

Nuclear Power Plant
P.O. Box 215
Buchanan, New York 10511
914 736.8001



Robert J. Barrett
Plant Manager

November 8, 1996
IPN-96-116

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555


SUBJECT: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
License No. DPR-64
Licensee Event Report # 96-015-00
**Inadvertent Actuation of the 32 Auxiliary Boiler Feedwater Pump
After Closing the 32 Emergency Diesel Generator Manual Output
Breaker Switch During Testing**

Dear Sir:

The attached Licensee Event Report (LER) 96-015-00 is hereby submitted as required by 10 CFR 50.73. This event is of the type defined in 10 CFR 50.73 (a)(2)(iv).

Also attached is the commitment made by the Authority in this LER.

Very truly yours,


Robert J. Barrett
Plant Manager
Indian Point 3 Nuclear Power Plant

Attachment

cc: See next page

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PDR ADOCK 05000286
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cc: Hubert J. Miller
Regional Administrator
Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

INPO Record Center
700 Galleria Parkway
Atlanta, Georgia 30339-5957

U.S. Nuclear Regulatory Commission
Resident Inspectors' Office
Indian Point 3 Nuclear Power Plant

Number	Commitment	Due
IPN-96-116-01	Troubleshoot the 32 EDG manual output breaker switch and the Non-SI Blackout Logic Defeated relay (3-5/6A) and repair or replace as required.	End of RO 9 (currently scheduled for May 1997)

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.

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TITLE (4) Inadvertent Actuation of the 32 Auxiliary Boiler Feedwater Pump After Closing the 32 Emergency Diesel Generator Manual Output Breaker Switch During Testing

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
10	09	96	96	-- 015 --	00	11	08	96	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)								
POWER LEVEL (10)	100	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)				
		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: Lucy Labruzzo, I&C Engineer
TELEPHONE NUMBER (Include Area Code): (914) 736-8356

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)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On October 9, 1996, with the plant at 100 percent power and normal temperature and pressure, a Control Room (CR) Operator observed that the "Steam Supply Low Pressure" alarm cleared for turbine driven Auxiliary Boiler Feedwater (ABFW) pump 32, and that the pump was in operation. The alarm is normal with the 32 ABFW pump not in service. A "Non Safety Injection Blackout Logic Defeated" alarm was expected as a result of a surveillance test being performed on the 32 Emergency Diesel Generator (EDG), which closed the manual output breaker switch to tie the 32 EDG to 480 Volt Bus 6A. The clearing of the "Steam Supply Low Pressure" alarm was not expected. Operators initiated an investigation and determined that there were no plant conditions requiring operation of the 32 ABFW pump, and shutdown the pump. Troubleshooting determined that the relay (BFPL) in the auto start circuitry for the 32 ABFW pump was actuated and sealed-in. The probable causes were determined to be either a mechanical problem with the 32 EDG manual output breaker switch, and/or a sluggish reaction from relay 3-5/6A in the "Non-Safety Injection Blackout Logic Defeated" circuitry, resulting in a change to the timing sequence for the auto start circuit. Corrective actions included troubleshooting that verified the proper operation of logic relays during EDG re-test and verification of proper relay action upon initiation of auto start. Troubleshooting of the manual output breaker switch and the Non-SI Blackout Logic Defeat relay will be performed in Refueling Outage 9. This event had no effect on the health and safety of the public.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

DESCRIPTION OF EVENT

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

On October 9, 1996, at approximately 1231 hours, a Control Room (CR) Operator observed a "Non-Safety Injection Blackout Logic Defeated" alarm up and the "Auxiliary Boiler Feedwater (ABFW) {BA} pump {P} 32 Steam Supply Low Pressure" alarm {PA} cleared and the ABFW pumps RPMs increase. A Nuclear Plant Operator (NPO) reported the pump operating in recirculation. The "Non-Safety Injection Blackout Logic Defeated" alarm was expected as a result of performing a functional test of the 32 Emergency Diesel Generator (EDG) {EK} (monthly functional test 3PT-M79). The EDG functional test closes the EDG manual output breaker, and ties the EDG to 480 Volt AC Bus 6A. The ABFW Pump start is defeated during this test. The "Steam Supply Low Pressure" alarm is normal (Green) with the 32 ABFW pump not in service. The "Steam Supply Low Pressure" alarm clearing alerted the operator of the automatic start of the pump. Operations initiated an investigation and determined that there were no plant conditions requiring operation of the 32 ABFW pump. EDG 32 was removed from 480 Volt Bus 6A, shutdown, and placed in "Auto" at approximately 1311 hours. The 32 ABFW pump was shutdown and placed in "Auto" at approximately 1400 hours. The "Non-Safety Injection Blackout Logic Defeated" alarm was reset and the 32 EDG control switch placed in "Off" at approximately 1413 hours. At the time of the event, reactor power was at approximately 100 percent, reactor coolant temperature and pressure were at approximately 567 degrees F and 2235 psig, and pressurizer level was at 46 percent.

At approximately 1529 hours, a four-hour non-emergency notification (Log No. 31123) reported an automatic Engineered Safety Feature (ESF) actuation. Operations initiated an investigation of the event. Troubleshooting by Instrumentation and Control (I&C) personnel determined that relay BFPL {RLY} in the 32 ABFW pump auto start circuitry {JE} was energized and sealed-in. The 32 ABFW pump auto started approximately 12 seconds after the 32 EDG manual output breaker was manually closed to 480 Volt AC {ED} Bus 6A. Auxiliary Feedwater (AFW) from the 32 ABFW pump did not flow to the steam generators due to normally closed manually operated Flow Control Valves {FCV} (BFD-FCV-405A, B, C, D).

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I&C Engineering performed an Operability Determination which concluded that the 32 ABFW pump was operable. The 32 ABFW pump is automatically actuated by a Non-SI Blackout signal, a Low Low level in two of the four steam generators, and an AMSAC signal. I&C Engineering determined none of these conditions were present during the time the 32 ABFW pump auto started. Interviews with operators and I&C technicians determined that no unexpected alarms were received, no other actuation or trips were initiated, and no relay flags were dropped. Based on the absence of required conditions resulting from auto start by AMSAC or Low Low steam generator level, scenarios associated with them were ruled out. Because the EDGs are tied to the Non-SI Blackout Defeat logic and a test of EDG 32 was being performed during the time the event occurred, I&C Engineering focused their investigation on the Non-SI Blackout logic circuitry.

The purpose of the Non-SI Blackout Defeat logic circuitry is to prevent an auto start of the ABFW pump 32 when the 32 EDG output breaker is manually closed (e.g., during testing), and during an SI with Blackout. The 32 ABFW pump is designed not to start on an SI signal in order to prevent any inadvertent release of radioactivity (i.e., SGTR event).

While the 32 ABFW pump was running, I&C technicians verified that the relay (3-5/6A) associated with the "Non SI Blackout Logic Defeated" circuit for manual closure of the EDG output breaker was energized and that the relay (3-2/6A) associated with "Non-SI Blackout Bus 6A" (which auto starts the 32 ABFW pump) was de-energized. I&C performed troubleshooting to ensure that the auto start function of ABFW Pump 32 would not be prevented when required. The DC system was checked for grounds and the results indicated there were no significant grounds that could have caused the contacts to close. In addition, engineering reviewed the results of periodic surveillance tests for the ABFW Pump auto start logic and found them to be satisfactory. The 32 EDG was re-tested and returned to operable at approximately 0155 hours on October 10, 1996, without recurrence of the inadvertent auto start.

Relay 3-5/6A is model BFD-22S and the 32 EDG manual output breaker switch is model W-2 both are supplied by Westinghouse {123}.

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CAUSE OF EVENT

The probable causes were either a mechanical problem with the 32 EDG manual output breaker switch (contacts 1-1/EG2, 1-2/EG2), and/or a sluggish reaction from relay 3-5/6A of the "Non-Safety Injection Blackout Logic Defeated" circuitry.

Either condition would result in the delayed opening of contact 3-5/6A in the Non-SI Blackout Bus 6A circuitry. The delay would cause the contact to open after the contacts for the 32 EDG breaker (52H/EG2 and 52A/EG2) close allowing relay 3-2/6A of the Non-SI Blackout Bus 6A circuitry to momentarily energize and makeup the logic for ABFW pump auto-start. When relay 3-2/6A energizes it closes contact 3-2/6A of the ABFW Pump auto start logic energizing relay BFPL which starts the ABFW Pump. Once relay BFPL is energized, it is sealed-in by the BFPL contact. Any other actuations or trips which should have occurred when relay 3-2/6A energized did not occur because the relay was only momentarily energized and the time delay within the circuitry prevented further actuations or trips. Relay 3-5/6A or the EDG manual output breaker switch could not be verified as the reason the event occurred.

Since the purpose of the "Non-SI Blackout Logic Defeated" circuitry is to prevent an auto start of the ABFW pump by opening a contact in the "Non-SI Blackout Bus 6A" circuitry, the sluggish reaction allowed the "Non-SI Blackout Bus 6A" logic to be made up momentarily and an auto start signal started the ABFW pump.

The event could not be repeated and troubleshooting did not identify any problems. Therefore, the specific cause of the event could not be determined. Engineering performed an Operability Determination which concluded that the 32 ABFW pump was operable. Engineering judged the risk associated with making the affected circuits inoperable for repair and performing repair or replacement of components was not warranted.

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CORRECTIVE ACTIONS

The following corrective actions have been or will be performed to address the causes of this event:

- I&C performed troubleshooting that verified the proper operation of the logic relays during re-test of EDG 32, and verified proper relay action upon initiation of auto start.
- The 32 ABFW pump was determined to be operable and able to perform its safety functions.
- Functional testing was performed on EDG 32, and an operability check was performed on EDGs 31 and 33.
- A supplement to the initial troubleshooting Work Request (WR) will be developed to troubleshoot the 32 EDG manual output breaker switch and Non-SI Blackout Logic Defeat relay (3-5/6A), and repair or replace as required. The work is scheduled for Refueling Outage (RO) 9 currently estimated for May 1997.

ANALYSIS OF EVENT

This event is reportable under 10 CFR 50.73 (a) (2) (iv). The licensee shall report any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF). The most probable cause of the turbine driven ABFW pump automatic start was an inadvertent actuation from a Non-SI Blackout signal. During post preventive maintenance testing of the 32 EDG, the manual output breaker switch was closed to tie the EDG 32 to the 480 Volt AC Bus 6A. The 480 Volt AC switchgear 32 for Bus 6A contains the "Non-SI Blackout Logic Defeat" circuitry to prevent auto start of the ABFW pump when the EDG manual output breaker switch is manually closed. The "Non-SI Blackout Logic Defeat" circuitry includes relay (3-5/6A) and EDG manual output breaker switch (contacts 1-1/EG2, 1-2/EG2). A delay in either device would result in a momentary makeup of the logic for an ABFW pump auto start.

A review of Licensee Event Reports (LERs) for the past two years for similar events identified the following LERs where ESF actuations were reported: LERs 96-007, 96-003, 96-002, 95-009, and 95-004.

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SAFETY SIGNIFICANCE

This event did not have a significant effect on the health and safety of the public. The ABFW pump did not actuate for any condition that required mitigation action to protect the public health and safety. Although the pump was actuated it was not delivering flow or operating at design conditions. The effect of the auto start was that the pump started and operated at idle (recirculation) awaiting operator action. Operators could place the pump in service or stop pump operation as conditions warranted. AFW would not be injected into the steam generators. The design of the AFWS is for the turbine driven ABFW pump to provide feedwater to the steam generators during a station blackout or if both motor driven ABFW pumps are unavailable. Two motor driven pumps (ABFW Pump 31, 33) were available to provide AFW. The pumps were verified to be capable of automatically starting and available to provide auxiliary feedwater flow.

The turbine driven 32 ABFW pump is designed not to start on an SI signal in order to prevent any inadvertent release of radioactivity (i.e., SGTR event). The major hazard associated with a steam generator tube rupture (SGTR) is the potential offsite radiological consequences resulting from the transfer of radioactive reactor coolant to the secondary side of the ruptured steam generator and subsequent release of radioactivity to the atmosphere. The offsite radiological consequences for a SGTR were calculated for the accident analysis independent of the amount of steam released to the atmosphere. The analysis includes a calculation of the primary to secondary break flow and the mass release from the ruptured steam generator. The steam to drive the turbine of the 32 ABFW pump is supplied from two steam lines upstream of the main steam isolation valves and therefore could be a release path in a SGTR event. However, assuming the steam line feeding the turbine was from the faulted generator, the steam used to drive an idle turbine is a fraction of the total mass released assumed in the accident analysis. Because the calculated offsite radiation doses for the SGTR event were well below the 10 CFR Part 100 criteria, any additional steam release from an inadvertent start of the 32 ABFW pump during a SGTR event and operating at idle was judged not to be significant.