Michael T. Coyle
Vice President

AmerGen
An Exelon/British Energy Company

Clinton Power Station
P.O. Box 678
Clinton, IL 61727
Phone: 217 935-8881 Ext. 4161

U-603436
2C.220

November 15, 2000

Docket No. 50-461

10CFR50.73

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

Subject: Clinton Power Station
Licensee Event Report No. 2000-006-00

Dear Madam or Sir:

Enclosed is Licensee Event Report (LER) No. 2000-006-00: Lack of System Response Characteristics Knowledge Results in Failure to Identify Consequences of Re-Energizing Power Supplies and Manual Reactor Scram. This report is being submitted in accordance with the requirements of 10CFR50.73.

Sincerely yours,

Michael T. Coyle
Vice President

RSF/blf

Enclosure

cc: NRC Clinton Licensing Project Manager
NRC Resident Office, V-690
NRC Region III, Regional Administrator
Institute of Nuclear Power Operations

IE22

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Clinton Power Station	05000461	1 OF 4

TITLE (4)
Lack of System Response Characteristics Knowledge Results in Failure to Identify Consequences of Re-Energizing Power Supplies and Manual Reactor Scram

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
									None	05000
10	16	2000	2000	- 006 -	00	11	15	2000	None	05000

OPERATING MODE (9): 5

POWER LEVEL (10): 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
	20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
	20.2203(a)(2)(ii)		20.2203(a)(4)	X	50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
J. C. Wemlinger, Corrective Action Coordinator Lead	(217) 935-8881, Extension 3846

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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

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

While re-energizing two power supplies following replacement in the Alternate Rod Insertion (ARI-1) System, the ARI-1 system automatically initiated. Annunciators alarmed in the Main Control Room and operators observed the Scram Discharge Volume (SDV) vent and drain valves closing. With SDV water level increasing, operators initiated a manual scram to prevent an automatic scram on high SDV water level. An investigation identified that the technician performing the work considered that an ARI-1 logic initiation was not possible upon re-energizing the power supplies since normally the circuit must be energized for a trip to occur. Therefore, no precautions were taken for the restoration activity. The most likely cause of the ARI-1 initiation signal was the logic sensed a low reactor water level and initiated the trip. The cause of this event was a failure of Maintenance Planning, I&C technicians, and Operations personnel to identify the consequences of energizing the power supplies due to a lack of knowledge of system response characteristics. Corrective action for this event includes revising the work documents, providing lessons learned briefing/training, performing a training task analysis, and revising a procedure.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Clinton Power Station	05000461	2000	- 006 -	00	2 OF 4

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

DESCRIPTION OF EVENT

On October 16, 2000, the plant was in Mode 5 (REFUELING), with reactor coolant temperature being maintained between 90 and 110 degrees Fahrenheit (F) and pressure atmospheric. The reactor cavity was drained down and reactor pressure vessel [RPV] head de-tensioning was in progress. Reactor water level was being maintained at about 195 inches. Instrumentation and Controls (I&C) technicians were completing replacement of two 24-volt direct current power supplies [JX] in the Alternate Rod Insertion -1 (ARI-1) System [JC] in accordance with preventive maintenance (PM) tasks PCIMSA017 and PCIMSA019.

At about 0920 hours, while re-energizing the power supplies, the ARI-1 system automatically initiated. In the Main Control Room, "Scram Pilot Air Header Pressure Low" and "ARI System 1" annunciators [ANN] alarmed and operators observed the Scram Discharge Volume vent and drain valves [V] closing. At about 0921 hours, with Scram Discharge Volume water level at about 11 gallons and increasing, operators initiated a manual reactor scram to prevent an automatic scram on high Scram Discharge Volume water level. The scram caused reactor water level to increase to about 200 inches. Operators responded to the increase in water level by increasing the rate of Reactor Water Cleanup System [CE] letdown from the RPV to bring level back to the preferred range of 190 to 200 inches. At about 1103 hours operators reset the Alternate Rod Insertion trip logic. At about 1244 hours, operators reset the reactor scram signal.

Condition Report 2-00-10-083 was initiated to track a cause and corrective action determination for this event.

An investigation of this event identified that the I&C technician performing the work considered that an ARI-1 System logic initiation was not possible upon re-energizing the power supplies since normally the circuit must be energized for a trip to occur. As a result of this mistake, Operations was not informed of a possible ARI-1 System initiation upon re-energizing the equipment, and precautions were not taken for the restoration activity.

Two low reactor water level trips and two high reactor pressure trips are associated with the ARI-1 System circuitry. The most likely cause of the ARI-1 System initiation signal was the logic received a low reactor water level signal and initiated the trip. The reactor water level transmitters [LT] are powered from the same source as the logic and fail low on loss of power. Upon being re-energized, a delay occurs before the actual reactor water level sensed is transmitted to the logic. This delay can result in a kind of "relay race" (except the level transmitter is not a relay) for component actuation. Therefore, in this event, the logic likely received a low reactor water level signal and initiated the ARI-1 System immediately upon being re-energized, and before sensing the actual reactor water level signal from the level transmitters.

PM tasks PCIMSA017 and PCIMSA019 were first-time evolutions. The power supplies had never before been replaced. The two power supplies are designed so that under normal operating conditions one can fail and the other will take over instantly with no interruption of power to the loads. However, for the replacement activity in this event, the only safe

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Clinton Power Station	05000461	2000	- 006 -	00	3 OF 4

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

DESCRIPTION OF EVENT (continued)

way to replace the power supplies due to the installed configuration of the equipment is to de-energize both power supplies.

No automatic or manually initiated safety system responses were necessary to place the plant in a safe and stable condition. Other inoperable equipment or components did not directly affect this event.

CAUSE

The cause of this event was a failure of Maintenance Planning, I&C technicians, and Operations personnel to identify the consequences of energizing the power supplies due to a lack of knowledge of system response characteristics.

A contributor to this event was an inadequate understanding that planning process responsibilities include identifying equipment restoration impacts in the planned work package for preventive maintenance tasks. No research or documentation of the possible adverse consequences of performing restoration of de-energized equipment was completed for this equipment. The impact matrix for the PM tasks discussed in this event did not address re-energizing the equipment. This deficiency resulted in the failure to identify the potential adverse plant impact that could occur upon re-energizing the ARI-1 power supply and to take appropriate precautions.

CORRECTIVE ACTIONS

The Preventive Maintenance tasks involved in this event will be revised to include steps for preventing a scram signal.

Lessons learned training about this event will be provided in Operator Initial and Requalification training. The training will emphasize the need for Operations shift personnel to carefully review system restorations that involve energizing logic system components, including circuit cards, power supplies and relays.

A task analysis will be performed for identifying equipment restoration impact, and necessary training will be developed and implemented for maintenance planners and I&C technicians.

Procedure CPS 1029.06, "Work Order Planning," will be revised to include a requirement for Maintenance Planning to address the impact of restoring equipment when this information is not already addressed in an operating or maintenance procedure. The revision will also include a requirement to screen preventive maintenance tasks included in the work week schedule to identify the potential for logic trips and address any that have a potential impact.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 4
Clinton Power Station	05000461	2000	- 006	- 00	

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

CORRECTIVE ACTIONS (continued)

Maintenance Planners will be informed about the lessons learned from this event.

A Shift Night Order will be issued to inform on-shift Operations personnel about the lessons learned from this event.

ANALYSIS OF EVENT

This event is reportable under the provisions of 10CFR50.73(a)(2)(iv) due to the manual actuation of the reactor protection system.

An assessment of the safety consequences and implication of this event determined that the manual reactor scram ensured the plant remained in a safe and stable condition.

ADDITIONAL INFORMATION

No equipment or components failed during this event.

Clinton Power Station has not had any reportable events in the past 2 years involving reactor scrams caused by inadequate work impact assessments.

For further information regarding this event, contact J. C. Wemlinger, Corrective Action Coordinator Lead, at (217) 935-8881, extension 3846.