

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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) Indian Point 3		DOCKET NUMBER (2) 05000286	PAGE (3) 1 OF 4
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TITLE (4) Plant Outside Design Basis Due To Error In Original Plant Design Probably Due to Personnel Error

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
09	03	97	97	-- 020 --	00	10	03	97	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)						
POWER LEVEL (10) 00	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)						
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER						
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)						
	20.405(a)(1)(iv)	✓ 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)							
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)							

LICENSEE CONTACT FOR THIS LER (12)

NAME Glen Simpson, Operations	TELEPHONE NUMBER (Include Area Code) (914) 736-8015
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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
B	SJ	V	C683	No					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	✓	NO					

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

On September 3, 1997, with the plant in hot shutdown, the Independent Safety Engineering Group determined that the main boiler feed pump motor operated discharge valves would not close upon receipt of a feedwater isolation or safety injection signal if they were opening. These discharge valves have been opened in the past while starting up and following repairs while the plant was in a condition where the valves were credited for mitigation of a feedwater addition accident or a steam pipe rupture. The discharge valves, manufactured by Crane-Teledyne, have an "RY" relay circuit which is operated by the valve closed torque switch and valve open limit switch. The "RY" relay circuit is designed so that the valve closed torque switch (actuated when the valve is torqued shut) deenergizes the valve closing circuit and blocks reenergization until the valve reaches the full open position. If a feedwater isolation or safety injection signal is received while the valve is in an intermediate position, during the opening stroke, the valve will stop opening and reclosure is prevented. The cause is probably personnel error in original plant design. Administrative controls are in place to assure feedwater isolation, considering a single failure, when the valves are opened during startup. These administrative controls will be maintained until Engineering has assessed and completed corrective action. This event had no significant effect on the public health and safety.

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TEXT CONTINUATION

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

Note: The Energy Industry Identification System Codes are identified within the brackets { }

DESCRIPTION OF EVENT

On September 3, 1997, at approximately 1924 hours, while the plant was in hot shutdown with Reactor Coolant System (RCS) {AB} temperature 547 degrees F, RCS pressure of 2235 psig, 40 percent pressurizer level, the Independent Safety Engineering Group determined the main boiler feed pump {P} motor operated discharge valves {V} (BFD-MOV-2-31 and 32) would be unable to shut upon receipt of a feedwater isolation or safety injection signal if they were opening. Deviation Event Report 97-2221 was issued to address this. This event was evaluated and it was determined that the plant has been outside its design bases while opening valves BFD-MOV-2-31 and 32 above cold shutdown.

The feedwater pump discharge valves were manufactured by the Crane-Teledyne Company. The control circuit to open and close each feedwater pump discharge valve has an "RY" relay circuit which is operated by the valve closed torque switch and reset by the valve open limit switch. The "RY" relay circuit is designed so that the valve closed torque switch (actuated when the valve is torqued shut) deenergizes the valve closing circuit and blocks reenergization of the closing circuit until the upper valve position limit switch is actuated when the valve reaches the full open position. The original purpose of the "RY" relay circuit was to prevent intermittent energization of the closing motor contactor circuit when the valve reaches its full shut position. An unforeseen effect of the current configuration of the "RY" circuit is to cause the valve to stop opening if a feedwater isolation or safety injection signal is received while the valve is in an intermediate position after an open demand signal is generated. In this circumstance, valve reclosure is prevented. These control circuits are original plant design.

The extent of condition was assessed. The valve operators for the containment spray {BE}, safety injection {BQ}, chemical volume and control {CB}, and residual heat removal {BP} systems do not utilize the "RY" relay circuit which is installed in the motor control circuits of the feedwater pump discharge valves.

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The plant design basis analyses credit the closure of the feedwater pump discharge valves and resultant trip of the boiler feed pump turbines for steam pipe ruptures (assuming a single failure of the feedwater control valve) and feedwater system malfunctions. The steam pipe ruptures are postulated to occur at the worst case power levels between no load conditions and 100 percent power. The plant would be outside design basis during a period of less than two minutes while opening each discharge valve when putting the main boiler feedwater pumps into service. The first main boiler feedpump is typically put into service between 1 and 4 percent power and the second prior to reaching about 60 percent power during plant startup. Also, power is reduced below about 60 percent when a single boiler feed pump is to be taken out of service.

CAUSE OF EVENT

The event was probably caused by personnel error during original design because of a failure to fully evaluate the functioning of the circuit during design. Due to the passage of time this cannot be verified.

CORRECTIVE ACTIONS

The following corrective actions have been or will be taken:

- Administrative controls are in place to assure that a feedwater isolation or safety injection signal during hot shutdown or startup will not prevent isolation of main feedwater considering a single active failure.
- Engineering is evaluating the corrective action to be taken and will schedule the corrective action when determined. Administrative controls will remain in place until the corrective action is completed. The assessment of corrective action is scheduled for completion by November 3, 1997 and the schedule for corrective action will be determined at that time.

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ANALYSIS OF EVENT

This event is being submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B). When opening the feedwater pump discharge valves while above cold shutdown, either during startup or returning a main boiler feedwater pump to service, the plant would be in a condition outside its design basis due to the inability of the feedwater pump discharge valves to close in response to a feedwater isolation or safety injection signal. The accident analyses in the Updated Final Safety Analysis Report take credit for closure of the feedwater pump discharge valves in response to a feedwater isolation or safety injection signal for steam line breaks and feedwater addition accidents.

A review of LERs submitted in the last two years identified LERs 95-003, 96-004, 97-003, and 97-006 which were caused by a deficiency in original plant design.

SAFETY SIGNIFICANCE

This event did not have a significant effect on the public health and safety.

The deficiency in the feedwater pump discharge valves would result in a failure to isolate only when the valves are being opened. Opening the valves takes less than 2 minutes each which is short compared to the Standard Technical Specification which would allow one or more feedwater isolation valves to be inoperable for 72 hours before being closed. The 72 hour completion time is based on the redundancy of the remaining operable valves and the low probability of an event occurring during this time that would require feedwater line isolation.