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FACIL:50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316

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SUBJECT: LER 97-004-02 re analysis which demonstrates design basis impact of inadequate refueling outage SE negligible.LER 97-004-01 retracted.W/980122 ltr.

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AEP
AMERICAN ELECTRIC POWER

January 22, 1998

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

Operating Licenses 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:

97-004-02

Sincerely,

John R. Sampson

John R. Sampson
Site Vice President

/tlm

Attachment

IE22 '/,

c: A. B. Beach
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NRC FORM 366
(5-92)

S. NUCLEAR REGULATORY COMMISSION

ROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	
Donald C. Cook Nuclear Plant - Unit 2	50-316	Page 1 of 3

TITLE (4) LER Retratction - Analysis Demonstrates Design Basis Impact of Inadequate Refueling Outage Safety Evaluation was Negligible

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
08	26	97	97	-- 004 --	02	01	22	98	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9): 1

POWER LEVEL (10): 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)

	20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		73.71(b)
	20.2203(a)(1)		20.2203(a)(3)(ii)		50.73(a)(2)(iv)		73.71
	20.2203(a)(2)(i)		20.2203(a)(4)		50.73(a)(2)(v)	X	OTHER
	20.2203(a)(2)(ii)		50.36(c)(1)		50.73(a)(2)(vii)		(Specify in Abstract below and in Text, NRC Form 366A)
	20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(viii)(A)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)		50.73(a)(2)(viii)(B)		
	20.2203(a)(2)(v)		50.73(a)(2)(ii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code
Mr. Jeb Kingseed, Nuclear Safety and Analysis Manager	616/697-5106

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)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES	X	NO				

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

The basis for this revision is to provide additional information relative to the retraction of this report. On August 26, 1997, with Unit 2 at 100 percent Rated Thermal Power, it was determined that the unit had potentially operated outside the design basis during the Unit 2 1996 refueling outage relative to the spent fuel pool (SFP) heat exchanger's component cooling water (CCW) inlet design temperature. It was determined that this event was reportable under 10 CFR 50.72(b)(1)(ii)(B) as a condition outside the design basis, and an ENS notification was made at 1533 hours on August 26, 1997. An interim LER was submitted pursuant to 10 CFR 50.73(a)(2)(ii) as a condition outside the design basis on September 22, 1997.

As a result of the subsequent investigation and analysis into this event, it has been concluded that the unreviewed safety question determination performed in support of the Unit 2 1996 refueling outage full core offload was conservative with respect to the required core offload period; however, the SFP temperature limit could not be demonstrated at the maximum design CCW temperature. Subsequent analysis using a more realistic core offload period has demonstrated that the SFP design requirement would have been met at a maximum CCW temperature of 95 degrees Fahrenheit noted in the UFSAR. Based on this, the LER Retraction 316/97-004-01, submitted on November 17, 1997, is being revised to reflect this additional information.

The analysis to support this LER revision is HI-971612, "Thermal Hydraulic Analysis for D.C. Cook 1997 Refueling Outages", Revision 0. This analysis bounded the Unit 2 1996 refueling outage conditions and demonstrated that the design basis was maintained.

NRC FORM 366A U.S. NUCLEAR REGULATORY COMMISSION

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EXPIRES 5/31/95

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LICENSEE EVENT CONTINUATION

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

Condition Prior to Event

Unit 2 was in Mode 1 at 100 percent Rated Thermal Power.

Description of Event

The spent fuel pool (SFP) cooling system design requirement is to maintain the SFP maximum bulk temperature below 159.54 degrees Fahrenheit assuming a worse case scenario with one cooling train operational. Per the Updated Final Safety Analysis Report (UFSAR), the design of the SFP heat exchanger is based on a maximum component cooling water (CCW) inlet temperature of 95 degrees Fahrenheit. During the Unit 2 1996 refueling outage a safety evaluation was performed for full core offload that assumed a maximum CCW inlet temperature of 90.7 degrees Fahrenheit to the SFP heat exchanger. The 90.7 degree Fahrenheit maximum limit was assumed in order to meet the SFP cooling system single train design requirement based on other assumptions made in the evaluation. An administrative limit of 90 degrees Fahrenheit CCW temperature was imposed to ensure the CCW temperature limit was not exceeded.

During the 1997 NRC Architect Engineering Inspection, a question was raised regarding whether or not an unreviewed safety question determination had been performed for the change to the CCW temperature during the Unit 2 1996 refueling outage.

A 10 CFR 50.72 notification and interim LER were submitted because it was thought at the time that the 90 degree Fahrenheit limit had not been properly evaluated, and the plant would have been outside the design basis had the CCW temperature increased to 95 degrees Fahrenheit. Further analysis has demonstrated that even if the CCW temperature would have exceeded the 90 degree Fahrenheit limit and reached 95 degrees Fahrenheit, the UFSAR SFP cooling design requirement would have been met.

Analysis of the Event

A cycle-specific SFP analysis was performed to support the Unit 2 1996 refueling outage. The analysis demonstrated that the CCW temperature of 90.7 degrees Fahrenheit would maintain the SFP temperature below the design limit of 159.54 degrees Fahrenheit. This provided the basis for the 90 degree Fahrenheit administrative limit for the Unit 2 1996 refueling outage. The key analysis assumption is that a full core offload would begin at 100 hours after reactor shutdown. Subsequent cycle-specific analysis, HI-971612, "Thermal Hydraulic Analysis for D.C. Cook 1997 Refueling Outages", Revision 0, was performed that demonstrated that the SFP temperature can be maintained below 159.54 degrees Fahrenheit using a single train of SFP cooling, and a CCW temperature of 95 degrees Fahrenheit. This analysis assumed that a full core offload would begin at 168 hours after reactor shutdown, thereby reducing the decay heat in the SFP. Core offload at 168 hours more accurately reflects plant requirements given in technical specification 3.9.3. This newer analysis bounds the 1996 refueling outage conditions and demonstrated that the design basis was maintained.

Technical specification 3.9.3, Refueling Operations - Decay Time, requires that the reactor be subcritical for at least 168 hours prior to movement of irradiated fuel in the reactor pressure vessel. Thus 168 hours more accurately reflects plant decay heat loading of the spent fuel pool. The 100 hours used in the previous analysis was conservative.

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		YEAR	SEQUENTIAL	REVISION	
Cook Nuclear Plant - Unit 2	50-316	97	-- 004 --	02	3 OF 3

TEXT (if more space is required, use additional NRC Form 366A's) (17)

Analysis of the Event Con't

As a result of the subsequent investigation and analysis into this event, it has been concluded that the unreviewed safety question determination performed in support of the Unit 2 1996 refueling outage full core offload was conservative with respect to the required core offload period; however, the SFP temperature limit could not be demonstrated at the maximum design CCW temperature. Subsequent analysis using a more realistic core offload period has demonstrated that the SFP design requirement would have been met at the maximum CCW temperature of 95 degrees Fahrenheit noted in the UFSAR. Based on this, the LER Retraction 316/97-004-01, submitted on November 17, 1997, is being revised to reflect this additional information.