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Cook Nuclear Plant  
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Bridgman, MI 49106  
616-465-5901



June 21, 2000

United States Nuclear Regulatory Commission  
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Washington, DC 20555

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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 316/2000-002-00, "Operation Outside Design Bases and Entry Into Technical Specification (TS) 3.0.3 Due to Non-Conservative TS".

No new commitments were identified in this submittal.

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

Sincerely,

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

M. W. Rencheck  
Vice President - Nuclear Engineering

/mbd  
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

# LICENSEE EVENT REPORT (LER)

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

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 (T-8 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

FACILITY NAME (1) <b>Donald C. Cook Nuclear Plant Unit 2</b>	DOCKET NUMBER (2) <b>05000-316</b>	PAGE (3) <b>1 of 4</b>
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TITLE (4)  
**Operation Outside Design Bases and Entry Into Technical Specification (TS) 3.0.3 Due to Non-Conservative TS**

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	14	1997	2000	- 002 -	00	06	21	2000	FACILITY NAME	DOCKET NUMBER	
OPERATING MODE (9)		3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)		00	20.2201 (b)			20.2203(a)(2)(v)		X	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 <b>M. B. Depuydt, Regulatory Affairs</b>	TELEPHONE NUMBER (Include Area Code) <b>616 / 465-5901, x1589</b>
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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 (If Yes, complete EXPECTED SUBMISSION DATE).	X	NO	MONTH	DAY	YEAR			

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

On March 14, 1997, with Unit 2 in Mode 3 and Unit 1 defueled, the Unit 1 Essential Service Water (ESW) system was removed from service to facilitate Unit 1 forebay cleaning without the ESW crosstie valves to Unit 2 being closed. On May 1, 2000, a new Administrative Technical Requirement (ATR) was approved for implementation in accordance with the guidance provided in NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety". The ATR for ESW requires that the ESW crosstie valves be closed when a pump is inoperable. On May 24, 2000, it was determined that operation in the past, such as from March 14 to 17, 1997 with the ESW crosstie valve open when the associated pump was inoperable, constituted a condition outside the design basis, reportable in accordance with 10CFR50.73(a)(2)(ii). Additionally, applying the criteria of the current ATR, the event was also reportable in accordance with 10CFR50.73(a)(2)(i)(B), as a condition prohibited by the plant's Technical Specification (TS).

The apparent cause was failure to recognize that ESW TS 3.7.4.1 was potentially non-conservative and the system could be operated outside the design bases while still meeting the requirements of the TS. The ESW ATR was implemented on May 1, 2000. A TS amendment request for TS 3.7.4.1 will be submitted by August 18, 2000. A review was performed of other shared systems to determine if adequate control is maintained over the associated system crosstie valves. No additional issues were identified. A familiarization session on NRC Administrative Letter 98-10 was conducted with the Regulatory Compliance personnel normally involved with the evaluation of potentially reportable conditions.

Due to the low probability for scenarios involving maximum flow conditions, in conjunction with the existing procedural guidance and training received by the operators, this event had minimal safety significance.

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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 3, Hot Standby

**Description of Event**

On March 14, 1997, Unit Two was in Mode 3 preparing for startup after a unit trip on March 11, 1997. Unit 1 was in a refueling outage and defueled at the time.

In preparation for cleaning of the Unit 1 intake forebay, the Unit 1 Essential Service Water (ESW) (EIS:BI) pumps were removed from operation and a clearance was placed on the power supply to the pump motors. As closure of the ESW crosstie valves between the units under this condition was not required by either the plant's Technical Specification (TS) or by procedure, the crosstie valves were left open. Contingency actions for timely restoration of the Unit 1 ESW pumps were provided such that the Unit 1 pumps could be placed in operation within 1 hour. The Unit 1 ESW pumps remained under clearance from March 14 to March 16, 1997.

On February 4, 2000, the NRC issued Donald C. Cook (CNP) Inspection Report (IR) 50-315, 50-316/99021. In this IR, the NRC identified a concern that the requirements provided in the ESW TS may not be consistent with design basis assumptions. Specifically, the design basis as described in UFSAR Section 9.8.3.2 states: "Two pumps are sufficient to supply all service requirements for unit operation, shutdown, refueling or post accident operation, including a LOCA on one unit and simultaneous hot shutdown in the other." TS 3.7.4.1 requires two independent ESW loops to be operable in Mode 1, Power Operation, through Mode 4, Hot Shutdown, and one ESW flowpath associated with support of the opposite unit shutdown functions to be available at all times.

As a result of this concern and extensive investigation by the plant staff, on May 1, 2000, an Administrative Technical Requirement (ATR) for the ESW system was implemented. The ATR requires that the associated ESW crosstie valve be closed whenever an ESW pump is inoperable on either unit, thereby ensuring that flow will not be diverted from an accident affected unit. The ATR requirement was based on the conclusion that the plant was originally designed to be operated with the cross-tie(s) closed whenever the associated pump was inoperable. Information supporting the ATR documented that TS 3.7.4.1 was potentially non-conservative and met the conditions described in NRC Administrative Letter 98-10 "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety".

During past refueling outages when forebay cleaning was to be performed, such as the Unit 1 1997 refueling outage, the ESW pumps of the shutdown unit were removed from service without the ESW crosstie valves being shut. Although this condition is permitted by TS, administrative controls were insufficient to ensure that an adequate number of operable pumps were available to ensure operability of the ESW system for each unit. Therefore, operation of Unit 2 during the period of March 14 to 16, 1997, with the ESW crosstie valves open is considered to be a condition outside the design basis reportable in accordance with 10CFR50.73(a)(2)(ii). Additionally, applying the requirements of the current ATR to the past, operation during that same period can be considered an entry into TS 3.0.3. Therefore, this LER is also submitted in accordance with 10CFR50.73(a)(2)(i)(B) for a condition prohibited by Technical Specifications.

As discussed previously, this event occurred on March 14, 1997. Reportability of this condition was initially evaluated in March 2000 based on system flow capability, system design basis, and the current TS. The reportability evaluation concluded that the condition was not reportable.

The discovery date for this event is May 1, 2000, when the safety evaluation associated with the ATR, which documented the potentially non-conservative TS, was approved by the Plant Operations Review Committee. However, re-evaluation for reportability was not completed until after the issue was raised by the NRC Resident Inspectors on May 24, 2000. As a result, this LER is submitted outside the 30 day time limit of 10CFR50.73(a).

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**Cause of Event**

The apparent cause was the failure to recognize that ESW TS 3.7.4.1 was potentially non-conservative and the system could be operated outside the design bases while still meeting the requirements of the TS. Specifically, the TS states requirements for Mode 1 through Mode 4 and does not address Modes 5 or 6 or positioning of the normally open crosstie valves.

Additionally, the reportability aspects relative to Administrative Letter 98-10 were not considered. This was a result of a failure to recognize that the past system operation needed to be evaluated against the new criteria defined by the ATR.

**Analysis of Event**

The Essential Service Water (ESW) System is a safety-related system that provides cooling water to the Component Cooling Water (CCW) (EIS:CC) heat exchangers, the Containment Spray (CTS) (EIS:BE) heat exchangers, and the Emergency Diesel Generator (EIS:EK) jacket water coolers. ESW also provides an alternate supply to Control Room Air Handling Units (EIS:VI) and to the Auxiliary Feedwater pumps (EIS:BA).

Although ESW is not an Engineered Safety Feature (ESF) System, it is identified as an ESF support system in the UFSAR. In particular, ESW provides the heat sink for the CTS system and for the Emergency Core Cooling System through the CCW system. As a result, ESW is treated as an ESF system.

The ESW System for each unit contains two trains: the east train fed by the east ESW pump and the west train fed by the west ESW pump. The Unit 1 east train is cross-connected to the Unit 2 west header and the Unit 1 west train is cross-connected to the Unit 2 east header. Each ESW train consists of a pump, strainer, heat exchangers, coolers, associated piping, valves, and instrumentation.

The Unit 1 and Unit 2 ESW Systems are normally operated with the crosstie valves between the east and west trains open. With this alignment the Unit 1 and Unit 2 ESW Systems function as a shared system. During normal operation, one ESW pump per unit is operating such that both headers on both units are pressurized and the remaining pumps are on standby. The standby pumps will auto-start on an ESF signal as well as a non-ESF signal such as low header pressure. This alignment allows ESW pumps from either unit to supply water to the ESW loads in both units, increasing the reliability of the ESW system for both units.

UFSAR Table 9.8-5, "Essential Service Water System Minimum Flow Requirements Per Train (GPM)", documents that during the Loss of Coolant Accident (LOCA) injection phase 6890 gallons per minute (gpm) of ESW flow is required. Each ESW pump was tested to 10,000 gpm, well above the minimum required flow. Therefore, sufficient flow is available for a safe, single train response to the injection phase of a LOCA and the spare capacity is available to address the shutdown unit loads.

However, during the recirculation phase following the LOCA, Table 9.8-5 also documents that 10,810 gpm are required to address the accident affected unit. The table also states that this is well within the runout capabilities of one pump. However, under these conditions additional capacity would not be available to address the shutdown units loads, and without operator action a runout condition could occur on the operating ESW pump.

Operation of the pump in a runout condition, as described above, is not considered likely since the operator will check ESW pump status and flow early in a postulated accident. This is directed by Emergency Operating Procedure (EOP) 02-OHP-4023.E-0, "Reactor Trip or Safety Injection", which also directs that the ESW valves be manually aligned as necessary to provide required flow. This occurs before switchover to the recirculation mode when the highest ESW flow demand is expected. Additionally, manual operator action is required by 02-OHP 4023.ES-1.3, "Transfer To Cold Leg

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Recirculation" to enter the recirculation phase. The procedure then requires the operator to verify ESW system status before increasing flow to the CCW heat exchangers. Sufficient flow would not be available in the postulated scenario where one pump is supplying accident loads on one unit and shutdown loads on the other. Operator action would be taken at this point in the accident to ensure adequate flow, if not taken while carrying out the actions of 02-OHP-4023.E-0.

At the time of the March 1997 event, both Unit 2 ESW pumps were operable and no evidence exists to suggest that the crosstie valves were not capable of being closed from the Control Room. If an accident had occurred, the existing procedures were adequate to ensure that operator actions would have been taken to ensure adequate ESW flow to required loads.

Due to the low probability of the scenario, the existing procedures and the training received by the operators, this condition is judged to have minimal safety significance.

**Corrective Actions**

The ESW ATR was implemented on May 1, 2000.

As documented in letter C0500-11 from DC Cook to the NRC, dated May 19, 2000, a TS amendment request for TS 3.7.4.1, Essential Service Water, will be submitted by August 18, 2000.

A review was performed of the other shared systems to determine if adequate control is maintained over the associated system crosstie valves. No additional issues were identified.

A root cause investigation is being performed. Until that investigation is complete, interim preventive actions have been taken by conducting a familiarization session on NRC Administrative Letter 98-10 with the Regulatory Compliance personnel normally involved with the evaluation of potentially reportable conditions.

**Previous Similar Events**

None