



September 8, 2000

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

Operating Licenses DPR-58 and DPR-74
Docket Nos. 50-315 and 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 315/1998-058-01, "Postulated High Energy Line Break Could Result in Condition Outside Design Bases for Auxiliary Feedwater."

A supplement to this LER was to be submitted to provide the corrective actions for the described condition. Subsequently, an assessment of the high energy line break (HELB) program identified several programmatic deficiencies. The corrective actions associated with HELB programmatic deficiencies are documented in Donald C. Cook Nuclear Plant LER 315/1999-026-00, "High Energy Line Break Programmatic Inadequacies Result in Unanalyzed Conditions," submitted in November 1999, and include corrective and preventive actions for the condition described in the attached LER. As such, LER 315/1998-058-01 is being submitted to close out this individual HELB issue to LER 315/1999-026-00.

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, appearing to read 'A. Bakken', with a large circular flourish at the end.

A. Christopher Bakken, III
Site Vice President

/srd
Attachment

Handwritten initials 'JED2' in black ink.

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

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)

Donald C. Cook Nuclear Plant Unit 1

DOCKET NUMBER (2)

05000-315

PAGE (3)

1 of 3

TITLE (4)

Postulated High Energy Line Break Could Result in Condition Outside Design Bases for Auxiliary Feedwater

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	
11	16	1998	1998	--	058	--	01	09	08	2000	Cook Plant Unit 2 05000-316
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)		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

Mr. Ron Gaston, Regulatory Affairs

TELEPHONE NUMBER (Include Area Code)

616 / 465-5901, x1366

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)

YES

(If Yes, complete EXPECTED SUBMISSION DATE).

X

NO

EXPECTED
SUBMISSION
DATE (15)

MONTH

DAY

YEAR

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

This supplement is submitted to close out this individual high energy line break (HELB) issue to LER 315/1999-026-00.

During a Safety System Functional Inspection (SSFI) self-assessment of the Auxiliary Feedwater (AFW) System, a request was made to review the High Energy Line Break (HELB) analysis for the AFW pump common hallway. The Unit 1 East Motor Driven Auxiliary Feedwater Pump (MDAFP), Unit 1 Turbine Driven Auxiliary Feedwater Pump (TDAFP), Unit 2 East MDAFP, and Unit 2 TDAFP are located adjacent to each other and share a common hallway. A HELB analysis for the hallway could not be located. Evaluation of the potential effects of a HELB on the AFW pumps resulted in the conclusion that this condition could lead to the concurrent failure of the TDAFP and a single MDAFP. On November 16, 1998 this condition was determined to be reportable. Therefore, this LER is being submitted in accordance with 10 CFR 50.73 (a)(2)(ii)(B) as a condition outside the design bases of the plant.

The root cause of this condition was determined to be deficiencies associated with the administration of the HELB program. An independent assessment of the program has been completed, which identified several programmatic deficiencies. The corrective actions associated with these HELB programmatic deficiencies are documented in LER 315/1999-026-00, "High Energy Line Break Programmatic Inadequacies Result in Unanalyzed Conditions," submitted in November 1999, and include corrective and preventive actions for the condition described in this LER.

The safety significance of this condition was evaluated considering the loss of both the TDAFP and a single MDAFP on a HELB in the area. Based on the fact that a single MDAFP can provide sufficient flow in order to safely shut down the plant and one MDAFP would be unaffected by the HELB, it was determined that the condition did not pose a threat to the health or safety of the public.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER			REVISION NUMBER	2 of 3
		1998	--	058	--	01	
Donald C. Cook Nuclear Plant Unit 1	05000-315						

Donald C. Cook Nuclear Plant Unit 1

05000-315

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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 in Mode 5, Cold Shutdown

Unit 2 was in Mode 5, Cold Shutdown

Description of Event

On September 21, 1998, a Safety System Function Inspection (SSFI) self-assessment of the Auxiliary Feedwater (AFW) system began, using SSFI techniques in accordance with NRC Inspection Procedure 93801, "Safety System Functional Inspection". The inspection team utilized a vertical slice review in the functional areas of engineering design and configuration control, operations, maintenance, surveillance and testing, and quality assurance and corrective actions. The self-assessment concluded on October 23, 1998.

During the SSFI, an inquiry was made to review the High Energy Line Break (HELB) analysis for the AFW pump common hallway. No such analysis could be located. On November 16, 1998 it was determined that the potential effects of a HELB in the area was reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition outside the design bases of the plant.

The Unit 1 East Motor Driven Auxiliary Feedwater Pump, Unit 1 Turbine Driven Auxiliary Feedwater Pump, Unit 2 East Motor Driven Auxiliary Feedwater Pump, and Unit 2 Turbine Driven Auxiliary Feedwater Pump are located adjacent to each other and share a common hallway. The steam used to drive the TDAFP turbines is provided by 4 inch supply lines, which tap off of the 30 inch Main Steam header. Due to the 4 inch steam supply lines, it is possible for a HELB to occur in either of the TDAFP rooms. To help mitigate the consequences of the postulated break, the doors to the TDAFP rooms are propped open while the doors to the MDAFP rooms are maintained closed. This arrangement allows the steam from the HELB to exhaust into the common hallway shared by the pumps. Investigation has revealed that no analysis could be located which evaluated the effects of the HELB on the equipment in the common hallway. A line break in the area will result in a temperature of 330 °F and a pressure of 14.7 psia, as indicated on plant drawing 1(2)-1355.

Four components were identified which may be rendered inoperable following a HELB. Those four components are:

1. The cable which supplies power to 1-WMO-753, Essential Service Water Supply To The TDAFP -- The qualification report for the cable states that it can operate in an environment of 250 °F, 26.7 psia, and 100% relative humidity. Since the qualified temperature of the cable is less than the calculated temperature of 330 °F, it was assumed to fail.
2. The cable which supplies power to 1-WMO-754, Essential Service Water Supply To The East Motor Driven Auxiliary Feedwater Pump -- The qualification report for the cable states that it can operate in an environment of 250 °F, 26.7 psia, and 100% relative humidity. Since the qualified temperature of the cable is less than the calculated temperature of 330 °F, it was assumed to fail.
3. The cable which supplies power to 2-WMO-753, Essential Service Water Supply To The TDAFP -- The qualification report for the cable states that it can operate in an environment of 250 °F, 26.7 psia, and 100% relative humidity. Since the qualified temperature of the cable is less than the calculated temperature of 330 °F, it was assumed to fail.
4. The cable which supplies power to the solenoid for 2-FRV-258, TDAFP Emergency Leakoff Regulating Valve -- No qualification records could be located for the cable; therefore, it was conservatively assumed that the valve would fail.

The electrical components listed above may not withstand the effects of the harsh steam-air environment. Per Table 14.4.2-1 of the UFSAR, the four components are required for the safe shutdown of the plant. Therefore, it was concluded this condition could lead to the failure the TDAFP and a single MDAFP upon a HELB in the area.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER(2)	LER NUMBER (6)				PAGE (3)
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		1998	--	058	--	01
Donald C. Cook Nuclear Plant Unit 1	05000-315					3 of 3

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

Cause of Event

The root cause of this condition is that the HELB program lacks a clearly defined, centralized owner. It was determined that there is no central location for the HELB analyses that have been completed for the plant. The information is fragmented throughout the organization. Also, there is no single authority responsible for the HELB program and much of the HELB program appears to be "tribal knowledge" held by different individuals throughout the organization. In effect, the procedural controls for the HELB program are inadequate.

Analysis of Event

This LER is submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B), as a condition outside the design bases of the plant.

The AFW system provides water to the steam generators when main feedwater is unavailable because of a loss of main feedwater, unit trip, feedwater or steam line break, loss of off-site power, or small break Loss of Coolant Accident (SBLOCA). This water removes core residual heat to prevent the release of primary water through the pressurizer safety or power-operated relief valves and allows the plant to cool down to the point at which Residual Heat Removal (RHR) can be placed in service.

Each unit is equipped with one turbine driven AFW pump and two motor driven AFW pumps. For each unit, the TDAFP serves all four steam generators and each MDAFW pump serves two steam generators. The steam to the AFW pump turbine is supplied from two of the steam generators.

The preferred source of water for the AFW system is the non-safety related CST. Each unit's CST is cross-tied by a normally closed air operated valve to provide condensate to the opposite unit's AFW. If both CSTs are unavailable, water is supplied from Lake Michigan via the safety related ESW system, which is connected upstream of the AFW pump suction strainers. A minimum of 175,000 gallons is required to maintain the unit at hot shutdown for nine hours.

A HELB in the area may lead to a concurrent failure of the TDAFP and a single MDAFP. As determined by the Appendix R analyses, a single MDAFP, with a capacity of 450 gpm, can provide adequate cooling in order to safely shut down the unit. The West MDAFP would not be affected by a HELB in the area. Therefore, it was concluded that this condition does not jeopardize health and safety of the public.

Corrective Actions

An independent assessment of the HELB program has been performed by an outside consultant. Several programmatic deficiencies were identified during the assessment. The corrective actions associated with these HELB programmatic deficiencies are documented in LER 315/1999-026-00, "High Energy Line Break Programmatic Inadequacies Result in Unanalyzed Conditions," submitted in November 1999, and include corrective and preventive actions for the condition described in this LER.

Previous Similar Events

None.