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January 24, 1997
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Beaver Valley Power Station, Unit No. 2
Docket No. 50-412 License No. NPF-73
LER 96-003-01

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

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 96-003-01, 10 CFR 50.73(a)(2)(i), "Generic Letter 96-01 - Inadequate Testing of Safety Related Logic Circuits."

Ronald L. LeGrand

R. L. LeGrand
Division Vice President
Nuclear Operations

LB/ds

Attachment

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NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98
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)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Beaver Valley Power Station Unit 2	05000412	1 OF 7

TITLE
Generic Letter 96-01 Inadequate Testing of Safety Related Logic Circuits

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
12	13	96	96	003	01	01	24	97	Beaver Valley Power Station Unit 1	05000334
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	Unit 1 - 1 Unit 2 - 4/5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	Unit 1 - 100% Unit 2 - 0%	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in abstract below and in Text NRC Form 366A)
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (include Area Code)
R. L. LeGrand, Vice President Nuclear Operations and Plant Manager	(412) 393-7622

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS				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		05	31	97

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

As a result of reviews being performed in response to Generic Letter 96-01, "Testing of Safety-Related Logic Circuits," the following conditions have been discovered and determined to be reportable under 10 CFR 50.73 (a) (2) (i) (B):

1. On June 6, 1996, with Unit 2 in Mode 1 at 100% power, review revealed that turbine trip relays 99-R/RPT and 99X-R/RPT were not included in surveillance testing.

2. On June 8, 1996, with Unit 2 in Mode 1 at 100% power, review revealed that interposing relays SDX7A1, SDX7A2, SDX7B1, and SDX7B2 were not adequately tested. Previous reviews performed did not reveal these conditions. The deficient tests were revised and the affected circuits were satisfactorily tested.

3. On December 6, 1996, with Unit 2 in Mode 4 at 0% power, review revealed that Control Room Emergency Ventilation System supply heaters 2HVC-CH222A and 2HVC-CH222B were not adequately tested. The operability of the heaters had been verified by voltage and current measurements on December 5, 1996 for heater 2HVC-CH222A and was verified on December 6, 1996 for heater 2HVC-CH222B. The deficient test procedures were revised on December 13, 1996.

4. On December 13, 1996, with Unit 2 in Mode 5 at 0% power, review revealed that the control circuits for Supplemental Leak Collection and Release System (SLCRS) moisture separator heaters 2HVS-CH219A and 2HVS-CH219B were not adequately tested. The operability of the heaters was verified via voltage and current measurements on December 13, 1996. Revisions to the deficient test procedures were made on January 3, 1997.

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor

Solid State Protection System/relay {JG/RLY CTR}*

*Energy Industry Identification System (EIIS) codes and component function identifier codes appear in the text as {SS/CCC}.

IDENTIFICATION OF OCCURRENCE

Event Date: June 6, 1996

Evaluation of this event extended from June 4, 1996 to June 9, 1996.

Date Determined to be Reportable: June 6, 1996.

CONDITIONS PRIOR TO OCCURRENCE

Unit 2: Mode 1, 100% Reactor Power

There were no structures, components, or systems that were inoperable at the start of the event that contributed to the event.

DESCRIPTION OF EVENT

On June 4, 1996, a review of the Unit 1 reactor trip (LER 1-96-008) had initiated a physical and electrical review of the Unit 1 turbine trip circuits. As a result of the discovery of test lights installed in parallel with a turbine trip and two other solenoid coils, the review was expanded to include Unit 2 turbine trip circuitry. This review revealed several design differences between the two unit's turbine trip logic circuitry. Based on this, a review of the surveillance tests for each unit was initiated.

On June 6, 1996, surveillance testing and Technical Specification review revealed that Unit 2 turbine trip relays 99-R/RPT and 99X-R/RPT were not included in surveillance testing. The purpose of these relays is to provide the B train turbine trip on either: reactor trip; steam generator high-high level; or safety injection (train B) initiation. Testing was subsequently performed, and the results were satisfactory.

As a result of this discovery, a review of Solid State Protection System slave relay circuits was undertaken in order to determine if there was a generic testing deficiency of interposing relays actuated from SSPS slave relays at Unit 2. Thirty-five different Unit 2 slave relay circuits were reviewed. Each review consisted of three steps. First, each circuit was reviewed to identify all relays, starting with the solid state protection system slave relay and ending with the final actuating device. Then, a licensing review was performed on each of these packages to identify relays which perform a safety related function required by Technical Specifications and the USFAR. Third, station surveillance procedures were reviewed to determine if each of the safety related Technical Specification or UFSAR required relays was tested per surveillance procedure.

On June 8, 1996, it was determined, as a result of this review, that Unit 2 interposing relays, SDX7A1, SDX7A2, SDX7B1, and SDX7B2 were not adequately tested. Surveillance tests were revised, and these relays were satisfactorily tested on June 9, 1996. These relays implement the P-12 interlock.

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

DESCRIPTION OF EVENT continued

The surveillance test procedure history has shown that this contact logic for the P-12 interlock has not been included in surveillance testing for Unit 2. The purpose of this interlock is to automatically reinstate a block of the non safety related steam dump valves when Tavg is less than or equal to 541°F.

CAUSE OF EVENT

The cause of this event is attributed to inadequate reviews performed previously to assess the adequacy of safety related logic testing at Beaver Valley. These reviews failed to identify the inadequate testing of interposing relays.

CORRECTIVE ACTIONS

1. A review of applicability to both units was performed. The results of the Unit 1 review can be found in LER 96-004-01.

2. Procedures 1OM-51.4.C, 2OM-51.4.C and 2OST-1.12.A were revised and the contact functions for the P-12 permissive were tested satisfactorily.

3. In accordance with the Duquesne Light Company response to NRC Generic Letter 96-01 entitled "Testing of Safety-Related Logic Circuits," a comprehensive validation of Unit 1 and Unit 2 surveillance procedures with regard to satisfying logic testing requirements of safety related logic circuits will be performed. These reviews will be completed as specified in our commitment response.

REPORTABILITY

This event is reportable in accordance with 10 CFR 50.73 (a) (2) (i) (B), as a condition prohibited by Technical Specifications.

SAFETY IMPLICATIONS

A review of the Unit 2 UFSAR was performed and it was concluded that a failure to test the P-12 interlock does not prevent the fulfillment of the function of any systems, structures or components necessary to shutdown and maintain a safe shutdown. The UFSAR Section 15.2.2, "Loss of External Electrical Load and/or Turbine Trip," bounds the failure of the non safety related steam dump system to arm. As part of the post trip reviews, the P-12 function has been verified after each reactor trip. The UFSAR section 15.1.4, "Accidental Depressurization of the Main Steam System," bounds the case where the steam dump system armed prematurely and a steam dump valve inadvertently opened.

Based on the above, the health and safety of the public were not affected.

SIMILAR EVENTS

There were two similar events during the last two years regarding inadequate testing of safety related logic. These are LER 1-96-004, "Generic Letter 96-01 Incorrect Test Frequency of Safety Related Logic," and LER 1-96-006, "Inadequate Testing of Safety Injection Relays."

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor (PWR)

Control Room Emergency Ventilation System {VI}*

Control Room Emergency Ventilation System supply heaters 2HVC-CH222A and 2HVC-CH222B {VI/EHTR}*

*Energy Industry Identification System (EIIS) codes and component function identifier codes appear in the text as {SS/CCC}.

IDENTIFICATION OF OCCURRENCE

Event Date: December 6, 1996

Date Determined to be Reportable: December 24, 1996.

CONDITIONS PRIOR TO OCCURRENCE

Unit 1: Mode 1, 100% Reactor Power

Unit 2: Mode 4, 0% Reactor Power

There were no structures, components, or systems that were inoperable at the start of the event that contributed to the event.

DESCRIPTION OF EVENT

On December 6, 1996, with Unit 2 in Mode 4 at 0% power, a review performed in response to Generic Letter 96-01 revealed that Control Room Emergency Ventilation System {EIIS:VI} supply heaters 2HVC-CH222A and 2HVC-CH222B {EIIS:VI/EHTR} were not adequately tested. Specifically, the monthly operating surveillance tests (OSTs) which implement the Technical Specification surveillance requirements for both Unit 1 and Unit 2 for these heaters do not adequately verify that that they are operating. The OSTs rely on a "FAN RELAY ENERGIZED," red light on the heater cover being energized to verify heater energization. A review of plant drawings for these heaters identified that illumination of this light only verifies that a fan relay, which is a permissive to energize the heaters, is energized. The operability of the heaters was subsequently verified by voltage and current measurements on December 5, 1996 (2HVC-CH222A) and December 6, 1996 (2HVC-CH222B). The deficient OSTs were appropriately revised on December 13, 1996 to include these voltage and current measurements and a calculation for total power dissipated by the heaters with prescribed kilowatt (kw) heater operability criteria.

CAUSE OF EVENT

The cause of this event is attributed to inadequate reviews performed previously to assess the adequacy of safety related logic testing at Beaver Valley. These reviews failed to identify the inadequate surveillance testing of heater 2HVC-CH222A and 2HVC-CH222B to verify operability.

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

CORRECTIVE ACTIONS

1. A review of applicability to Unit 1 is ongoing and will be completed by February 14, 1997.

2. The operability of the heaters was verified by voltage and current measurements on December 5, 1996 (2HVC-CH222A) and December 6, 1996 (2HVC-CH222B).

3. Monthly Surveillance Tests 2OST-44A.2, "Control Room Ventilation System Test Train A," and 2OST-44A.3, "Control Room Ventilation System Test-Train B," were revised on December 13, 1996. The test acceptance criteria in those revisions was the total power dissipated by the heater as calculated from measured line voltage and current. The calculated temperature rise across the heaters, the method used to verify operability for SLCRS Moisture Separator Heaters 2HVS-CH219A and 2HVS-CH219B, was evaluated for applicability to 2HVC-CH222A and 2HVC-CH222B and was incoporated in 2OST-44A.2 and 2OST-44A.3 on January 21, 1997.

4. In accordance with the Duquesne Light Company response to NRC Generic Letter 96-01 entitled "Testing of Safety-Related Logic Circuits," a comprehensive validation of Unit 1 and Unit 2 surveillance procedures with regard to satisfying logic testing requirements of safety related logic circuits will be performed. These reviews will be completed as specified in our commitment response.

REPORTABILITY

This event is reportable in accordance with 10 CFR 50.73 (a) (2) (i) (B), as a condition prohibited by Technical Specifications.

SAFETY IMPLICATIONS

Heater operability is required to maintain the humidity of the supply ventilation <70% under accident conditions, to maintain the efficiency of the charcoal adsorbers and thereby support Control Room habitability. The Control Room Emergency Ventilation System supply heaters 2HVC-CH222A and 2HVC-CH222B were verified to be operable via new test criteria on December 6, 1996. A 12 month preventive maintenance test which measures heater voltage and current has demonstrated operability on an annual basis. This testing demonstrated that there was no loss of heater operability.

Based on the above, the health and safety of the public were not affected.

SIMILAR EVENTS

There were six similar events during the last two years regarding inadequate testing of safety related logic:

1. LER 1-96-004-00, "Generic Letter 96-01 Incorrect Test Frequency of Safety Related Logic," dated April 24, 1996

2. LER 1-96-006, "Inadequate Testing of Safety Injection Relays," dated May 15, 1996

3. LER 1-96-004-01, "Generic Letter 96-01 Incorrect Test Frequency of Safety Related Logic," dated July 8, 1996

4. LER 1-96-004-02, "Generic Letter 96-01 Incorrect Testing of Safety Related Logic Circuits," dated August 6, 1996

5. LER 1-96-004-03, "Generic Letter 96-01 Incorrect Testing of Safety Related Logic Circuits," dated September 6, 1996

6. LER 1-96-004-04, "Generic Letter 96-01 Incorrect Testing of Safety Related Logic Circuits," dated December 20, 1996.

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor (PWR)

Supplementary Leak Collection and Release System (SLCRS)* {BH}

SLCRS Moisture Separator Heaters 2HVS-CH219A and 2HVS-CH219B {BH/ EHTR}*

*Energy Industry Identification System (EIIS) codes and component function identifier codes appear in the text as {SS/CCC}.

IDENTIFICATION OF OCCURRENCE

Event Date: December 13, 1996

Date Determined to be Reportable: December 24, 1996

CONDITIONS PRIOR TO OCCURRENCE

Unit 1: Mode 1, 100% Reactor Power

Unit 2: Mode 5, 0% Reactor Power

There were no structures, components, or systems that were inoperable at the start of the event that contributed to the event.

DESCRIPTION OF EVENT

On December 13, 1996, with Unit 2 in Mode 5 at 0% power, a review performed in response to Generic Letter 96-01 revealed that the control circuits for Supplemental Leak Collection and Release System (SLCRS) {EIIS:BH} moisture separator heaters 2HVS-CH219A and 2HVS-CH219B {EIIS:BH/EHTR} were not adequately tested. Specifically, the monthly operating surveillance tests (OSTs) which implement the Unit 2 Technical Specification surveillance requirements for these heaters do not adequately verify that they are operating. The OSTs rely on a building service panel indicating light above the three-position heater control switch to verify heater energization. A review of plant drawings for these heaters identified that this light only verifies that the breaker for the heaters is closed. The operability of the heaters was verified via voltage and current measurements on December 13, 1996. Revisions to the deficient test procedures were made on January 3, 1997.

CAUSE OF EVENT

The cause of this event is attributed to inadequate reviews performed previously to assess the adequacy of safety related logic testing at Beaver Valley. These reviews failed to identify the inadequate surveillance testing of SLCRS moisture separator heaters 2HVS-CH219A and 2HVS-CH219B to verify operability.

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

CORRECTIVE ACTIONS

1. A review of applicability to both units was performed on December 13, 1996.

2. The operability of heaters 2HVS-CH219A and 2HVS-CH219B was verified by voltage and current measurements on December 13, 1996.

3. Revisions were made to monthly surveillance tests 2OST-16.1, "Supplementary Leak Collection and Release Exhaust Fans and Remote Damper Component Test - Train A and 2OST-16.2, "Supplementary Leak Collection and Release Exhaust Fans and Remote Damper Component Test - Train B," on January 3 , 1996. The calculated temperature rise across the heaters is the new acceptance criteria used to verify operability for SLCRS Moisture Separator Heaters 2HVS-CH219A and 2HVS-CH219B.

4. In accordance with the Duquesne Light Company response to NRC Generic Letter 96-01 entitled "Testing of Safety-Related Logic Circuits," a comprehensive validation of Unit 1 and Unit 2 surveillance procedures with regard to satisfying logic testing requirements of safety related logic circuits will be performed. These reviews will be completed as specified in our commitment response.

REPORTABILITY

This event is reportable in accordance with 10 CFR 50.73 (a) (2) (i) (B), as a condition prohibited by Technical Specifications.

SAFETY IMPLICATIONS

Heater operability is required to maintain the humidity of the SLCRS exhaust ventilation <70% under postulated accident conditions, to maintain the efficiency of the charcoal adsorbers. SLCRS moisture separator heaters 2HVS-CH219A and 2HVS-CH219B were verified to be operable via the new test criteria on December 13, 1996. A 12 month preventive maintenance test which measures heater voltage and current has demonstrated operability on an annual basis. This testing demonstrated that there was no loss of heater operability.

Based on the above, the health and safety of the public were not affected.

SIMILAR EVENTS

There were six similar events during the last two years regarding inadequate testing of safety related logic:

1. LER 1-96-004-00, "Generic Letter 96-01 Incorrect Test Frequency of Safety Related Logic," dated April 24, 1996

2. LER 1-96-006, "Inadequate Testing of Safety Injection Relays," dated May 15, 1996

3. LER 1-96-004-01, "Generic Letter 96-01 Incorrect Test Frequency of Safety Related Logic," dated July 8, 1996

4. LER 1-96-004-02, "Generic Letter 96-01 Incorrect Testing of Safety Related Logic Circuits," dated August 6, 1996

5. LER 1-96-004-03, "Generic Letter 96-01 Incorrect Testing of Safety Related Logic Circuits," dated September 6, 1996

6. LER 1-96-004-04, "Generic Letter 96-01 Incorrect Testing of Safety Related Logic Circuits," dated December 20, 1996.