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ComEd

November 30, 1994

JSPLTR 94-0024

U.S. Nuclear Regulatory Commission
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Washington, D. C. 20555

Supplemental Report No. 1 to Licensee Event Report 94-006, Docket 50-237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10CFR50.73(a)(2)(v).

Sincerely,

J. Stephen Perry
Vice President
BWR Operations

JSP/GCE:cfq

Enclosure

cc: J. Martin, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED 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)	PAGE (3)
Dresden Nuclear Power Station, Unit 2	05000237	1 OF 4

TITLE (4)
Unit 2 Shutdown Cooling Pump Motors did not have Relay Setting Orders Reviewed Prior to Motor Installations due to Inadequate Work Practices

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
									None	
02	05	94	94	-- 006 --	01	03	07	94	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	099

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(c)
	20.2203(a)(2)(i)		20.2203(a)(4)	X	50.73(a)(2)(v)		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)
George C. Eckert III, SEC Ext. 2796	(815) 942-2920

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
X	YES (If yes, complete EXPECTED SUBMISSION DATE).		NO		09	16	94

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

At approximately 1300 hours on February 5, 1994 with Unit 2 at 99% power, it was discovered that the installed Unit 2 Shutdown Cooling Pump Motors, which were replacement motors, had different electrical characteristics than the original motors. It was determined that a review of the protective relay setpoints for these motors had not been performed.

Subsequent engineering analysis indicated that the relay setpoints should be reset to accommodate the installed motors. The analysis also indicated that the coordination between the motor feed breakers and the main feed breakers to ESS buses 23-1 and 24-1 had not been affected. The ESS buses were never in jeopardy of becoming unavailable due to a fault at or on any of the Shutdown Cooling Pump motors. The protective relay setpoints were reset and the pumps declared operable.

EVENT IDENTIFICATION:

Unit 2 Shutdown Cooling Pump Motors did not have Relay Setting Orders Reviewed Prior to Motor Installations due to Inadequate Work Practices.

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 2 Event Date: 02/05/94 Event Time: 1300 hrs

Reactor Mode: N Mode Name: Run Power Level: 99%

Reactor Coolant System Pressure: 1000 psig

B. DESCRIPTION OF EVENT:

At approximately 1300, on February 5, 1994 with Unit 2 operating at 99% power, it was determined that replacement motors installed on the 2A, B, and C Shutdown Cooling pumps did not receive an evaluation of the effect of the replacement motors on protective relay (breaker) settings. This problem was discovered during a similar installation on Unit 3.

The Unit 2 Shutdown Cooling Pumps were declared administratively inoperable per Dresden Administrative Technical Requirements 3/4.9 on February 5, 1994 at 1459. An ENS phone notification was made at 1459 EST, February 5, 1994 to report a condition affecting RHR Capability. Engineering analysis was performed to determine the correct relay setpoints and the effect the new setpoints would have on the ESS buses [EB]. The analysis indicated that the relay setpoints should be reset to accommodate the installed motor. The new relay setpoints would not affect the coordination of any of the motor feed breakers with the upstream ESS bus feed breakers. Therefore, the upstream relays would not be reset.

The existing configuration of the installed motors and existing relay setpoints did not adversely affect the availability of the ESS buses. The existing relay setpoint had both the long time and instantaneous settings too low for the existing motor. As such, a motor may have spuriously tripped its feed breaker due to high current but would not have challenged the main feed breaker to the ESS buses.

C. CAUSE OF EVENT:

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(v) which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of systems needed to remove residual heat.

The apparent cause of having motors installed without a review of their protective relay setpoints is due to a preconceived idea that this motor changeout was a like-for-like replacement and did not require an engineering review. This work was classified as reliability related. The existing work practices and procedures do not require an engineering review of this type of work package. The interaction of the replacement motor with the existing

protective relaying was not understood or believed to be a problem. Consequently, the change was not compatible with the as built condition.

D. SAFETY ANALYSIS:

The Shutdown Cooling System is not considered safety related or used to mitigate the consequences of any design basis accident. The protective relays were found to be improperly set in the direction which would have resulted in spurious tripping of the affected motors. Engineering analysis of the installed protective relay setpoints determined that the safety related bus which feeds the affected motors would have been protected from a postulated fault. All three of the affected motors have been satisfactorily run since their installation thereby making it highly unlikely that all three Shutdown Cooling Pump motors would have simultaneously caused breaker trips upon demand. Furthermore, if all three Shutdown Cooling pumps were lost, procedural guidance exists per DOA 1000-1 if alternate Shutdown Cooling methods were required.

The ESS 23-1 and 24-1 4kv buses provide the electrical feed to the Shutdown Cooling Pump motors. At no time were these buses in jeopardy of being lost because of the improperly set protective relays for the Shutdown Cooling Pump motors. The protective relays for the Shutdown Cooling Pump motor breakers must coordinate with the protective relays on the main feed breakers to the ESS buses. Coordination ensures that a fault at a load will be cleared by the load breaker and will not propagate upstream to the main feed breaker. Coordination existed between the Shutdown Cooling Pump motor breakers and the main feed breakers both before and after the Shutdown Cooling Pump motors protective relays were reset. Therefore, if a fault condition existed at or on a Shutdown Cooling Pump motor, the motor feed breaker would have tripped without affecting the availability of the ESS bus.

E. CORRECTIVE ACTIONS:

1) The protective relays for all three Shutdown Cooling Pump motor breakers were reset on 2/11/94.

2) As a result of this event, a root cause investigation team was formed to determine what work procedures or practices should be modified to prevent recurrence of this event. The team consisted of representatives from operations, system engineering, electrical maintenance, stores, and site engineering departments. The root cause of the event was determined to be a breakdown in the station work request program. The new motors were believed to be a like-for-like substitution for the existing motors. However, although the new motors matched the existing motors in horsepower, voltage, RPM, and other parameters, certain characteristics were not the same. These characteristics, including the fact that the new motors were high efficiency, gave the new motors different electrical current requirements.

Existing procedures were reviewed to determine if they were violated, unclear, or lacking necessary information for this specific event. It was determined, however, that the existing procedures governing work request generation and processing were not violated and did not need to be revised. Instead a heightened level of awareness concerning motor

characteristics and their effects on electrical systems was achieved through engineering correspondence and training. The Site Engineering - Plant Support department issued a letter (CHRON #0302044) listing certain motor parameters which affect relay setpoints. The letter was issued to Site and Systems Engineering personel as well as electrical maintenance work analysts. For future reference the letter was incorporated into the Work Analyst's Guide to Work Package Preparation as a supplement for this lesson learned. This event was included in the operator's six week training cycle, and was presented in tailgate as a lessons learned item. To assure the lessons learned form this event were identified to the appropriate personnel, the maintenance and engineering individuals involved in the motor replacement were members of the root cause evaluation team and responsible for the lessons learned identification and these corrective actions. Also, the work analyst involved with the motor replacement recognizes and acknowledges his error and clearly understands the impact of motor characteristics on relays settings.

F. PREVIOUS OCCURRENCES:

There were no previous occurrences of this nature found.

G. COMPONENT FAILURE DATA:

None.