEXT CONTINUATI	ORT (LER) ON	EXPIRES 4/30/92 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THINFORMATION COLLECTION REQUEST 500 HRS. FORWAR COMMENTS REGARDING BURDEN ESTIMATE TO THE RECOM AND REPORTS MANAGEMENT BRANCH (F-530). U.S. NUCLE REGULATORY COMMISSION, WASHINGTON, DC 20555. AND THE PAPERWORK REDUCTION PROJECT (3150-0104). OFF										
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	these components would coolers has not been de engineering judgement i available for operator receiving the alarm in start of the event). I it could be shown that sustained longer, perha	continue to operate wi etermined by quantitati indicates that at least action to restore the the Control Room (i.e. If the conservatism of the safety function of aps indefinitely.	thout DR flow through ve calculations. GPU 30 minutes would be DR valve alignment af , at least one hour a this evaluation was a DCCW components coul	h the J Nuclear fter after the removed, ld be									
	On receiving the alarm investigate reduced DR With the installed alar individual high bearing Nuclear concludes that, operator action to reop successfully reestablis Based on the above, GPL mitigating the conseque	in the Control Room, t system flow and verify rm actuated on DCCW hig g temperature alarms on , in accordance with pr ben the isolation valve sh full DCCW cooling pr J Nuclear concludes tha	he operators are dire the DR System valve h temperature followe these components, GF ocedure instructions, s would be taken prom ior to component degr t the safety function	ected to lineup. ed by the PU nptly to radation.									
	heat, would have been a were bypassed.	achieved if a LBLOCA ha	d occurred while the	coolers									
VII.	Previous Events of a Sin	nilar Nature:											
	None.												
VIII.	Corrective Actions Taken	1:											
	The Operations Director to ensure that they rec significance.	r has reviewed this inc cognize the errors that	ident with the crew i were committed and t	involved their									
IX.	Corrective Actions Plann	ned:											
	1. Administrative Proc the Operations Surv component outside t	cedure (AP) 1016 will b veillance Program tasks	e revised to exclude which operate a syst	from cem or									

Procedure.

^{2.} Operations Surveillance Procedures similar to OPS-S227 will be revised to ensure that detailed procedural guidance for evolutions that can potentially affect safe plant operations are removed and placed in approved Operating Procedures. Initial review of the program has identified three surveillances that are similar to

NRC FORM 386A (6-89)	U.S. NUCLEAR REGULATORY COMMISS	ION					APPROVED DMB ND. 3150-0104 EXPIRES 4/30/92								
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OPS-S227. A comprehensive review is in progress and it is expected that only a small number of procedures will be affected. These Operations Surveillance Procedures will reference approved Operating Procedures for proper guidance. This will assure that such activities receive a periodic review through the biennial procedure review process.

- 3. Each operating crew will review this event to ensure their understanding of the errors that were committed and how similar errors can be avoided. Conformance to the Administrative Procedure guidance on verbal communications, work preparation, and work control will be emphasized.
- 4. A more comprehensive review of the human performance aspects involved in this event will be conducted to include the roll of supervision, communications, and what improvements in work practices and controls are indicated.

These actions will be completed by May 1993.

* 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).