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LaSalle County Nuclear Station  
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August 8, 1994

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

Licensee Event Report #94-011-00, Docket #050-373 is being submitted to your office in accordance with 10CFR50.73(a)(2)(iv).

*for* *DJ Ray*  
D. J. Ray  
Station Manager  
LaSalle County Station

DJR/TJ/lja

Enclosure

cc: NRC Region III Administrator  
NRC Senior Resident Inspector  
INPO - Records Center  
IDNS Resident Inspector  
IDNS Senior Reactor Analyst  
Nuclear Licensing Administrator

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LICENSEE EVENT REPORT (LER)																		Form Rev 3.0								
Facility Name (1) LaSalle County Station Unit 1												Docket Number (2) 0 5 0 0 0 3 7 3				1 of 0 4										
Title (4) Unit 1 Scram Due to a Feedwater Signal Spike																										
Event Date (5)			LER Number (6)				Report Date (7)			Other Facilities Involved (8)																
Month	Day	Year	Year	///	Sequential	///	Revision	Month	Day	Year	Facility Names				Docket Number(s)											
				///	Number	///	Number																			
0	7	0	8	9	4	9	4	---	0	1	1	---	0	0	0	8	0	8	9	4						
OPERATING MODE (9)		1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																						
POWER LEVEL (10)	0		5		8		20.402(b)		20.405(c)		X		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 (Specify											
							20.405(a)(1)(iii)		50.73(a)(2)(i)				50.73(a)(2)(viii)(A)		in Abstract											
							20.405(a)(1)(iv)		50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)		below and in											
						20.405(a)(1)(v)		50.73(a)(2)(iii)				50.73(a)(2)(x)		Text)												
LICENSEE CONTACT FOR THIS LER (12)																										
Name Jack Otte Lewis, System Engineer, Extension 2447												TELEPHONE NUMBER														
												AREA CODE														
												8 1 5 3 5 7 - 6 7 6 1														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																										
CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NPDs																	
				N																						
SUPPLEMENTAL REPORT EXPECTED (14)										Expected Submission Date (15)	Month	Day	Year													
YES (If yes, complete EXPECTED SUBMISSION DATE)										X	NO															
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																										

On July 8, 1994, at 0550 hours, the unit was at 58% power preparing for power ascension. When the 1D Condensate Pump was started, the 1B Turbine Driven Reactor Feed Pump(TDRFP) developed flow swings of 2 million pounds per hour. Flow was stabilized with minor adjustments to the Motor Driven Reactor Feed Pump. However, small oscillations were still present in the Manual/Automatic (M/A) station output signal, which produced oscillations in the control valve. During an attempted adjustment to the signal gain, a spike occurred resulting in a loss of speed on the 1B TDRFP, a loss of feed flow from the pump, and reduction of reactor vessel level. Repeated attempts to control level by use of the raise and lower pushbuttons at the manual and manual backup stations resulted in vessel level fluctuations until vessel level reached the 55.5 inch High Level Turbine trip and resulted in a Reactor Scram at 0947 hours.

The 1B Emergency Diesel Generator (EDG), which was synchronized to the grid for a scheduled surveillance, assumed an abnormal amount of current and VAR's as a result of the grid disturbance caused by the loss of the Unit 1 generator.

This event is reportable in accordance with 10CFR50.73(a)(2)(iv) as an event that resulted in automatic actuation of the Reactor Protection System.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION														Form Rev 3.0								
FACILITY NAME (1)	DOCKET NUMBER (2)										LER NUMBER (6)											
											Year	/// /// ///	Sequential Number	/// /// ///	Revision Number							
	LaSalle County Station Unit 1	0	5	0	0	0	3	7	3	9	4	-	0	1	1	-	0	0	0	2	OF	0
TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]																						

# PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

## A. CONDITION PRIOR TO EVENT

Unit(s): 1 Event Date: 7/08/94 Event Time: 0947 Hours  
 Reactor Mode(s): 1 Modes(s) Name: Run Power Level(s): 58%

## B. DESCRIPTION OF EVENT

On July 8, 1994 at approximately 0550 hours, the unit was at 58% power and preparing for power ascension. The 1B Turbine Driven Reactor Feed Pump (TDRFP, FW)[SJ] and the Motor Driven Reactor Feed Pump were in service. The 1D Condensate Pump was started. Following this, the 1B TDRFP developed flow swings of 2 million pounds per hour. Flow was stabilized with minor adjustments to the Motor Driven Reactor Feed Pump. Small oscillations were still present in the Manual/Automatic (M/A) station output, which corresponded to oscillations in the control valve. It was decided to hold Unit 1 power at 620 MWE until the 1B TDRFP gain could be adjusted. During the adjustment of the gain control with the M/A controller in Automatic, a spike resulted in a loss of speed on the 1B TDRFP and a loss of feed flow from the pump. The operator immediately took manual control of the M/A station and depressed the increase button. There did not appear to be any response from the 1B TDRFP so the operator went to the manual backup station, placed it to the demand substitution position and placed the speed adjustment control to the raise position. No immediate response was observed by the Operator, so he held the control switch in raise until a response was observed. The vessel level then rose requiring him to reduce feedwater flow. When the pump responded to the decrease signal, the pump lost speed, reducing feed to the vessel, and vessel level decreased below normal. There were a total of 3 vessel level swings between Level 4 (31.5 inch) and Level 7 (40.5 inch) over a period of approximately three minutes before the trip occurred at 0947 hours.

The 1B Emergency Diesel Generator(EDG), which was synchronized to the grid for a scheduled surveillance, carried a high amount of current and VAR's as a result of the grid disturbance caused by the loss of the Unit 1 generator.

This event is reportable in accordance with 10CFR50.73(a)(2)(iv) as an event that resulted in automatic actuation of the Reactor Protection System.

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		Year	///	Sequential Number	///	Revision Number									
LaSalle County Station Unit 1	0   5   0   0   0   3   7   3	9   4	-	0   1   1	-	0   0	0   3	OF	0   4						
TEXT Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]															

### C. APPARENT CAUSE OF EVENT

The apparent cause of the event was the signal spike which initiated the event. It was determined that the 1B TDRFP gain control logic needed to be adjusted. A specific procedure does not exist for making the gain adjustment. The gain adjustment was being performed by the technician under the direction of the his supervisor with concurrence of Operations and System Engineering. There was reluctance on the part of plant personnel to place the TDRFP in manual because of previous events that resulted in transients. There is also a bypass switch that must be depressed while making the gain adjust with the 1B TDRFP in automatic. This was not accomplished because the personnel did not feel it was necessary. The cause of the spike could not be determined. Testing of the card which was being adjusted did not indicate any malfunctioning components.

A secondary cause was the Man-Machine interface. The system was insufficiently responsive to the Operator's needs. The slow system response impeded the Operator's ability to stabilize the transient.

### D. SAFETY ANALYSIS OF EVENT

The safety consequences of this event were minimal. The turbine trip in this event initiated the Reactor Scram as required. Following the Scram, reactor pressure was controlled by cycling turbine bypass valves. Plant response was consistent with the UFSAR Analysis of the event. All Engineered Safety Feature (ESF) actuations occurred as designed during the event.

### E. CORRECTIVE ACTIONS

Signal spikes are not uncommon when adjusting electronic equipment and could occur again in the future. Future adjustments to this system will be controlled by special test procedures and will address the use of manual control using the bypass button to mitigate the effect of system spikes during gain adjustments.

System ramp rates for the TDRFP control logic were changed to be more responsive to Operator's needs in controlling the system. This involved using the simulator to select ramp rates, operator involvement in the selection process, and tuning of the system in the plant to obtain optimum response.

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TEXT Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]																

E. CORRECTIVE ACTIONS CONTINUED

The 1B EDG was inspected in accordance with System Engineering recommendations. This required a visual airbox inspection, a visual generator inspection, and a generator megger. No damage was found during these inspections. A review by System Engineering indicated that the current did not reach overcurrent trip. The time period for which current exceeded 600 amps was estimated to be approximately five minutes. The polarization index on this EDG is also being trended until the next refueling outage at which time an evaluation of the data will be done to determine future surveillance requirements.

In that a three minute transient was followed by an automatic scram (via manual scram), management expectations may need to be more clearly brought in line with the degree of operational decision making conservatism that is desired. Our actions in this regard will be formulated in response to the recently received INPO SOER 94-01, "Nonconservative Decisions and Equipment Performance Problems Result in a Reactor Scram, Two Safety Injections, and Water-solid Conditions".

F. PREVIOUS EVENTS

The following scrams have occurred due to feedwater control:

<u>LER No.</u>	<u>Title</u>
373/91-006	Reactor Scram on Low Reactor Vessel Water Level Due to Loss of "A" Turbine Driven Reactor Feedwater Pump Caused by Control Valve Closure
373/93-011	Unit 1 - Manual Scram Due to Disconnected Linkage on Valve Positioner on a Heater Drain Valve
373/94-010	Scram Due to Reactor Water Level Control Signal Loss to the 1B Turbine Driven Reactor Feed Pump

G. COMPONENT FAILURE DATA

No equipment failures which contributed to this event were identified. Equipment problems noted were due to chosen equipment setup and design.