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SUBJECT: LER 93-008-01:on 930211,determined that logic sys
functional test requirements for emergency bus undervoltage
logic not fully implemented.Caused by inadequate
procedures.New procedures developed.W/930611 ltr.

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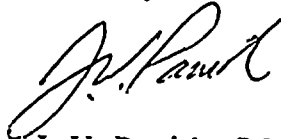
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21
LICENSEE EVENT REPORT NO. 93-008-01

Transmitted herewith is Licensee Event Report No. 93-008-01 for the WNP-2 Plant. This report is submitted in response to the report requirements of 10CFR50.73 and incorporates only minor administrative changes.

Sincerely,



J. V. Parrish (Mail Drop 1023)
Assistant Managing Director, Operations

JVP/CLF/jd
Enclosure

cc: Mr. B. H. Faulkenberry, NRC - Region V
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LICENSEE EVENT REPORT (LER)																					
FACILITY NAME (1) Washington Nuclear Plant - Unit 2												DOCKET NUMBER (2) 0 5 0 0 0 3 9 7				PAGE (3) 1 OF 5					
TITLE (4) LOGIC SYSTEM FUNCTIONAL TEST REQUIREMENTS FOR EMERGENCY BUS UNDervOLTAGE LOGIC NOT FULLY IMPLEMENTED DUE TO INADEQUATE PROCEDURE DEVELOPMENT																					
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 NUMBERS(S)								
0	2	1 1 9 3	9 3	0 0 8	0 1	0	6	1 1 9 3					0 5 0 0 0								
OPERATING MODE (9) 3			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																		
POWER LEVEL (10) 0 0 0			20.402(b) 20.405(a)(1)(i) 20.405(a)(1)(ii) 20.405(a)(1)(iii) 20.405(a)(1)(iv) 20.405(a)(1)(v)				20.405(C) 50.36(c)(1) 50.36(c)(2) X 50.73(a)(2)(i) 50.73(a)(2)(ii) 50.73(a)(2)(iii)				50.73(a)(2)(iv) 50.73(a)(2)(v) 50.73(a)(2)(vii) 50.73(a)(2)(viii)(A) 50.73(a)(2)(viii)(B) 50.73(a)(2)(x)				77.71(b) 73.73(c) OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
LICENSEE CONTACT FOR THIS LER (12)																					
NAME C. L. Fies, Licensing Engineer												TELEPHONE NUMBER									
												AREA CODE 5 0 9 3 7 7 - 4 1 4 5									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																					
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs		
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)				MONTH		DAY		YEAR	
YES (If yes, complete EXPECTED SUBMISSION DATE) X NO																					
ABSTRACT (16)																					
<p>At approximately 1054 hours on February 11, 1993, it was determined the method used to demonstrate operability for Division 1, 2, & 3 emergency power bus primary undervoltage protection logic circuits was not fully adequate to satisfy Technical Specification requirements. Operability of these circuits must be demonstrated periodically by performance of a Logic System Functional Test (LSFT). LSFT requirements were not fully implemented for portions of the primary undervoltage logic due to inadequacies in the existing test method.</p> <p>The root cause of this deficiency was inadequate provisions for review and evaluation of surveillance procedure suitability during initial development of the Technical Specification Surveillance Testing Program. As corrective action procedures were established to satisfy the primary undervoltage logic LSFT requirement, and functional testing of the undervoltage logic was performed. Additionally, a project to improve Technical Specification Surveillance Program implementation is in progress. Operability of those portions of the primary undervoltage logic that were not adequately verified previously has been demonstrated by testing. Consequently, the condition described in this report did not have an adverse effect on safe operation of the plant, or the health and safety of plant personnel or the general public.</p>																					

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TITLE (4) LOGIC SYSTEM FUNCTIONAL TEST REQUIREMENTS FOR EMERGENCY BUS UNDERVOLTAGE LOGIC NOT FULLY IMPLEMENTED DUE TO INADEQUATE PROCEDURE DEVELOPMENT											

Plant Conditions

Power Level - 0%

Plant Mode - 3 (Hot Shutdown)

Event Description

At approximately 1054 hours on February 11, 1993, it was determined the method used to demonstrate operability for Division 1, 2, & 3 emergency power bus primary undervoltage protection (loss of voltage) logic circuits did not fully satisfy Technical Specification Surveillance Requirements. In accordance with Technical Specification Surveillance Requirement 4.3.3.2, operability of these circuits must be demonstrated periodically by performance of a Logic System Functional Test (LSFT). LSFT testing requirements were not fully implemented for portions of the emergency power bus primary undervoltage logic due to inadequacies in the existing test method.

Immediate Corrective Action

As immediate corrective action, efforts were initiated to develop and approve test procedures necessary to fully demonstrate operability of the emergency power bus primary undervoltage protection logic. The 24 hour outage provision of Technical Specification 4.0.3 was utilized to develop these procedures and perform necessary testing.

Further Evaluation, Root Cause, and Corrective Action

A. Further Evaluation

1. The condition described in this report is reportable pursuant to the requirements of 10CFR50.73(a)(2)(i)(B) as an operation or condition that is prohibited by the plant Technical Specifications. Operability of the emergency power bus primary undervoltage protection logic was not fully demonstrated during prior plant operations when it was required. This condition resulted from LSFT requirements that were not adequately implemented within surveillance procedures.
2. Failure to fully implement LSFT requirements in surveillance procedures was identified and documented by an NSA (Nuclear Safety Assurance) engineer on February 11, 1993, during review of an Operating Experience (OE) report received via the INPO Network. The OE described a condition identified at another plant involving failure to fully demonstrate

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operability of undervoltage relays due to a surveillance testing method deficiency. Although undervoltage logic testing deficiencies at WNP-2 were identified during the OE review, the condition described in the OE was not directly related to the condition described in this report.

The OE review examined WNP-2 surveillance procedures used to test the emergency power bus undervoltage protection logic, and determined the test method used to perform functional testing of the emergency power bus primary undervoltage logic did not fully satisfy Technical Specification requirements. The OE review did not identify any deficiencies within the method used to test the emergency power bus secondary (degraded voltage) undervoltage protection logic.

Consistent with the Technical Specification definition of an LSFT, which allows testing to be performed in a series of overlapping and sequential steps, testing of primary undervoltage protection logic located in the field, and testing of undervoltage relays, were provided in separate procedures. Primary undervoltage relay operation was demonstrated by performance of a bench check within the relay calibration procedure. A test voltage input was applied to the relay, and each of the output signal contacts was checked for proper operation. This test method adequately verified relay operation.

Demonstration of operability for the undervoltage logic was provided within the HPCS and standby diesel generator surveillance procedures for Loss of Offsite Power (PPM 7.4.8.1.1.2.6 and PPM 7.4.1.1.8.2.5B/C). These procedures verify that an undervoltage condition on the input side of the primary undervoltage relays results in appropriate overall logic system response. The primary undervoltage logic for each emergency power bus utilizes output contacts from a pair of undervoltage relays configured in parallel to provide a 1 of 2 actuation logic. Consequently, because these relays must close to perform their safety function, this test method only provides ~~positive~~ functional verification of relay contacts and wiring necessary to accomplish the minimum actuation logic, which is one relay output contact per emergency bus. Failure of a set of contacts or its associated wiring might not have been detected by this test method.

3. Two new test procedures were developed and approved on February 11, 1993, in order to fully implement LSFT requirements for the emergency power bus primary undervoltage logic. Undervoltage logic for Division 1 and 2 emergency power busses was subsequently tested satisfactorily and declared operable at 2250 hours (12 hours after discovery) on February 11, 1993, and undervoltage logic for the Division 3 emergency power bus was tested satisfactorily and declared operable at 2345 hours (13 hours after discovery).

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TITLE (4) LOGIC SYSTEM FUNCTIONAL TEST REQUIREMENTS FOR EMERGENCY BUS UNDERVOLTAGE LOGIC NOT FULLY IMPLEMENTED DUE TO INADEQUATE PROCEDURE DEVELOPMENT															

B. Root Cause

The condition described in this report resulted from failure to fully incorporate surveillance requirements into plant procedures. The root cause of this deficiency was inadequate provisions for review and evaluation of surveillance procedure suitability during initial development of the Technical Specification Surveillance Testing Program. Programmatic aspects of this deficiency have been previously identified, and are being addressed by the project described in Item 4 of the Further Corrective Action section of this report.

C. Further Corrective Action

The following corrective actions either have been, or will be taken:

1. The following procedures were developed to satisfy LSFT requirements for the emergency power bus undervoltage protection logic:
 - a) PPM 7.4.3.3.1.85, SM-4 Loss of Voltage Relays-CFT, was developed to test undervoltage logic for the Division 3 emergency power bus.
 - b) PPM 8.3.278, "SM-7 and SM-8 Primary Under Voltage Logic Test", was developed to test undervoltage logic for Division 1 and 2 emergency power busses.
2. Previously untested portions of the emergency power bus undervoltage protection logic were demonstrated to be operable by successful performance of procedures, PPM 7.4.3.3.1.85 and PPM 8.3.
3. LSFT requirements currently satisfied by PPM 8.3 will be permanently integrated into surveillance procedures, PPM 7.4.1.1.8.2.5B and PPM 7.4.8.1.1.2.5C. Completion of this action is scheduled for June 4, 1993.
4. As a corrective action for previous events, a project team is performing a technical and compliance review of the Technical Specification Surveillance Program. This review will ensure that procedures used to satisfy Technical Specification Surveillance Requirements are technically accurate, and that each Surveillance Requirement is satisfied within plant procedures.

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Safety Significance

Recent testing has demonstrated that those portions of the emergency power bus primary undervoltage protection logic that were not adequately verified previously were capable of performing their safety function during prior plant operations. Additionally, functions provided by these portions of undervoltage protection logic are also provided by redundant undervoltage relay contacts and wiring. Consequently, the condition described in this report did not have an adverse effect on safe operation of the plant, or the health and safety of plant personnel or the general public.

Similar Events

Previous instances involving procedures that were not adequate to satisfy Surveillance Requirements have recently been reported in LERs 91-013, 018, 019, 028, 036, 92-002, and 92-035. A corrective action to perform a technical and compliance review of Technical Specification Surveillance Requirement implementation has been initiated in response to these previous events.

EIIS Information

Text Reference

Emergency Power Bus
 Primary Undervoltage Relay
 High Pressure Core Spray System (HPCS)
 Standby Diesel Generator
 HPCS Diesel Generator

EIIS Reference

<u>System</u>	<u>Component</u>
EA	BU
EA	27
BG	--
EK	DG
EK, BG	DG