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December 5, 1990
ND3MNO:3070

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
LER 90-019-00

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

Gentlemen:

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

LER 90-019-00, 10 CFR 50.73.a.2.iv, "Engineered Safety Features Actuations Caused By Partial Loss of Offsite Power Due to High Winds".

Very truly yours,

T. P. Noonan
General Manager
Nuclear Operations

JGT/sl

Attachment



IE27
1/1

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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

# LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1): Beaver Valley Power Station Unit 2

DOCKET NUMBER (2): 0 5 0 0 0 4 1 2

PAGE (3): 1 OF 0 5

TITLE (4): Engineered Safety Features Actuations Caused By Partial Loss of Offsite Power Due to High Winds

| 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) |
| 1 1 | 0 5 | 9 0 | 9 0 | 0 1 9 | 0 0 | 1 2 | 0 5 | 9 0 | N/A | 0 5 0 0 0 |
| | | | | | | | | | | 0 5 0 0 0 |

| OPERATING MODE (9) | 1 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | |
|---|---|---|---|---|---|
| POWER LEVEL (10) | 1 0 0 | 20.402(b) | 20.405(c) | X 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 (Specify in Abstract below and in Text, NRC Form 366A) |
| | | 20.405(a)(1)(iii) | 50.73(a)(2)(i) | 50.73(a)(2)(viii)(A) | |
| | | 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 |
|---|---|
| | AREA CODE |
| T.P. Noonan, General Manager Nuclear Operations | 4 1 2 6 4 3 - 1 2 5 8 |

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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C | F K | X X X | X X X | N | | | | | | | |
| | | | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

| | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | X NO | | | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)


On 11/05/90, with the Unit in Cold Shutdown, the 2A System Station Service Transformer (SSST) was being supplied by offsite power (No. 2 138KV Bus). At 1802 hours, a fault occurred on the No. 2 138 KV Bus, causing a loss of power to the "A" Train Normal and Emergency 4KV Busses. The No.1 Emergency Diesel Generator started and loaded the 2AE bus. This loss of power also caused a loss of power to Unit 2 Control Room Radiation Monitor, 2RMC*RQI201, resulting in a Control Room Emergency Breathing Air Pressurization System (CREBAPS) actuation. The cause for this event was adverse weather conditions (high winds). The air bottles were isolated at 1807 hours, after verifying a spurious signal actuation. At 1835 hours, the CREBAPS signal was reset and the air bottles were unisolated. At 1904 hours, power was restored to the 2A SSST. The Nuclear Regulatory Commission was notified at 2024 hours. There were no safety implications as a result of this event. The electrical protection circuitry functioned to restore the "A" Train Emergency 4KV Bus. Core cooling capability was available through this transient, as the 21B Residual Heat Pump was started immediately upon the loss of the 21A Residual Heat Pump. CREBAPS air bottle pressure remained above the Technical Specification limit the entire time period.

DESCRIPTION OF EVENT

On 11/05/90, with the Unit in Cold Shutdown at reactor coolant system (RCS) pressure and temperature of 100 PSIG and 84F respectively, Train "A" Priority was in effect. Train "A" Priority signifies that the Train "A" related components are being used to satisfy all Technical Specification required operable components, including the No. 1 Emergency Diesel Generator and that no maintenance activities are permitted on these components. The "A" Train Normal and Emergency 4160 Volt (4 KV) Busses were being supplied offsite power from the No. 2 138KV Bus through the 2A System Station Service Transformer (SSST) (Figure 1). During normal operations, these busses are supplied by the Unit through the 2C Unit Service Station Transformer (USST). Upon a loss of power to the USST, a fast-bus transfer to the SSST is initiated. At 1700 hours, System Operations notified the Control Room of severe wind warnings. At 1802 hours, a fault occurred on the No. 2 138 KV Bus, causing a loss of power to the 2A SSST and the 2A, 2AE and 2B 4KV Busses (the "B" Train Emergency Bus and the No. 2 Emergency Diesel Generator were available and operable at all times). This resulted in a loss of power to the following running components: 21C Charging Pump (pump was racked in on the 2AE 4KV Bus), 21A Residual Heat Removal Pump, 21A Component Cooling Water Pump, and the 21C Service Water System Pump (also racked in on the 2AE 4KV Bus). The No.1 Emergency Diesel Generator started and loaded the 2AE bus. The 21A Component Cooling Water Pump started during the diesel generator loading sequence. The 21C Charging Pump was manually started, since the 21A Charging Pump was also racked on the 2AE 4KV Bus, but its control switch was in Pull-To-Lock, and the 21C Charging Pump will not receive the automatic start signal if the preferred pump is also on the bus (design feature). The 21A Service Water Pump was manually started. The 21C Service Water Pump did not start due to the same design feature previously discussed for the Charging Pumps. The 21B Residual Heat Removal Pump was manually started (powered from the 2DF 4KV Bus, which was unaffected) approximately 30 seconds after the loss of the 21A Residual Heat Removal Pump. No increase in RCS pressure or temperature were observed. Following verification of Emergency Diesel Generator capacity the 21A Residual Heat removal Pump was restarted at 1803 hours, and the 21B Residual Heat Removal Pump was manually shutdown. System Operations was contacted regarding the loss of the 138 KV Bus. System Operations reported that a Traveling Operator had been dispatched to investigate the fault. This loss of power also caused a subsequent loss of power to the Unit 2 Control Room Radiation Monitor, 2RMC*RQI201, as it receives 120VAC power from the 2AE 4KV Bus. The deenergizing of the radiation monitor resulted in a Control Room Emergency Breathing

Air Pressurization System (CREBAPS) actuation. The air bottles were isolated at 1807 hours, after verifying a spurious signal actuation, placing Unit 1 (Control Rooms are in a common envelope) into Technical Specification 3.0.3. At 1904 hours, System Operations verified acceptability for the restoration of normal offsite power to the 2A SSST. The No. 1 Emergency Diesel generator was restored to standby after restoring and paralleling 2AE 4KV and 2A 4KV power.

## CAUSE OF THE EVENT

The cause for this event was adverse weather conditions (high winds). The spurious fault was self-clearing and 138 KV power was restored automatically.

## CORRECTIVE ACTIONS

The following corrective actions have been taken as a result of this event:

1. The 21B Residual Heat Removal Pump was started approximately 30 seconds following the loss of power to the 21A Residual Heat Removal Pump.

2. The air bottles were isolated at 1807 hours, after verifying a spurious signal actuation. This placed Unit 1 (Control Rooms are in a common envelope) into Technical Specification 3.0.3.

3. At 1835 hours, the CREBAPS signal was reset and the CREBAPS air bottles were unisolated. This allowed Unit 1 to exit Technical Specification 3.0.3.

4. At 1904 hours, offsite power was restored to the 2A SSST. The 2A and 2AE 4KV Busses were subsequently restored to offsite power through the 2A SSST. The No. 1 Emergency diesel generator was returned to standby service.

## REPORTABILITY

The Nuclear Regulatory Commission was notified at 2024 hours in accordance with 10CFR50.72.b.2.ii. This written report is being submitted in accordance with 10CFR50.73.a.2.iv, as an event involving an Engineered Safety Features (ESF) System Actuation.

## SAFETY IMPLICATIONS

There were no safety implications as a result of this event. The electrical protection circuitry functioned as designed resulting in the starting and loading of the No. 1 Emergency Diesel Generator. Core cooling capability was available throughout this transient, as the 21B Residual Heat Pump was started immediately upon the loss of the 21A Residual Heat Pump. Due to the recent core reload and the time from shutdown, minimal decay heat was present. No increases in RCS pressure or temperature were observed. CREBAPS air bottle pressure remained above the Technical Specification minimum limit the entire time period prior to isolation.

## DIESEL GENERATOR RELIABILITY

In accordance with the Station Commitment to NRC Generic Letter 84-15, the reliability of the Diesel Generators based on the criteria of NUMARC 87-00, Appendix D, "EDG Reliability Program", are included.

| | Last 20 Demands | Last 100 Demands |
|---|---|---|
| Diesel Generator 2-1 | 1.00 | 1.00 |
| Diesel Generator 2-2 | 1.00 | 0.987* |

* - Reliability based on 77 Demands.

A "Demand" is considered a start of the diesel generator for normal monthly surveillance tests, refueling surveillance tests, unloaded starts for technical specification compliance, and unexpected loss of voltage (undervoltage) starts.

## PREVIOUS OCCURRENCES

The following are previously reported events involving CREBAPS actuations:

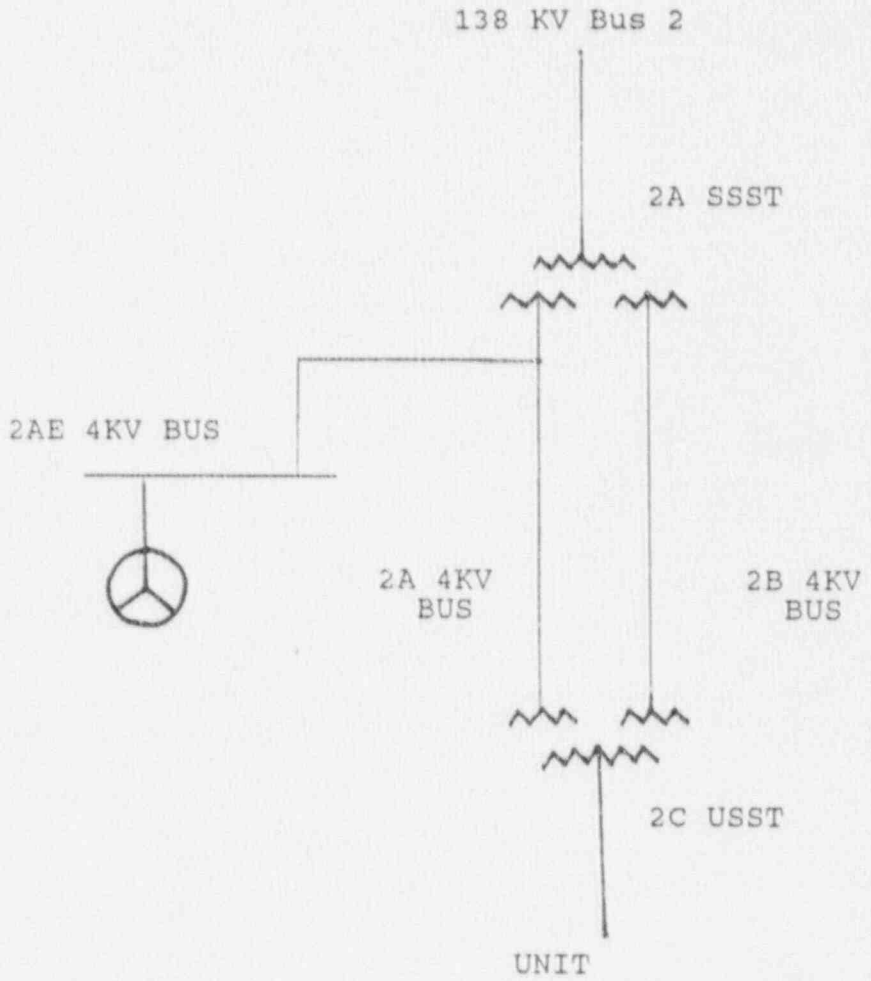
LER 88-019-00 "Inadvertent CREBAPS Actuation"
LER 89-002-00 "Inadvertent Control Room Pressurization (CREBAPS) Actuation"

The following are previously reported events a loss of power to 4KV emergency busses:

LER 87-022-00 "Automatic Start - No.1 Emergency Diesel Generator on Loss of AC Power to 2AE Emergency Bus"
LER 88-004-00 "Diesel Generator Actuation Due to Spurious Overcurrent Signal"
LER 88-005-00 "Overcurrent Relay Trip Leads to ESF Actuation"
LER 88-007-00 "Reactor Trip Due To Reactor Coolant Pump Trip Caused By a Loss Of 4KV Bus 2A Loads"
LER 89-012-00 "Loss Of Power To Train "A" Emergency Bus"

A review of the five events listed above shows four events due to component failures and one event due to personnel error during relay testing which resulted in the diesel generator loading.

Figure 1


138 KV Bus 2
2A SSST
2AE 4KV BUS
2A 4KV BUS
2B 4KV BUS
2C USST
UNIT