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Exelon Nuclear

10CFR50.73

August 20, 2001

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: LER 2-01-002 Reactor SCRAM on Turbine Trip

Limerick Generating Station, Unit 2
Facility Operating License No. NPF-85
NRC Docket No. 50-353

This Licensee Event Report (LER) addresses the actuation of the Reactor Protection System for a Unit 2 reactor SCRAM on turbine trip that occurred on June 26, 2001. The turbine trip was caused by a generator lockout resulting from a failed lug connection in the Alterrex protective relaying system. The connection was repaired and the unit was returned to power on June 28, 2001.

Report Number:	2-01-002
Revision:	00
Event Date:	June 26, 2001
Discovered Date:	June 26, 2001
Report Date:	August 20, 2001
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA 19464-2300

This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv)(A).

If you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,

William Levis
Vice President - LGS

Attachment

cc: H. J. Miller, Administrator Region I, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS

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NRC FORM 366 (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2001

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Limerick Generating Station Unit 2	05000 353	1 OF 3

TITLE (4)

Failed lug on Main Generator Alterex Exciter protective relay system caused generator lockout and reactor scram

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
06	26	01	01	002	00	08	20	01	FACILITY NAME	DOCKET NUMBER 05000

		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)			
OPERATING MODE (9)	1	20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
		20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
POWER LEVEL (10)	100	20.2203(a)(1)	50.36(c)(1)(i)(A)	x 50.73(a)(2)(iv)(A)	73.71(a)(4)
		20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
		20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	
		20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)	
		20.2203(a)(2)(v)	50.73(a)(2)(i)(B)	50.73(a)(2)(vii)	
		20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)	
		20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Marino Kaminski Manager-Experience Assessment	(610) 718-3400

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	TL	CON		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 15 single-spaced typewritten lines) **(16)**

On June 26, 2001 at 13:39 hours Unit 2 experienced a reactor scram on turbine trip and generator lockout. This event was caused by a failed wire lug in the Alterrex phase differential current protective relay system. The connection lug failed due to cyclic fatigue. The connection was repaired, and the unit was returned to power on June 28, 2001.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
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Limerick Generating Station Unit 2	05000-353	01	– 002 –	00	2 OF 3

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

Unit Conditions Prior to the Event

Unit 2 was in Operational Condition (OPCON) 1 (Power Operation) at 100% power. There were no structures, systems or components out of service that contributed to this event.

Description of the Event

On June 26, 2001 at 13:39 hours, an automatic actuation of the Reactor Protection System (EIIS:JC) occurred on Unit 2 due to a faulty connection in the Alterrex protective relaying system (EIIS:JF) that caused a generator lockout and resultant turbine trip. No Emergency Core Cooling System (ECCS) actuations occurred.

All control rods fully inserted as a result of the automatic scram. The 2A and 2B Recirculation Pump trip breakers tripped as expected due to the turbine trip at greater than 30% power. Both Unit Auxiliary 13.2 kV buses automatically transferred to the offsite sources as designed.

Reactor pressure peaked at 1155 psig following the turbine trip. No main steam safety relief valves lifted (lowest setpoint is 1170 psig). Reactor level decreased to –3 inches. Following the scram, the main control room operators entered trip procedure T-101 Reactor Control on an entry condition of reactor level less than +12.5 inches and successfully stabilized reactor parameters.

The connection was repaired, and Unit 2 was returned to power on June 28, 2001.

This event involved an actuation of RPS when critical and a valid actuation of RPS. An NRC ENS 4 hour notification was submitted on 6/26/01 at 16:59 hours pursuant to 10CFR50.72(b)(2)(iv)(B) and 10CFR50.72(b)(3)(iv)(A).

This event involved an automatic actuation of RPS. Therefore, this LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv)(A).

Analysis of the Event

There were no actual safety consequences associated with this event. The plant responded as designed to a loss of electrical load and the subsequent uncomplicated reactor scram. No release of radioactive material occurred. The potential safety consequences of this event were also minimal since the plant is designed for a Generator Load Rejection.

Cause of the Event

This event was caused by a failed wire lug in the Alterrex phase differential current protective relay system. The lug failed due to cyclic fatigue. Incipient cracks had been initiated from routine lifting and landing of the lug during preventive maintenance over several outages. Normal running vibration was sufficient to cause the incipient cracks to propagate leading to the ultimate failure of the lug.

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

Corrective Action Completed

The failed lug was repaired. The affected terminal block and a similar terminal block above the affected terminal block and associated wires were replaced in-kind.

Following repairs, all adjacent lugs on the terminal block were inspected visually by a qualified non-destructive examination (NDE) inspector. No additional indications were noted.

Thermography inspections of the terminal block were performed after the unit was returned to 100% power with no additional indications noted. Thermography was also performed on the corresponding connections on Unit 1, and the results were satisfactory.

A recurring predictive maintenance task has been created to perform thermography on the Alterrex terminal panels.

Corrective Actions Planned

The replacement of the existing General Electric PK-2 test block with an improved design is being reviewed. It is intended that the new design will eliminate the need to bend the wiring and connection lugs during future maintenance activities. If an improved design is developed, it will be installed during the next available refueling outage opportunity.

Craft electrical fundamental and continuing training will be improved to include lessons learned from this incident prior to the next Unit 1 refueling outage (1R09).

Previous Similar Occurrences

None