



PECO NUCLEAR

A UNIT OF PECO ENERGY

PECO Energy Company
PO Box 2300
Sanatoga, PA 19464-0920

10CFR 50.73

March 7, 1996
Docket No. 50-352
License No. NPF-39

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Licensee Event Report
Limerick Generating Station - Unit 1

This LER reports automatic Reactor Protection System and Primary Containment and Reactor Vessel Isolation Control System, an Engineered Safety Feature, actuations while the unit was shutdown for refueling. The actuations resulted from a reactor low level trip caused by personnel error.

Reference:	Docket No. 50-352
Report Number:	1-96-004
Revision Number:	00
Event Date:	February 6, 1996
Report Date:	March 7, 1996
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA 19464-2300

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(1)(v).

Very truly yours,

Robert W. Boyce, Plant Manager

DMS:cah

cc: T. T. Martin, Administrator Region I, USNRC
N. S. Perry, USNRC Senior Resident Inspector, LGS

110093

9603120209 960307
PDR ADOCK 05000352
S PDR

IE22
11

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
(MNB 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)

Limerick Generating Station, Unit 1

DOCKET NUMBER (2)

05000 352

PAGE (3)

1 OF 6

TITLE (4) Reactor Scram Signal While in Hot Shutdown Due to Operator Error during
Depressurization.

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
02	06	96	96	-- 004 --	0	03	07	96	Limerick, Unit 2	05000 353
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
3			20.402(b)		20.405(c)		<input checked="" type="checkbox"/>		50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)			20.405(a)(1)(i)		50.36(c)(1)				50.73(a)(2)(v)	73.71(c)
0			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
			20.405(a)(1)(iv)		50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)	Abstract below
			20.405(a)(1)(v)		50.73(a)(2)(iii)				50.73(a)(2)(x)	and in Text.
										NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME

J. L. Kantner, Manager - Experience Assessment

TELEPHONE NUMBER (Include Area Code)

(610) 718-3400

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).	X NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

02/06/96, Unit 1 had been manually scrambled and was in the process of being cooled down in preparation for a refueling outage. Reactor water level was being controlled using the 'B' condensate pump through LIC-06-120, "Reactor Feedpump Bypass," and cooldown rate was being controlled with the main turbine bypass valves. At 0329 hours, an automatic Reactor Protection System actuation and Primary Containment and Reactor Vessel Isolation Control System actuations occurred when RPV level reached the +12.5 inch scram setpoint. Prior to this event all control rods were fully inserted and all affected isolation valves were closed. Reactor water level further decreased to +10.5 inches and was immediately restored by operator action. The cause for this event was personnel error in that the licensed reactor operator (RO) was not appropriately attentive to controlling reactor water level. Contributory factors included insufficient supervisory oversight, less than adequate (LTA) situation specific simulator training, an inadequate pre-evolution briefing, and LTA procedural guidance. Corrective actions include a shift briefing on the lessons learned from this event, enhanced simulator training, and procedural enhancements.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Limerick Generating Station, Unit 1	05000 352	96	-- 004 --	0	2 OF 6

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

Unit Conditions Prior to the Event:

On February 5, 1996 at 2300 hours, Unit 1 was manually scrammed in preparation for its sixth refueling outage. During the initial cooldown, reactor pressure vessel (RPV, EIIS:RPV) level makeup was provided by Control Rod Drive (CRD) system flow. Once RPV pressure lowered below condensate pump discharge pressure, RPV water level was controlled using the B condensate pump flow and level controller (EIIS:LIC) LIC-06-120, "Reactor Feedpump Bypass."

A Reactor Operator (RO) was assigned the task of RPV depressurization and level control. RPV depressurization was being performed in accordance with GP-3, "Normal Plant Shutdown." GP-3, Step 3.3.13, directs RPV cooldown to be performed using the main turbine bypass valves and the following cooldown rates:

- 1) rated temperature to 400 degrees F - 25 degrees F per hour, and
- 2) 400 degrees F to 200 degrees F - 80 degrees F per hour.

The RO controlled cooldown rate to less than 25 degrees per hour by opening approximately 1.1 to 1.25 main turbine bypass valves. During the RPV cooldown, the RO manually controlled LIC-06-120 to maintain RPV water level below the main turbine trip setpoint of +54 inches. (Note: When the main turbine trips, the turbine stop valve above seat drain valves open, and cooldown rate increases).

Description of the Event:

On February 6, 1996, at 0300 hours, with RPV temperature at approximately 400 degrees F, the RO asked the Outage Shift Supervisor (OSSV) if the depressurization rate could be increased to 80 degrees F per hour. The OSSV gave approval and cautioned the RO about the cooldown rate because the target cooldown rate was now closer to the Technical Specifications (TS) Section 3.4.6.1 limit of 100 degrees F per hour. Cooldown was increased by opening 4.5 to 5 main turbine bypass valves.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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 (MNB 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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Limerick Generating Station, Unit 1	05000 352	96	-- 004 --	0	3 OF 6

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

At 0320 hours, the RO manually controlled LIC-06-120 to lower RPV level and prevent a main turbine trip signal at +54 inches RPV water level. With the 80 degree F per hour cooldown rate, the RPV water level lowered faster than the RO expected, and at 0329 hours, reached +12.5 inches resulting in a Reactor Protection System (RPS, EIIS:JC) actuation, and a Group IIA and Group IIB Primary Containment and Reactor Vessel Isolation Control System (PCRVICES, EIIS:JM) actuation. This represents an Engineered Safety Feature (ESF) actuation. No control rod movement occurred because all control rods were fully inserted prior to the event. RPV level decreased to +10.5 inches and was immediately restored by the RO increasing coolant flow to the RPV.

The following valves received isolation signals but no valve motion occurred because the associated valves were in their normally closed positions:

HV-51-1F009	Residual Heat Removal (RHR) Shutdown Cooling Suction Inboard Primary Containment Isolation Valve (PCIV)
HV-51-1F008	RHR Shutdown Cooling Suction Outboard PCIV
HV-51-1F050A(B)	RHR Shutdown Cooling Return Check Inboard PCIV
HV-51-151A(B)	RHR Shutdown Cooling Return Check Equalization (test)
HV-51-1F015A(B)	RHR Shutdown Cooling Return Outboard PCIV
HV-51-1F079A(B)	RHR Heat Exchanger Sample Inboard PCIV
HV-51-1F080A(B)	RHR Heat Exchanger Sample Outboard PCIV
HV-51-1F049	RHR Drain to Radwaste Inboard PCIV
HV-51-1F040	RHR Drain to Radwaste Outboard PCIV

At approximately 0335 hours, Operations personnel reset the RPS and PCRVICES actuation signals in accordance with plant procedures.

A four-hour notification was made to the NRC at 0550 hours on February 6, 1996, in accordance with the requirements of 10CFR50.72(b)(2)(11) since this event involved automatic RPS and ESF actuations. This report is submitted in accordance with the requirements of 10CFR50.73(a)(2)(iv).

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Limerick Generating Station, Unit 1		05000 352		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 6
				96	-- 004 --	0	

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

Analysis of the Event:

The consequences of this event were minimal, and there was no release of radioactive material to the environment as a result of this event. The RPS and PCRVICS actuation signals were expeditiously reset by Operations personnel in accordance with plant procedures. All systems responded as designed in response to the RPV low level trip signal. No control rod movement occurred because all control rods were fully inserted prior to the event. No valve movement occurred because the affected PCIVs were in their normally closed positions prior to this event.

Cause of the Event:

The primary cause of this event was personnel error. The attention to detail of the RO controlling RPV water level during this transient was less than adequate. A related causal factor was frequent task interruptions due to Instrumentation and Controls (I&C) testing activities and phone calls. In addition, at about the same time that level was lowering, other ROs were having difficulties with the Reactor Water Cleanup (RWCU) system, which distracted the RO controlling RPV water level.

Several other contributing factors are described below.

Simulator training does not usually allow for operators to reduce pressure due to simulator time constraints. In addition, Licensed Operator Requalification (LOR) training on the simulator did not include the transition from a 25 degree F per hour cooldown rate to an 80 degree F per hour cooldown rate.

The worker selection by the OSSV was less than adequate. The OSSV should have taken steps to assign another RO to address the increased level of activity in the control room in order to minimize the impact on RPV level and pressure control.

The RO job briefing for increasing the cooldown rate to 80 degrees F per hour was less than adequate. The briefing should have discussed self checking. Self checking includes eliminating distractions and task interruptions. The OSSV cautioned the RO about exceeding the 100 degree per hour cooldown rate; however, there was no discussion about level control and increased monitoring requirements.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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)		DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Limerick Generating Station, Unit 1		05000 352	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 6
			96	-- 004 --	0	

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

Level controller LIC-06-120 response requires some operator manual intervention when controlling changes in RPV water level. At least twice during depressurization the RO needed to take manual RPV water level control by throttling the control valve.

The OSSV ineffectively monitored reactor level control during depressurization. The OSSV monitored the depressurization rate but was insufficiently involved in level control evolutions. Had he been more involved, he might have recognized the level decrease. The supervisory oversight was strained due to equipment problems with the RWCU system. The RWCU problem resulted in a significant interruption to the OSSV.

The procedural guidance concerning RPV level control during this type of evolution was less than adequate. GP-3 provides overall direction for plant shutdown. The guidance provided for depressurization has no cautions or warnings concerning level control during this evolution. GP-3 refers to procedure S06.2.C, "Removing the Reactor Feedpumps From Service to a Standby Condition," for level control. Procedure S06.2.C does not provide guidance based on the specific plant conditions and equipment available to the RO.

Corrective Actions:

A briefing sheet will be provided to Operations Managers by March 15, 1996, that describes this event and the lessons learned. The briefing will include proper equipment monitoring, supervisory oversight, briefing details, and selection of personnel for assignments to allow for adequate monitoring.

Training will be conducted on this event and simulator exercises will include at least one evolution during LOR training that allows the RO the opportunity to depressurize the RPV from the 25 degree F per hour cooldown rate to the 80 degree F per hour cooldown rate. This is expected to be completed before the Unit 2 1997 refuel outage.

A work order was initiated to assess enhancing the LIC-06-120 response to sensed changes in RPV water level.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Limerick Generating Station, Unit 1	05000 352	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	6 OF 6
		96	-- 004 --	0	

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

Procedural guidance will be developed by May 1, 1996, for RPV cooldown that includes RPV level control during depressurization. Guidance on steam users and their impact on RPV depressurization rates and various level control alternatives based on plant conditions will be addressed.

Previous Similar Occurrences:

None