

## ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL:50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana & 05000315  
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SUBJECT: LER-88-010-oo:on 881011,unit shutdown to inspect environ  
 qualification configuration of electrical cables.  
 W/8 ltr.

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## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) D. C. COOK NUCLEAR PLANT - UNIT 1										DOCKET NUMBER (2) 0 5 0 0 0 3 1 5										PAGE (3) 1 OF 0 4				
TITLE (4) UNIT SHUTDOWN TO INSPECT ENVIRONMENTAL QUALIFICATION CONFIGURATION OF ELECTRICAL CABLES OF THE REACTOR HEAD VENT VALVES AND PRESSURIZER STEAM SPACE VENT VALVES																								
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 NAMES						DOCKET NUMBER(S)									
									D.C. COOK PLANT-UNIT 2						0 5 0 0 0 3 1 6									
1	0	1	1	8	8	8	8	0	1	0	0	0	1	1	1	0	8	8	0 5 0 0 0 3 1 6					
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (Check one or more of the following) (11)																						
1		20.402(b)					20.406(c)					60.73(a)(2)(iv)					73.71(b)							
POWER LEVEL (10)		0 9 0					20.406(a)(1)(i)					60.73(a)(2)(v)					73.71(c)							
		20.406(a)(1)(ii)					60.73(a)(2)(vi)					OTHER (Specify in Abstract below and in Text, NRC Form 366A)												
		20.406(a)(1)(iii)					60.73(a)(2)(vii)																	
		20.406(a)(1)(iv)					60.73(a)(2)(viii)(A)																	
		20.406(a)(1)(v)					60.73(a)(2)(viii)(B)																	
		20.406(a)(1)(vi)					60.73(a)(2)(ix)																	
LICENSEE CONTACT FOR THIS LER (12)																								
NAME T. P. BEILMAN INSTRUMENTATION AND CONTROL DEPARTMENT SUPERINTENDENT										TELEPHONE NUMBER AREA CODE 6 1 1 6 4 1 6 5 1 - 1 5 9 1 0 1 1														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		
SUPPLEMENTAL REPORT EXPECTED (14)																EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR				
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)																		0	2	0	2	8	9	
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																								

This is an interim report pending completion of an evaluation to confirm that no additional actions are necessary.

On October 4, 1988 during routine Unit Two refueling activities, a Quality Assurance Environmental Qualification (EQ) Surveillance determined that the electrical cables of the Reactor Head Vent Valves and Pressurizer Steam Space Vent Valves were not physically configured per current design drawings. The conditions found on Unit Two rendered the configuration of the equivalent valves on Unit One suspect. However, configuration of the vent valve cable conduits for Unit One could not be determined while at power. As a precautionary measure, Unit One was shut down for visual inspection on October 11, 1988 which revealed similar configuration discrepancies to those found in Unit Two. The cause of the discrepancies was that configuration requirements relative to EQ of the valves evolved over a period of years following their actual installation and this aspect was not reverified as part of our EQ inspections performed in 1985. Additional inspections performed during shutdown revealed installation discrepancies with the electrical cable junction boxes of the pressurizer PORV position limit switches. These were due to oversight during installation of an EQ design change performed in 1982. All configuration discrepancies were corrected in Unit One and the Unit was returned to service on October 14, 1988. Corrections will be completed on Unit Two prior to the restart from the current refueling outage.

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PDR ADOCK 05000315  
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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104  
EXPIRES: 8/31/88

FACILITY NAME (1)  D. C. COOK NUCLEAR PLANT - UNIT 1	DOCKET NUMBER (2)  0 5 0 0 0 3 1 5	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 8	0 1 0	0 0	0 2	OF	0 4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

Conditions Prior To Occurrence

Unit One in Mode One, at the administrative limit of 90 percent Reactor Thermal Power.

Unit Two in Mode Six, with the fuel out of core for planned maintenance.

Description of Event

During a routine Quality Assurance (QA) Surveillance on October 4, 1988 at approximately 2000 hours, it was discovered that the electrical cables of the Unit Two Reactor Head Vent Valves (EIIS/AB-VTV) and Pressurizer Vent Valves (EIIS/AB-VTV) were not physically configured as described on current design drawings. These valves are required to function following a design basis accident, and they would be subjected to a harsh environment should a high energy line break occur inside the containment building.

An evaluation of the installed configuration, concluded on October 11, 1988 at 1000 hours, indicated that a potential for submerging the cables connected to the vent valves had been created. Because of the configuration, steam released from the high energy line could condense in the conduit surrounding the cable, eventually submerging the cable. The cables were not qualified in the submerged condition.

Because the conditions found on Unit Two rendered the configuration of the equivalent valves on Unit One suspect, Unit One commenced shut down for inspection on October 11, 1988 at 1045 hours.

At 1140 hours, the 1 hour notification of the Unit One T.S. shutdown was made to the NRC via the ENS. At 1146, the vent valves in question were de-energized. At 1400 hours the NRC 4-hour notification was made via the ENS, regarding the Environmental Qualification (EQ) concerns on the vent valves for Unit Two. Power reduction continued until Hot Standby condition was reached at 2152 hours. On October 12, 1988 at 0930 hours, additional information was given to the NRC via the ENS regarding the EQ concerns of the vent valves.

During inspections of similarly qualified cabling in Unit One containment, the configuration of the electrical cable junction boxes for Pressurizer Power Operated Relief Valves (EIIS/AB-RV) limit switches (EIIS/AB-33) were also found to be discrepant relative to the installation requirements in that the junction boxes did not have the required drain holes.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
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D. C. COOK NUCLEAR PLANT - UNIT 1	0 5 0 0 0 3 1 5	8 8	— 0 1 0	— 0 0	0 3	OF	0 4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

Cause of the Event

During a documentation review performed in 1983, prior to EQ operability declaration, the configuration of the Pressurizer and Reactor Head Vent Valves as installed in 1981 were found not to be in accordance with the EQ test configuration. For corrective measures, a design change to add a water-tight (Conax) connector at the valves' solenoids was initiated. However, an additional configuration requirement (intended slope direction of the conduit) was not communicated to the installation organization. As a result, the installation completed in 1985 did not meet the EQ requirements.

The requirement to have drain holes in the limit switch junction boxes for the PORV's was correctly communicated to the installation organization but was inadvertently omitted (cognitive error) during the installation performed during 1982.

Analysis of Event

This report is being submitted under 10CFR50.73(a)(2)(i) as the completion of plant shutdown required by Technical Specifications, and 10CFR50.73(a)(2)(v) as a condition that alone could have prevented the fulfillment of the safety function of a system that is needed to mitigate the consequences of an accident.

The vents are designed to mitigate a possible condition of inadequate core cooling, inadequate natural circulation, or an inability to depressurize the system. These conditions would result from the accumulation of non-condensable gases or steam in the reactor coolant system.

Electrical cables provide power to the vent system's solenoid operated valves. In the event of a high energy line break inside the containment building, a steam environment is created in the lower compartment. Condensation of steam inside the conduits containing the cables could potentially submerge them in a pool of water. The cables are not qualified for submergence.

The vent valves are included in the emergency operating procedure for inadequate core cooling. Their use is prescribed if operation of the emergency core cooling system, operation of the reactor coolant pumps, and the opening of the pressurizer power operated relief valves fail to maintain the core exit fluid temperature below 1200 degrees Fahrenheit. Because of the installed configuration, the vent system which provides additional capability may not have been available.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  D. C. COOK NUCLEAR PLANT - UNIT 1	DOCKET NUMBER (2)  0   5   0   0   0   3   1   5	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8   8	—   0   1   0	—   0   0	0   4	OF	0   4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

During shutdown, attempts to borate the Reactor Coolant System (EIIS/AB) through the Normal Boration (EIIS/CB) flowpath were unsuccessful, and this flowpath was declared inoperable at 1048 hours. Attempts to borate through the Emergency Boration (EIIS/CB) flowpath also appeared at first to be unsuccessful, and this flowpath was declared inoperable at 1107 hours. With the Refueling Water Storage Tank (EIIS/BP-TK) remaining operable, T.S. 3.1.2.2 requires a flowpath be restored to operable status within 72 hours or the unit to be in Hot Standby within 6 hours. Reactor power was held at 90 percent power until 1136 hours when the Emergency Boration flowpath was confirmed to be operable. Power reduction at 10 percent per hour then began.

Partial failure of heat trace tape, combined with a delay in replacing insulation associated with maintenance activities, resulted in solidification of borated water in the normal boration flow path.

Corrective Action

The configuration discrepancies of the vent valves and the junction boxes have been corrected in Unit One. Unit Two correction will be completed prior to restart after refueling. Restoration of proper heat tracing and insulation resolved the flow blockage condition on the normal boration flow path. Unit One was restarted on October 14, 1988.

This is an interim report pending completion of an evaluation to confirm that no additional actions are necessary. An updated report will be submitted prior to Unit Two startup (tentatively scheduled for February 2, 1989).

Failed Component Identification

There were no specific component failures during this event.

Previous Similar Events

There have been no previous EQ concerns of this nature at Donald C. Cook Nuclear Plant.

Indiana Michigan  
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Cook Nuclear Plant  
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616 465 5901



November 10, 1988

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

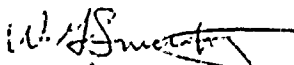
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Document Control Manager:

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

88-010-00

Sincerely,

  
W. G. Smith, Jr.  
Plant Manager

WGS:clw

Attachment

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