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November 20, 2000

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Operating License DPR-74
Docket No. 50-316

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73 entitled Licensee Event Report System, the following revised report is being submitted:

LER 316/2000-003-01, "Containment Internal Concrete Structures Do Not Meet Design Load Margins."

There are no commitments identified in this submittal.

Should you have any questions regarding this correspondence, please contact Mr. Wayne J. Kropp, Director Regulatory Affairs, at 616/697-5056.

Sincerely,

A handwritten signature in black ink that reads 'Michael W. Rencheck'.

Michael W. Rencheck
Vice President, Nuclear Engineering

/srd
Attachment

c: J. E. Dyer, Region III
D. Hahn
B. A. McIntyre
T. P. Noonan
A. C. Bakken III
R. P. Powers
R. Whale
NRC Resident Inspector
Records Center, INPO

IED2

NRC Form 366 (6-1998)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001
LICENSEE EVENT REPORT (LER)		ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (1-6 F33), 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
(See reverse for required number of digits/characters for each block)		

FACILITY NAME (1) <p style="text-align: center;">Donald C. Cook Nuclear Plant Unit 2</p>	DOCKET NUMBER (2) <p style="text-align: center;">05000-316</p>	PAGE (3) <p style="text-align: center;">1 of 3</p>
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TITLE (4)
Containment Internal Concrete Structures Do Not Meet Design Load Margins

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	
05	29	2000	2000	-- 003 --	01	11	20	2000	Cook Plant Unit 1	05000-315	
OPERATING MODE (9)		5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)		--	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)		X	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)			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 <p style="text-align: center;">R. W. Gaston, Regulatory Affairs</p>	TELEPHONE NUMBER (Include Area Code) <p style="text-align: center;">616 / 465-5901, x1366</p>
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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 SUBMISSION DATE (15)		
YES	X			NO	MONTH	DAY	YEAR
(If Yes, complete EXPECTED SUBMISSION DATE.)							

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

This LER is revised as marked in the margin to incorporate Unit 1 containment structure information.

On May 29, 2000, during an evaluation of concrete structures inside the Donald C. Cook Nuclear Plant (CNP) Unit 2 containment, it was determined that a condition outside the design basis of the plant existed in that some containment internal concrete sub-compartment structural elements, specifically walls and floors, did not meet the design pressure load factor margin of 1.5 as described in the CNP Updated Final Safety Analysis Report (UFSAR). A revised Nuclear Steam Supply System (NSSS) vendor transient mass distribution (TMD) containment analysis prompted new calculations which showed that a number of containment internal concrete structural elements did not meet the 1.5 design pressure load factor margin. On October 26, 2000, during an extent-of-condition review prompted by the Unit 2 condition described above, completed calculations identified that similar conditions existed on the Unit 1 containment structural elements. This LER is submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B) for a condition outside the design basis of the plant. The apparent cause for this event was the failure to adequately control design basis calculations and supporting documentation. For Units 1 and 2, critical calculations were reconstituted or evaluations performed for the subject concrete structural elements, and some structural grout repairs made on one Unit 2 wall with noted degradation. Presentations were made to the U. S. Nuclear Regulatory Commission (NRC) to provide information related to the design and licensing basis for the concrete structures and discrepancies found. A plan and schedule for long-term corrective and preventive actions for both units have been developed.

The results of the Unit 1 and 2 calculations and evaluations show that the internal containment concrete structural elements were capable of withstanding the revised TMD accident pressures without loss of function. There is minimal safety significance associated with the failure to maintain a 1.5 design pressure load factor margin for internal containment structures.

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

Conditions Prior to Event

Unit 1 was defueled.
Unit 2 was in Mode 5, Cold Shutdown

Description of Event

On May 29, 2000, during an evaluation of concrete structures inside the Donald C. Cook Nuclear Plant (CNP) Unit 2 containment (EIS: NH), it was determined that a condition outside the design basis of the plant existed in that some containment internal concrete sub-compartment structural elements did not meet the design pressure load factor margin of 1.5 as described in the CNP Updated Final Safety Analysis Report (UFSAR). A revised Nuclear Steam Supply System (NSSS) vendor transient mass distribution (TMD) containment analysis prompted new calculations which showed that a number of containment internal concrete structural elements did not meet the 1.5 design pressure load factor margin, contrary to UFSAR design requirements. Additionally, some physical degradation and non-conforming conditions existed on isolated areas of four accumulator room end walls, which contributed to the reduction in structural capacity for these walls.

On October 26, 2000, during an extent-of-condition review prompted by the Unit 2 condition described above, completed calculations identified that similar conditions existed on the Unit 1 containment structural elements.

The reduction in design pressure load margin for containment internal concrete sub-compartment structural elements was determined to be reportable, and this LER is submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B) for a condition outside the design basis of the plant.

Cause of Event

The apparent cause for this condition was the failure to adequately control design basis calculations and supporting documentation. Specifically, documentation and calculations supporting the plant configuration related to containment concrete structure load conditions could not be located, or did not meet current standards for technical or administrative attributes.

These issues are symptoms of the larger generic issue of inadequate design and licensing basis control that had been previously identified and confirmed during the Expanded System Readiness Reviews.

Analysis of Event

The design of the containment structures is based upon limiting load factors, which are the ratios by which loads are multiplied to assure that the loading deformation behavior of the structure is one of elastic, tolerable strain behavior. The UFSAR requires an evaluation of the loads utilized in the design of reinforced concrete containment structures, and includes a design pressure load factor margin of 1.5 to ensure that the structures were capable of withstanding a 50 percent increase in pressure load above the worst-case expected load in a given area. The pressure load is one of a number of loads considered in the design of the containment structural elements.

Critical calculations have been reconstituted or evaluations performed for the subject concrete structural elements using the new TMD accident pressures. These new calculations and evaluations utilized reduced pressure load factors, less than the 1.5 pressure load factor specified in the UFSAR, but always greater than 1.0, and also took credit for the actual as-installed physical configuration and strength of materials. The results of the calculations and evaluations show that the internal containment concrete structures were capable of withstanding the revised TMD accident pressures without loss of function. Based on the above, there is minimal safety significance associated with the failure to maintain a 1.5 design pressure load factor margin for containment concrete structures.

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

Corrective Actions

There were no immediate corrective actions associated with the failure to maintain a 1.5 design pressure load factor margin for containment concrete structures, since Unit 1 was defueled and Unit 2 was in cold shutdown when the described conditions were confirmed.

Critical calculations have been reconstituted or evaluations performed for the subject concrete structural elements using the new TMD accident pressures to document operability of the Unit 1 and 2 structures. Limited structural grout repairs to areas with noted degradation were completed on one Unit 2 end wall. No structural grout repairs were necessary on Unit 1 walls.

Presentations were made to the U. S. Nuclear Regulatory Commission (NRC) in June 2000, and again in September 2000, to provide information related to the design and licensing basis for the concrete structures, the current configuration of the structures including which structures were degraded, and a justification to operate the units while the structures were considered to be in a degraded or non-conforming condition.

The final course and schedule for long-term corrective and preventive actions to restore and maintain the design pressure load factors for the internal containment concrete structural elements in both units have been completed, and are docketed in correspondence to the NRC, "Resolution of Containment Structural Issues," dated October 15, 2000.

The corrective actions to prevent recurrence for the root cause of the generic inadequacies of the design control process are being addressed through the CNP Corrective Action Program. The root cause evaluation identified numerous corrective actions to address management, organizational, and programmatic issues in the Engineering organization. Actions specific to restart of the CNP units have been tracked and completed as part of the CNP Restart Plan.

Previous Similar Events

There have been numerous LERs from 1999 and 2000 that have been linked to the design control inadequacies root cause. Since the condition described here is historical, the corrective actions from these LERs would not have identified or prevented this condition.