Indiana Michigan
Power Company
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
616-465-5901

AEP
INDIANA
MICHIGAN
POWER

June 28, 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 report is being submitted:

LER 316/2000-003-00, "Containment Internal Concrete Structures Do Not Meet Design Load Margins."

The following commitments were identified in this submittal:

- A review of containment internal structures will be performed prior to Unit 1 startup to determine extent of condition, repairs to structural elements will be made where applicable, and critical calculations will be reconstituted or evaluations performed to document operability of the Unit 1 structures.
- 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 will be determined prior to Unit 1 startup.

Should you have any questions regarding this correspondence, please contact Mr. Robert C. Godley, Director, Regulatory Affairs, at 616/465-5901, extension 2698.

Sincerely,

for Daniel R. Garner

M. W. Rencheck
Vice President – Nuclear Engineering

/srd
Attachment

c: J. E. Dyer, Region III
R. C. Godley
D. Hahn
W. J. Kropp
R. P. Powers
R. Whale
Records Center, INPO
NRC Resident Inspector

IE22

NRC Form 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

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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	--	00	06	28	2000	FACILITY NAME	DOCKET NUMBER

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	TELEPHONE NUMBER (Include Area Code)
M. B. Depuydt, Regulatory Affairs	616 / 465-5901, x1589

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)	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 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, contrary to UFSAR design requirements. 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 Unit 2, critical calculations have been reconstituted or evaluations performed for the subject concrete structural elements, and some structural grout repairs made on a wall with noted degradation. A review of containment internal concrete structural elements will be performed prior to Unit 1 startup to determine extent of condition, repairs will be made where applicable, and critical calculations will be reconstituted or evaluations performed to document operability of the Unit 1 structures. A plan and schedule for long-term corrective and preventive actions for both units will be developed prior to Unit 1 startup.

The results of Unit 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 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 (EIIS: 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.

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.

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, because Unit 2 was in a cold shutdown condition.

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

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 2 structures. Limited structural grout repairs were completed on one accumulator room wall with noted degradation.

A presentation was made to the NRC on June 1, 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. Reference NRC letter to Indiana Michigan Power Company, "Donald C. Cook - Summary of June 1, 2000, Public Meeting Regarding Containment Subcompartment Walls," dated June 12, 2000.

A similar condition is expected on CNP Unit 1. A review of containment internal structures will be performed prior to Unit 1 startup to determine extent of condition, repairs to structural elements will be made where applicable, and critical calculations will be reconstituted or evaluations performed to document operability of the Unit 1 structures.

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 will be determined prior to Unit 1 startup.

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

315/1999-026-00	315/1999-022-01
315/1999-019-00	315/1999-012-00
315/1999-007-00	315/1998-056-01
315/1998-037-01	315/1998-029-01