

## 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.

FACILITY NAME (1)

Limerick Generating Station, Unit 2

DOCKET NUMBER (2)

05000 353

PAGE (3)

1 OF 6

TITLE (4) Two Breakers Not Locked Open Contrary to Fire Protection Program Analysis

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
12	14	96	96	-- 008 --	00	01	15	97	FACILITY NAME	DOCKET NUMBER 05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		24	20.402(b)		20.405(c)		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)		<input checked="" type="checkbox"/> 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	TELEPHONE NUMBER (Include Area Code)
J. L. Kantner, Manager - Experience Assessment, LGS	(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)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 12/16/96, two closed Primary Containment Isolation Valves were discovered with their motor operator breakers closed (i.e., energized) contrary to the Technical Specifications and the high/low pressure system interface analysis of the Fire Protection Program (FPP). Postulated fire damage could result in opening of these valves allowing high pressure water to be discharged to the main condenser during fire recovery operations. During performance of the plant start-up procedure for Unit 2 on 12/14/96, the valves were required to be closed and their breakers locked open. A licensed shift supervisor failed to thoroughly review the panel indications and then incorrectly interpreted the indications during performance of the start-up procedure. This resulted in a failure to maintain the provisions of the FPP and is a violation of a Unit 2 License Condition. Incomplete system filling and venting instructions and a failure to use the Locked Valve and Device Log contributed to the event. The actual consequences are minimal since the duration of the non-compliance was short and a fire did not occur. The ongoing Operation Department self assessment will be used to monitor for the consistent application of self check behaviors. Procedure enhancements and reviews of requirements with appropriate Operations personnel will be performed.

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			96	-- 008 --	00	

TEXT (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 24% power when this event was discovered. Reactor power was being maintained at 24% power to investigate an increase in condenser air in-leakage. The unit had returned to power operation on December 13, 1996, following a short planned maintenance outage. During the maintenance outage, a portion of the feedwater system had been removed from service for maintenance work. Near the end of the outage this piping was filled and vented using an approved operating procedure.

Description of the Event

On December 16, 1996, a licensed Shift Manager observed that electrical power had not been removed from two (2) closed Primary Containment Isolation Valves (PCIVs, EIIS:ISV) during a panel walk down in the Main Control Room. These valves are the upstream feedwater long-path recirculation valves, HV-41-209A and B, and are required to be closed with the motor operator breakers locked open whenever the reactor is critical and reactor pressure is greater than 600 psig. This requirement is stated in General Plant (GP) procedure GP-2, 'Startup,' Technical Specifications (TS) Section 3.6.3, and the Updated Safety Analysis Report (UFSAR) Section 6.2.4 to assure Primary Containment integrity since these valves do not have automatic isolation signals.

These valves are also required to be closed with the breakers locked open per UFSAR Section 9A.6.2, and Table 9A-12, to preserve the interface between low pressure piping and the Reactor Coolant Pressure Boundary (RCPB) in the event of postulated fire damage. Fire damage in three (3) areas of the plant could result in opening of the downstream feedwater long-path recirculation valve, HV-41-210, and either valve HV-41-209A or B. This would allow water from the Reactor Water Cleanup (RWCU) system (EIIS:CE) return line or the Reactor Core Isolation Cooling (RCIC) system (EIIS:BN) injection line to be discharged to the main condenser during the fire recovery operations. An equipment operator was immediately dispatched to lock open the electrical breakers to the HV-41-209A and B valves restoring the breakers to the correct alignment.

An investigation revealed that the valves had been opened on December 11, 1996, as part of a filling and venting activity during the planned maintenance outage. The valves were closed but the electrical breakers were not returned to the locked open position. On December

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12, 1996, during startup activities, a licensed Shift Supervisor did not ensure that the electrical breakers were locked open as required by steps 3.1.32.3 and 4 of procedure GP-2. On December 14, 1996, at approximately 0900 hours, the reactor pressure exceeded 600 psig during the reactor start-up. Since the breakers were not locked open, the TS requirement of TS Section 3.6.3 note 32 was not met; however, the valves were closed meeting the action statement of TS 3.6.3.a.3. This condition resulted in a failure to maintain the provisions of the approved Fire Protection Program (FPP) and was a violation of Facility Operating License Condition 2.C.(3) for Unit 2.

A twenty-four (24) hour notification was made to the NRC at 1647 hours on December 17, 1996, in accordance with the requirements of License Condition 2.E for Unit 2 to report the failure to comply with License Condition 2.C.(3). This report is submitted in accordance with requirements of License Condition 2.E.

Analysis of the Event

The actual consequences for this condition are minimal since the duration of the non-compliance was short and a fire did not occur challenging the fire protection program or requiring the safe shutdown of Unit 2. The three (3) areas of the plant where postulated fire damage could cause inadvertent opening of both the upstream and downstream feedwater long-path recirculation valves are the MCR, the Unit 2 Cable Spreading Room (CSR) and fire area 68W in the Unit 2 Reactor Enclosure on elevation 253 feet. The potential for a fire and the impact of a fire in these fire areas are minimized by a combination of many factors. The design of the FPP relies on a 'defense-in-depth' approach which serves to:

1. prevent a fire from starting,
2. quickly detect and suppress fires which do start,
3. provide reasonable electrical isolation and separation of circuits in the event of small fires,
4. prevent the rapid spread of fires by selecting fire retardant construction materials, and
5. protect safety related equipment so that a fire will not prevent SSD of the plant.

The potential for a fire and the consequences of postulated fire damage in the specific areas of concern are further mitigated by the specific factors indicated below.

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1. Automatic fire detection (EIIS:IC) and suppression equipment (EIIS:KP) exists in all three areas.
2. The transient combustible loading and fire hazard control of these rooms is well established including continuous manning of the MCR and an existing hourly fire watch patrol in fire area 68W as a result of the inoperable Thermo-Lag fire barriers.
3. The CSR is controlled such that no transient combustible materials are permitted in the area.
4. Other methods of providing reactor coolant make up would have been available with existing procedural guidance in the event of a limited fire that caused fire damage to both the upstream and downstream valves (e.g., high and low pressure Emergency Core Cooling Systems (EIIS:BJ,BM,BO)).
5. Operators could have manually closed the feedwater long-path recirculation valves using the valve hand wheels locally in the plant.

Cause of the Event

The primary cause of this event was personnel error. The shift supervisor failed to thoroughly review the MCR panel indications and then incorrectly interpreted the panel indications when he performed step 3.1.32.3 and 4 of procedure GP-2. These procedure steps contained multiple actions creating a more complex activity and thought process which contributed to his error. Following the event the shift supervisor was interviewed and clearly knew the expectations and elements of self checking but failed to implement this behavior during performance of these GP-2 steps.

Contributing causes include the following;

- The procedure used for filling and venting the feedwater piping and the clearance did not require restoring the breakers to the locked open position.
- The operator who unlocked and closed the normally locked open breaker did not use the Locked Valve and Device Log to track the unlocked component. The operator believed that since he was using an approved procedure, use of the log was not required. This is only the case when the procedure contains documentation and verification steps for manipulation of locked components.



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Corrective Actions

The shift supervisor was counseled on the need for consistent performance of adequate self checks.

The ongoing self assessment of the Operation's Department Event Free Operations program will be used to monitor for the consistent application of self check behaviors within the Operation Department.

The other procedural steps in GP-2 performed by the shift supervisor were reviewed and no other errors were identified. A walk down was performed of all locked valve breakers and selected valves and no other problems with locked components were identified.

Black dots were added to the MCR panels near the panel valve position indications for those valves that are de-energized during normal operations. This is similar to the red and green dots used to indicate the position for normally open and closed valves.

The following corrective actions are expected to be completed by January 31, 1997:

1. Procedure GP-2 will be revised to separate the specific steps into individual actions. The remainder of procedure GP-2 will be reviewed to determine if other multiple activity steps exist. A caution step will be added to procedure GP-2 to verify that these valves are closed and de-energized prior to the reactor exceeding 600 psig.
2. The feedwater filling and venting procedures will be revised to include direction to close the Unit 1 (or Unit 2) long-path recirculation valves and to lock open the breakers at the completion of the activity if the plant is to be started up. Other procedures will be revised to provide similar direction for those valves required to be closed with their breakers locked open during normal plant operations.
3. The requirements for restoring systems to the as-found condition when planning system removal and restoration activities will be reviewed with the appropriate operations personnel.
4. The requirements regarding the Locked Valve and Device Log will be reviewed with the appropriate Operations personnel.

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Previous Similar Occurrences

There have been several LERs that report non-conformances with the fire Safe Shutdown (SSD) analysis (e.g., 1-96-012, 1-96-015, 1-96-021), however these did not result from incorrect implementation of a fire SSD implementing procedure.