

Commonwealth Edison Company  
LaSalle Generating Station  
2601 North 21st Road  
Marseilles, IL 61341-9757  
Tel 815-357-6761



April 8, 1997

**United States Nuclear Regulatory Commission**  
**Attention: Document Control Desk**  
**Washington, D.C. 20555**

Licensee Event Report #97-009-00, Docket #050-373 is being submitted to your office in accordance with 10 CFR 50.73(a)(2),(ii).

Respectfully,

A handwritten signature in dark ink, appearing to read "Fred Dacimo".

Fred Dacimo  
Plant General Manager  
LaSalle County Station

Enclosure

cc: A. B. Beach, NRC Region III Administrator  
M. P. Huber, NRC Senior Resident Inspector - LaSalle  
C. H. Mathews, IDNS Resident Inspector - LaSalle  
F. Niziolek, IDNS Senior Reactor Analyst  
INPO - Records Center

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## LICENSEE EVENT REPORT (LER)

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):

LaSalle County Station Unit One

DOCKET NUMBER (2) 05000373

PAGE (3)  
1 of 5

TITLE (4) Inadequate Understanding of Lake Design Basis Results in Lake Level Higher Than Permitted by UFSAR

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	
03	11	97	97	009	00	04	08	97	LaSalle County Station Unit Two	05000374	
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)											
4											
000											
			<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 73.71(b)					
			<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2003(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(c)					
			<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 20.2003(a)(4)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> OTHER					
			<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(vii)	(Specify in Abstract below and in Text, NRC Form 366A)					
			<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
			<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
			<input type="checkbox"/> 20.2003(a)(2)(v)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(x)						
LICENSEE CONTACT FOR THIS LER (12)											
NAME						TELEPHONE NUMBER (Include Area Code)					
Larry Demick, Design Engineering						(815) 357-6761 Extension 3106					
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	
E	KI	FCV	A180	N							
SUPPLEMENTAL REPORT EXPECTED (14)											
YES (If yes, complete EXPECTED SUBMISSION DATE)					<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR	

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

LaSalle County Station entered an Unusual Event at 19:45 on 3/11/97 when it was determined that the 701.8 foot elevation of the lake level at that time was above the 701 foot maximum level described in the UFSAR and used in plant flooding potential analyses. The high lake level resulted principally from a lack of knowledge and consideration of the design basis for the maximum lake level. This led to operating and surveillance procedures which provided upper limits for lake level higher than the UFSAR specified value of 701 ft. Contributing factors were high rates of precipitation, poor materiel condition of the lake make-up and blowdown lines and the unavailability of the lake blowdown valve. Critical plant equipment were confirmed to be operable for the higher than analyzed lake level. However, as prudent measures, plant personnel monitored lower elevations of the plant, and the flood wall on the north side of the condenser pit was effectively raised by placement of sand bags to an elevation of 701 ft. 10 in. Operating procedures were revised and additional revisions are in progress. The lake blowdown valve was returned to full service on 3/13/97 to begin reducing lake level to its normal range. The Unusual Event was terminated at 17:00 on 3/26/97 with the lake level at 700.68 ft. The lake level was within normal operating range on 4/3/97.

**LICENSEE EVENT REPORT (LER)**  
TEXT CONTINUATION

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**PLANT AND SYSTEM IDENTIFICATION**

General Electric - Boiling Water Reactor

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

**A. CONDITION PRIOR TO EVENT**

Unit(s): 1/2	Event Date: 03/11/97	Event Time: 1945 Hours
Reactor Mode(s): 4/N	Mode(s) Name: Cold	Power Level(s): 0%/0%
	Shutdown/Defueled	

**B. DESCRIPTION OF EVENT**

On 3/11/97 at 1945 hours with Unit 1 in Cold Shutdown and Unit 2 Defueled, it was determined that the lake level was above the maximum level described in the UFSAR and used in analyses of plant external and internal flooding potential. The lake level at that time was at an elevation of 701.8 ft. UFSAR Sections 3.4.1.4 and 3.11.1.4.2, LSCS-FSAR Amendment 24 Question 010.10, and plant flooding analyses state a maximum lake level elevation of 701 ft. An Unusual Event was declared.

As background, on 2/6/97 the lake blowdown valve was partially closed and made unavailable due to reliability concerns. At the time, two of the three lake make-up pumps were in operation and the lake level began a steady increase from its initial value of about 699.7 ft. The lake level reached 701 ft. elevation on 2/20/97. Heavy rain and melting snow on 2/20 and 2/21/97 added about 6 in. to the lake level. On the evening of 2/22/97 lake make-up pumps (WL) [KI] A and B were turned off. On 2/26/97 rainfall of about 1.2 inches resulted in a lake level increase of about 2.0 inches to a total elevation of about 701.8 ft. A maximum lake level of 701.9 ft. was reached on 3/1/97. On this date a problem identification form (PIF) on the high lake level was filed due to exceeding the operating procedure control limits of 701 ft 7 inches. The review and screening of this PIF, however, did not recognize the exceedance of the UFSAR and flooding analysis maximum lake level limit of 701 ft.

On 3/4/97 the lake blowdown valve became stuck in the 5 percent open position after two open/close cycles during verification testing of its flow instrument. On 3/11/97, an engineering evaluation of the PIF filed on 3/1/97 identified that the lake level was above the maximum lake level described in the UFSAR. A second PIF on exceeding the UFSAR maximum lake level limit was immediately generated and an Unusual Event was declared at 19:45. As a result of the higher than analyzed lake level, plant personnel immediately began monitoring lower elevations of the plant including penetrations into the Unit 1 Division 1 Core Standby Cooling System (CSCS) pump room between elevations of 701 and 703 ft. Analyses for flooding of potentially affected areas were also completed and critical equipment in these areas were found to be operable. However, as a prudent compensatory measure, the 701 ft. elevation flood wall on the north side of the condenser pit was effectively raised by placement of sand bags to an elevation of 701 ft. 10 in. This was higher than the then current lake elevation which was on a

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decreasing trend. By 3/13/97 the lake blowdown valve had been repaired and returned to service. The lake level which was then at 701.8 ft began a steady decrease. The Unusual Event was terminated at 17:00 on 3/26/97 with the lake level at 700.68 ft., as measured by surveyor transit and no significant rainfall forecast over the next several days. The lake level was returned to normal operating level range on 4/3/97.

Lake levels higher than the design basis value of 701 ft. described in the UFSAR were permitted by an operating procedure and a surveillance procedure which provided upper limits for lake level higher than the UFSAR specified value. These procedures include LOP-WL-04, "Lake Level and Blowdown Flow Control" and LOS-AA-S1, "Shiftly Surveillance."

This event is reportable per 10 CFR 50.73(a)(2)(ii)(B) due to a condition that was outside the design basis of the plant.

**C. CAUSE OF EVENT**

The root cause of the event was an inadequate knowledge and consideration of the design basis of the maximum lake level relative to operating procedure limits and internal flooding concerns. This condition led to operating and surveillance procedures which were both inadequate and incorrect. These procedures include LOP-WL-04, "Lake Level and Blowdown Flow Control" and LOS-AA-S1, "Shiftly Control Room Back Panel Check for Operational Condition 4."

Both procedures identify a normal, or target maximum lake level of 700 ft., but cite upper limits for lake level of 702 ft. (LOP-WL-04) and 701 ft. 7 in. (LOS-AA-S1). These exceed the maximum lake level of 701 ft. described in the UFSAR and used in the plant internal flooding analyses. The procedures included this incorrect information despite the fact that the process for preparation of station procedures requires a safety evaluation screening which includes checks of the UFSAR. In addition, the operating procedure does not address the current operating configuration, i.e., both units at cold shutdown.

Primary considerations with respect to controlling high lake level appeared to have been on operational issues, such as preventing fogging during the winter, preventing flow over the spillway, and providing a high level which would allow shutdown of the lake makeup pumps for two weeks or more at a time.

Significant contributors to the high lake event were (1) the acceptance by Operations of conditions outside the normal control band, (2) lack of knowledge by Engineering and Operations personnel of the 701 ft. design basis maximum level for the lake, and (3) failure by System Engineering to monitor and trend lake level to predict an impending exceedance of this design basis value and develop timely corrective action.

Contributing to this acceptance of abnormally high lake level was the materiel condition of the lake blowdown valve as well as the lake make-up and blowdown lines and vacuum breakers. The original design and construction of the lines are marginal. The lines have experienced seven failures and degradation over time makes them more susceptible to failure due to operational transients. Because of

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this, stopping and then re-starting the make-up pumps requires significant manpower and time. Operator sensitivity to this condition contributed to the reluctance to stop the pumps prior to reaching the procedurally specified high limit. The lake blowdown valve (Allis-Chalmers 20-inch Howell-Bunger type valve) has experienced ten instances of unavailability due to mechanical binding or overhaul, beginning in 1980. This has been attributed to inadequate preventative maintenance activities.

Additionally, this problem could have been identified earlier in the review and screening of the first PIF written on high lake level. Further, the problem was exacerbated by the continued poor materiel condition of the systems used to control lake level. These are both indications of weaknesses in the implementation of the corrective action process and continuing management acceptance of degraded materiel condition.

**D. ASSESSMENT OF SAFETY CONSEQUENCES**

The increased potential for internal and external flooding events was minimal. Thus, the actual safety consequences of the event were minimal. Operability evaluations relating the current lake levels to the results of previous flooding analyses confirm this. However, the event has identified weaknesses in several areas that could lead to future significant events. The weaknesses include:

Procedure revisions with incomplete safety evaluation screenings resulting in inconsistencies with the design and licensing base;

Lack of timely identification of abnormal conditions;

Inadequate review of the original problem identification (i.e., the fact that the reported high lake level exceeded the flood analysis design basis was not identified during the initial review); and

Failure to trend operator log data to identify adverse trends and actual or impending violation of procedural or design basis values.

**E. CORRECTIVE ACTIONS**

1. Procedures LOP-WL-04 and LOS-AA-S1 will be further revised to incorporate operator actions to prevent exceeding the lake design basis high level of 701 ft. for all plant operating configurations and conditions. Evaluations will be performed of the ability to maintain lake level within the narrow band currently specified for normal operation.
2. Prior to restart of either unit, sections 4 through 9 and 15 of the UFSAR, and appropriate sections of the SERs, and other selected documents will be reviewed by senior engineering and operating personnel with significant experience at LaSalle to identify any other areas of potential inconsistencies between the plant design basis and operating procedures.
3. Station policy that the plant is to be operated within its normal limits will be re-emphasized to the Operating Department. Operation outside these limits will only be accepted following review and approval by Operations senior management.

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4. The responsibility of System Engineers to trend important system parameters will be re-emphasized in the implementation of the ongoing System Engineering Improvement Plan.
5. Engineering will reissue prior evaluations of the design, materiel condition, and operation of the lake make-up and blowdown systems which define modifications necessary to improve the reliability of the make-up and blowdown lines. Modifications already planned for the replacement of the present lake blowdown valve with a more reliable and maintainable valve will be implemented.

Other activities to improve performance:

LaSalle County Station Management has taken action to address concerns with the quality of 50.59 safety screenings and evaluations. All safety screenings and evaluations performed by Engineering are reviewed and approved by an Independent Review Group as part of the Engineering Assurance function. Additionally, in April 1997, ComEd will issue a Corporate-wide Safety Evaluation procedure with appropriate training.

A new corrective action process has been developed for ComEd that will encompass human error reduction methodology, including standardized coding, problem identification, trend analysis, and root cause analysis techniques.

Over the long term, separate design basis document development and UFSAR verification tasks will include a more extensive review of the conformance of procedures with the plant design basis.

**F. PREVIOUS OCCURRENCES**

LER NUMBER	TITLE
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None.

**G. COMPONENT FAILURE DATA**

Manufacturer:	Allis-Chalmers
Component ID:	0WLU05
Description:	20-inch Howell-Bunger type valve