NRR-PMDAPEm Resource

From: Wiebe, Joel
Sent: Friday, February 10, 2012 11:13 AM
To: Joseph Bauer
Cc: David Gullott; Zimmerman, Jacob
Subject: Operating Experience to be sent to Quad Cities and Dresden Stations
Attachments: EN 7624 Byron 2.pdf; Beaver Valley LER.PDF; Fitz LER.PDF; NMP LER.PDF; EN 7636 Byron.pdf

Please pass the attached operating experience information on to the Quad Cities and Dresden Stations.

Joel

Hearing Identifier: NRR_PMDA
Email Number: 264

Mail Envelope Properties (F371D08C516DE74F81193E6D891DC4AF7964CB9596)

Subject: Operating Experience to be sent to Quad Cities and Dresden Stations
Sent Date: 2/10/2012 11:12:45 AM
Received Date: 2/10/2012 11:12:00 AM
From: Wiebe, Joel

Created By: Joel.Wiebe@nrc.gov

Recipients:
"David Gullott" <David.Gullott@ExelonCorp.com>
Tracking Status: None
"Zimmerman, Jacob" <Jacob.Zimmerman@nrc.gov>
Tracking Status: None
"Joseph Bauer" <Joseph.Bauer@exeloncorp.com>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	116	2/10/2012 11:12:00 AM
EN 7624 Byron 2.pdf	92450	
Beaver Valley LER.PDF	617754	
Fitz LER.PDF	365680	
NMP LER.PDF	246309	
EN 7636 Byron.pdf	102780	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Power Reactor	Event Number: 47624
Facility: BYRON Region: 3 State: IL Unit: [ ] [2] [ ] RX Type: [1] W-4-LP,[2] W-4-LP NRC Notified By: LEO WEHNER HQ OPS Officer: JOHN KNOKE	Notification Date: 01/30/2012 Notification Time: 11:39 [ET] Event Date: 01/30/2012 Event Time: 10:01 [CST] Last Update Date: 01/31/2012
Emergency Class: UNUSUAL EVENT 10 CFR Section: 50.72(a) (1) (i) - EMERGENCY DECLARED 50.72(b)(2)(iv)(B) - RPS ACTUATION - CRITICAL 50.72(b)(2)(i) - PLANT S/D REQD BY TS 50.72(b)(3)(iv)(A) - VALID SPECIF SYS ACTUATION	Person (Organization): JAMNES CAMERON (R3DO) CYNTHIA PEDERSON (R3) BRUCE BOGER (ET) JEFFERY GRANT (IRD) SIL MOUVONE (DOE) DEBBY HASSEL (DHS) LOU BURCKANT (FEMA) SAM WILLIS (HHS) MIKE BEVERLY (USDA)

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
2	A/R	Y	100	Power Operation	0	Hot Standby

Event Text

UNUSUAL EVENT DUE TO LOSS OF OFFSITE POWER GREATER THAN 15 MINUTES

At 1101 EST, Byron Unit-2 experienced a reactor trip due to RCP undervoltage. All rods fully inserted, MSIV's were manually closed and decay heat is being removed by Auxiliary Feedwater pumps running and steam leaving via atmospheric relief valves. The unit is currently in a natural circulation cooldown with the diesels supplying station emergency loads. Licensee will be cooling the plant down to Mode 5.

At 1118 EST, Byron declared an Unusual Event due to a loss of offsite power on Unit 2 from a faulted Station Auxiliary Transformer (SAT). The faulted SAT caused both 6.9 kV and 4.1 kV bus voltage to drop. Smoke was observed coming from the SAT with no visible flames being apparent. This caused bus loads to trip without a complete loss of ESF busses 241 and 242. These buses were manually disconnected from the SAT, which transferred the load to the emergency diesel generators 2A and 2B. Both diesel generators started and loaded without incident. Offsite assistance was requested from the local fire department as a precaution.

The licensee is also declaring notification for 10 CFR 50.72(b)(3)(v)(D)

Unit 1 is not being affected by this event and remains at 100% power.

The licensee has notified the NRC Resident Inspector.

* * UPDATE FROM GREG BALESTRIERI TO JOHN KNOKE AT 2119 EST ON 01/31/12 * *

"At 2000 CST on 1/31/12, Byron terminated their Unusual Event due to the Loss of Offsite Power to Unit 2. Switchyard repairs were completed and offsite power has been restored to essential busses 241 and 242 thru System Auxiliary Transformers 242-1 and 242-2. Unit 2 Emergency Diesel Generators have been shutdown."

The licensee is citing classification 10 CFR 50.72(c)(1)(iii)

The licensee has notified the NRC Resident Inspector. Notified R3DO (James Cameron), NRR EO (Louise Lund), IRD MOC (Scott Morris), DHS (Konopka) and FEMA (Hollis). Licensee may issue a press release.

FENOC
FirstEnergy Nuclear Operating Company

Peter P. Sena III
Site Vice President

724-682-5234
Fax: 724-643-8069

January 25, 2008
L-08-037

10 CFR 50.73

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
LER 2007-002-00

Enclosed is Licensee Event Report (LER) 2007-002, "Undetected Loss of 138 kV 'A' Phase to System Station Service Transformer Leads to Condition Prohibited by Plant Technical Specification."

There are no regulatory commitments contained in this submittal. Any actions discussed in this document that represent intended or planned actions are described for the NRC's information, and are not regulatory commitments.

If you have questions or require additional information, please contact Mr. Colin P. Keller, Manager, Regulatory Compliance at 724-682-4284.

Sincerely,

Peter P. Sena III

Attachment

c: Mr. S. J. Collins, NRC Region I Administrator
Mr. D. L. Werkheiser, NRC Senior Resident Inspector
Ms. N. S. Morgan, NRR Project Manager
INPO Records Center (via electronic image)
Mr. L. E. Ryan (BRP/DEP)

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Beaver Valley Power Station Unit Number 1	05000334	1 of 7

4. TITLE

Undetected Loss of 138 kV 'A' Phase to System Station Service Transformer Leads to Condition Prohibited by Plant Technical Specification

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	27	2007	2007	- 002 -	00	01	25	2008	None	
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(a)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Colin P. Keller, Manager, Regulatory Compliance	(724) 682-4284

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	EA	XFMR	Kuhlman	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete EXPECTED SUBMISSION DATE).* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

During a non-routine walkdown of the offsite switchyard on 11/27/2007, a site construction supervisor discovered that the 'A' phase conductor on a Beaver Valley Power Station Unit No. 1 (BVPS-1) three-phase 138 kV power line had broken off in the switchyard. This break occurred between the offsite feeder breaker and the line running onsite to the 'A' train System Station Service Transformer (SSST) located inside the site security fence. The station declared the 'A' train offsite power circuit inoperable and entered BVPS-1 Technical Specification (TS) 3.8.1 Condition A for one of the two required offsite circuits inoperable. Subsequent evaluation concluded that the break on the 138 kV phase 'A' occurred on 11/01/2007 based upon review of offsite and onsite computer-based grid line information. Since the undetected SSST failure that occurred on 11/01/2007 was not restored within 72 hours as required by TS 3.8.1 Action A, this was a condition prohibited by plant Technical Specifications and is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B).

The root cause of this event is knowledge-based error. Site personnel did not fully recognize the characteristics of the three legged WYE-G / WYE-G WYE-G secondary core form transformer design, leading to a surveillance procedure weakness in detecting power line failures. With this type of transformer, it is difficult to sense a phase loss through only voltage measurements, even under moderate loading conditions. If site personnel had known the characteristics of this type of transformer, adequate indication and surveillance acceptance criteria may have been provided to detect an open phase. The safety significance of this event was very low.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Beaver Valley Power Station Unit Number 1	05000334	2007	-- 002 --	00	2 OF 7

NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor {PWR}
138 kV Offsite Feed to System Station Service Transformer (which supplies 4.16 kV Onsite AC Power) {EA}

CONDITIONS PRIOR TO OCCURRENCE

Unit 1: Mode 1 at 100 percent power.

There were no systems, structures, or components beyond the 'A' train 138 kV line that were inoperable at the start of the event that contributed to the event.

DESCRIPTION OF EVENT

During a non-routine walkdown of the offsite switchyard on 11/27/2007, a site construction supervisor discovered that the 'A' phase conductor on a Beaver Valley Power Station Unit No. 1 (BVPS-1) three-phase 138 kV power line had broken off in the switchyard. This break occurred between the offsite feeder breaker (OCB-92-FDS) and the line running onsite to the 'A' train System Station Service Transformer (SSST) located inside the site security fence. The switchyard walkdown was being performed to investigate line voltage differences. The terminal broke on the switchyard side of a Revenue Metering Current Transformer/Voltage Transformer (CTVT), which was installed in 2006 to track the station's power usage through this line. During normal station power operation, there is no appreciable current going through this 138 kV line as the station busses (loads) are normally powered from the unit generator. [See simplified power sketch on page 7.]

The station declared the 'A' train offsite power circuit inoperable at 0955 hrs on 11/27/2007 and entered BVPS-1 Technical Specification 3.8.1 Condition A for one of the two required offsite circuits inoperable. The subject line was repaired and the 'A' train offsite power circuit was declared operable at 1253 hours on 11/28/2007, exiting Technical Specification 3.8.1 Condition A.

Subsequent evaluation concluded that the break on the 138 kV phase 'A' occurred on 11/01/2007 based upon review of offsite and onsite computer-based grid power line information for the loss of current on the open phase. The failure was not identified by any BVPS alarm at that time. During a offsite power surveillance performed on 11/14/2007, minor voltage variations were noted between the 'A' train SSST three phases. The 'A' train SSST Load Tap Changer had to be placed in manual in order to return its phase voltages to

within specification. A condition report was added to the corrective action program to document that the Load Tap Changer was not correctly controlling the SSST voltage in the automatic mode.

BVPS-1 Technical Specification Surveillance Requirement 3.8.1.1 states "Verify correct breaker alignment and indicated power availability for each required offsite circuit" and is required to be performed on a 7 day frequency. This surveillance is performed at BVPS-1 by site procedure 1OST-36.7 and was successfully completed on 11/02/2007, 11/07/2007, 11/08/2007, 11/14/2007 (twice), and 11/21/2007 without identifying the 138 kV phase 'A' open circuit. This surveillance checks breaker alignments and phase-to-phase voltage on the secondary side (plant side) of the SSST.

Subsequent investigation determined that acceptable secondary phase-to-phase voltage can be indicated during a lack of the 138 kV 'A' phase on the primary side of the SSST due to induced voltage from the 'B' and 'C' primary phases when there is no appreciable load on the transformer. If the SSST had appreciable loads without one of the three primary phases, significant phase-to-phase imbalances would occur and would be recognized on the secondary side voltage instrumentation (assuming the phase imbalances were not significant enough to cause a trip of these operating loads). There is no definitive 138 kV phase amperage indication instrumentation in the BVPS control room. Thus, the site surveillance procedure was not capable of detecting a loss of one phase on the primary side of the SSST when the SSST was carrying no appreciable load.

REPORTABILITY

On 11/27/2007, the line side high voltage terminal to the "A" phase revenue metering CTVT was found to be failed resulting in an open circuit. This failure de-energized one of the three offsite transformer primary phases ('A' phase) going to the 'A' Train BVPS-1 SSST. Computer information indicated that this phase was lost on 11/01/2007. This failure made the 'A' train SSST inoperable and thus, one of the two BVPS-1 safety related offsite circuits inoperable.

BVPS-1 Technical Specification 3.8.1 Limiting Condition for Operation requires that two qualified offsite circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System be operable. With one required offsite circuit inoperable, Required Action A.3 requires that the required offsite circuit be restored to operable within 72 hours. Since the undetected SSST failure that occurred on 11/01/2007 was not restored within 72 hours, this was a condition prohibited by plant Technical Specifications and this condition is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B).

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
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Beaver Valley Power Station Unit Number 1	05000334	2007	-- 002 --	00	4 OF 7

NARRATIVE

CAUSE OF EVENT

The most probable cause of the power cable terminal connection failure on the 'A' phase of the 138 kV line was due to an improper manufacturer's brazing process which may have provided less than full design cable holding capability.

The root cause of this event is knowledge-based error. Site personnel did not recognize that the three legged WYE-G / WYE-G WYE-G secondary core form transformer design on the SSST would maintain the voltage on an open phase to nearly the same voltage as the other two (powered) phases during a normal site loading configuration. With this type of transformer, it is difficult to sense a phase loss via only voltage measurements, even under moderate loading conditions. If site personnel had known the characteristics of this type of transformer, adequate indication and surveillance acceptance criteria may have been provided to detect an open phase. A contributing cause is procedure content. The guidance in Operations Surveillance procedure 1OST-36.7 had inadequate acceptance criteria and directed Operations to initiate actions to calibrate the automatic SSST Load Tap Changer control circuitry, making it unlikely that other causes would be aggressively investigated. This contributed to the lengthened time of discovery to find the open phase.

SAFETY IMPLICATIONS

The function of the 138 kV transmission system is to provide an independent offsite power supply to safety related components. The two redundant 138 kV lines are part of the offsite circuits.

With a lack of the 'A' phase on the 'A' train offsite feed from the 138 kV source, a transfer of major site loads from its normal Unit-feed transformer to the System-feed transformer (which would automatically occur upon any loss of the station's main generator) would have resulted in the loss of this offsite power source due to significant phase imbalances with the transfer of these station electrical loads. Thus, there was only one effective offsite electrical circuit, the 'B' train offsite power circuit through the 'B' train SSST, from 11/01/2007 to 11/28/2007.

The plant risk associated with the broken terminal on the "A" phase of the BVPS Unit 1 138 kV offsite feed to the 1A System Station Service Transformer (SSST) that occurred between 11/01/2007 and 11/28/2007, thereby exceeding the TS 3.8.1 LCO and placing the unit in a condition prohibited by Technical Specifications, is considered to be very low, due to the remaining mitigation capability and operator recovery actions that could be

credited to mitigate the event. This risk assessment includes 7.2 hours when the 'A' train emergency diesel generator was out of service during the 'A' train SSST failure.

Based upon the above, the safety significance of the event condition was very low.

CORRECTIVE ACTIONS

1. Several prompt actions were completed. An Operations Standing Order was generated at both BVPS Units to perform a physical walk down of 138 kV transmission lines when the offsite power availability surveillance is performed until the surveillance procedures are revised (the physical walk down is a short term action until a longer term solution is developed). A temporary modification was implemented to remove the Kuhlman Electric Model KA-145 Revenue Metering CTVT on the 'A' phase of the BVPS Unit 1 "A" Train SSST and install a jumper to bypass this removed CTVT, restoring this offsite power circuit to full service.

2. Surveillance criteria are being evaluated at both BVPS Units for enhancements to verify offsite power availability under both loaded and unloaded conditions, given the BVPS offsite power configuration and equipment at each Unit. The offsite power availability surveillance at each Unit will then be revised to incorporate this enhanced acceptance criteria. Where appropriate, additional guidance will address the load tap changer operation on the offsite power transformers during both automatic and manual operation.

3. Other potential plant enhancements are being evaluated which include increasing the station's ability to detect an open condition on each of the offsite power lines.

4. The Revenue Metering CTVTs on the 'B' and 'C' phases of the BVPS Unit 1 and the three phases on the BVPS Unit 2 'A' Train SSSTs have now been removed. The remaining six original Revenue Metering CTVTs on the 'B' Train offsite power lines for the BVPS Unit 1 SSST and BVPS Unit 2 SSST will also be removed. Long term disposition for these revenue meters is under evaluation.

5. This event was described in an Operating Experience Report which has been issued to the industry.

Completion of the above and other corrective actions are being tracked through the BVPS corrective action program.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
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Beaver Valley Power Station Unit Number 1	05000334	2007	-- 002 --	00	6 OF 7

NARRATIVE

PREVIOUS SIMILAR EVENTS

A review found one prior BVPS Unit 1 and no prior BVPS Unit 2 Licensee Event Reports within the last five years for an event involving an inappropriate offsite power circuit condition.

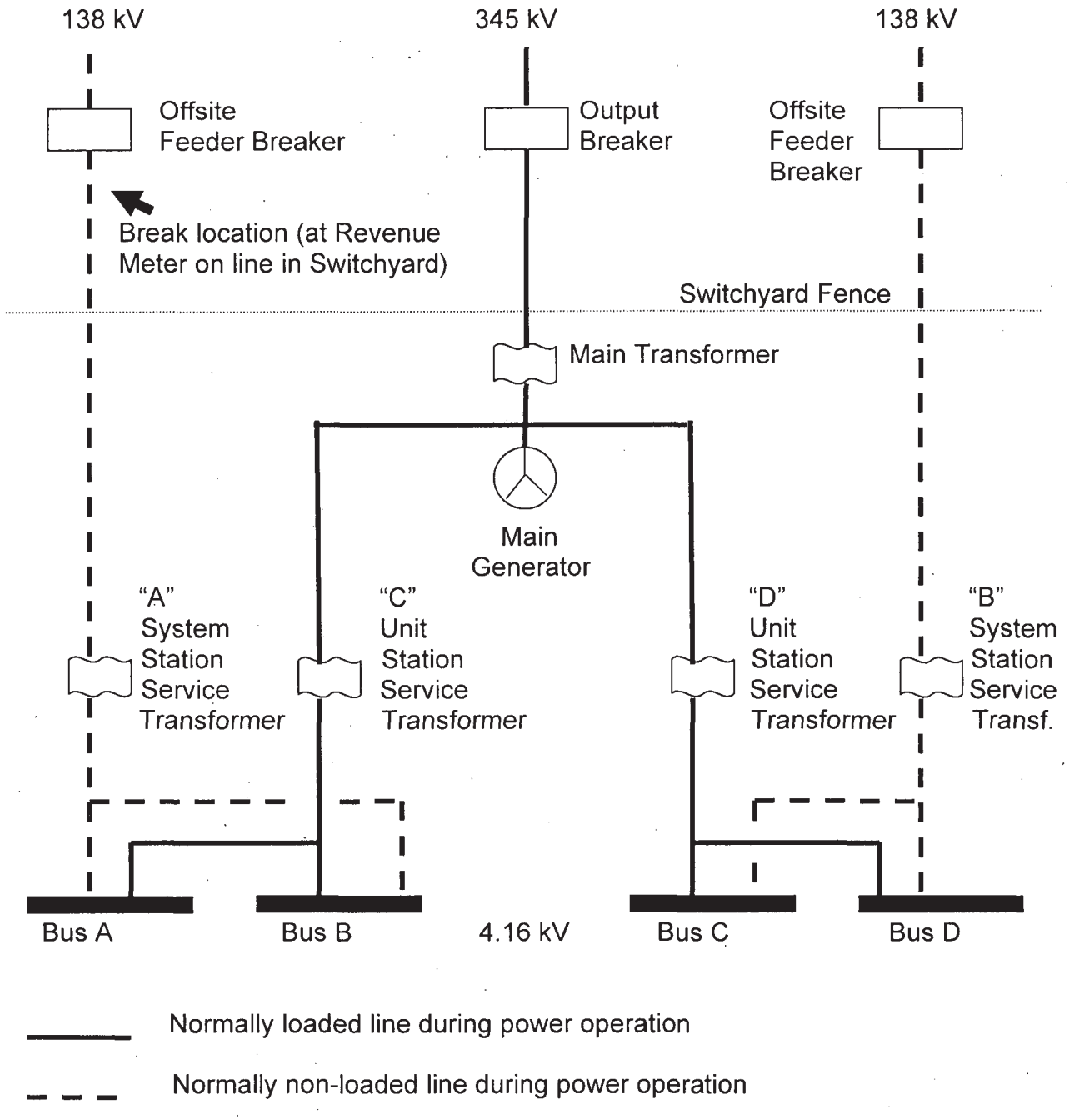
- BVPS Unit 1 LER 2003-003, "Automatic Actuation of Emergency Diesel Generator Following Loss of Emergency Bus Offsite Source." This LER event resulted from an unexpected opening of an onsite 4kV feeder breaker due to a false ground overcurrent trip caused by an inappropriate ground relay geometry. Corrective actions originating from LER 2003-003 would not be expected to have prevented the event discussed in LER 2007-002.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Beaver Valley Power Station Unit Number 1	05000334	2007	-- 002 --	00	7 OF 7

NARRATIVE

Simplified Unit Electrical Distribution Drawing



Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc.
James A. Fitzpatrick NPP
P.O. Box 110
Lycoming, NY 13093
Tel 315 349 6024 Fax 315 349 6480

T.A. Sullivan
Site Vice President - JAF

February 13, 2006
JAFP-06-0034

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Subject: **Docket No. 50-333**
LICENSEE EVENT REPORT: LER-05-006 (CR-JAF-2005-05289)

Inoperable 115 kV Line in Excess of Technical Specification Allowed Out of Service Time

Dear Sir:

This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications."

There are no commitments contained in this report.

Questions concerning this report may be addressed to Mr. Jim Costedio at (315) 349-6358.

Very truly yours,

Kevin Sullivan
Site Vice President (Acting)

T. A. Sullivan

TAS:DD:dd
Enclosure

cc: USNRC, Region 1
USNRC, Project Directorate
USNRC Resident Inspector
INPO Records Center

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2007

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
James A. FitzPatrick Nuclear Power Plant	05000333	1 OF 5

4. TITLE

Inoperable 115 kV Line in Excess of Technical Specification Allowed Out of Service Time

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									Nine Mile Point Unit 1	05000220
12	19	05	05	– 006 –	00	02	13	06	FACILITY NAME N/A	DOCKET NUMBER 05000

9. OPERATING MODE	1
10. POWER LEVEL	100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Mr. Darren Deretz, Sr. Regulatory Compliance Specialist	(315) 349-6851

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
D	FK	CON	P145	N					

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

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

On December 19, 2005, with the James A. FitzPatrick Nuclear Power Plant (JAF) operating at 100 percent power, National Grid (local grid operator) notified the Nine Mile Point Nuclear Station, Unit 1 (NMP1) Control Room that abnormal amperage readings on the 115 kV off-site power lines were noted and may be indicative of an open phase. JAF was contacted by NMP1 regarding the abnormal readings. JAF Operators walked down the 115 kV switchyard and observed an open circuit on the "A" phase of 115 kV Line #4, caused by a broken bus bar connector. Line #4 was declared inoperable and removed from service for repairs. The bus bar connector was promptly repaired and Line #4 was returned to service on December 20, 2005.

An Engineering evaluation of the NMP1, JAF, and National Grid data indicated that the bus bar connector failure existed, undetected, since November 29, 2005, resulting in a Line #4 out of service time of approximately 21 days. This resulted in one redundant offsite power supply exceeding its Technical Specifications (TS) 3.8.1 allowed out of service time.

The cause of the undetected inoperability of Line #4 was an inadequate surveillance test (ST-9W). ST-9W records 115 kV bus voltages and confirms power availability, via communication with National Grid, but does not confirm that all three phases are intact by monitoring current flow in the 115 kV transmission lines.

As part of the corrective actions, a once per shift check of Line #4 phase amperage has been implemented to verify intact 115 kV phases and flow of electricity through the JAF switchyard. This criteria will be added to ST-9W.

There were no nuclear, radiological or safety consequences associated with this event.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
James A. FitzPatrick Nuclear Power Plant	05000333	05	006	00	

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

EIIS Codes in [ ]

Background:

The James A. FitzPatrick Nuclear Power Plant (JAF) 115 kV switchyard [FK] is supplied by two independent 115 kV transmission lines and associated breakers, providing two redundant sources of offsite power. One transmission line, the Lighthouse Hill – FitzPatrick Line #3, connects the South 115 kV bus to the Lighthouse Hill substation. The other transmission line, Nine Mile – FitzPatrick Line #4, connects the North 115 kV bus to the Nine Mile Point Nuclear Station, Unit 1 (NMP1) 115 kV switchyard which is then connected to the South Oswego substation.

Each 115 kV transmission line normally supplies power to the two reserve station service transformers (RSSTs) T2 and T3, through a normally closed bus disconnect. The 115 kV transmission system is designed such that either line alone will supply both RSSTs that supply both safeguards buses. The RSSTs do not supply plant loads during normal operation. During normal operation, the normal station service transformer T4 supplies all plant loads, while reserve transformers T2 and T3, although energized at the 115 kV level, are disconnected from the 4.16 kV plant buses.

Voltage conditions on both 115 kV transmission lines are monitored in the JAF Control Room using voltmeters. There is no definitive 115 kV phase current flow (amperage) indication instrumentation in the JAF Control Room. An undervoltage condition on either 115 kV line will alarm in the Control Room. If a fault were to occur on either line, the plant would remain stable and the redundant 115 kV line will not be prevented from performing its function.

Event Description:

On December 19, 2005, with JAF operating at 100 percent power, National Grid (local grid operator) notified the NMP1 Control Room that abnormal amperage readings (0 amps on "A" phase and 50 amps on "B" and "C" phases) were noted on the 115 kV off-site power lines and suggested that the readings may indicate an open phase. The JAF Control Room was contacted by the NMP1 Control Room regarding the abnormal readings. JAF Operators walked down the 115 kV switchyard and observed an open circuit on the "A" phase of Line #4, caused by a broken bus bar connector. Line #4 was declared inoperable and removed from service for repairs. The bus bar connector was promptly repaired and Line #4 was returned to service at approximately 1511 hours on December 20, 2005.

Subsequent to this event, an Engineering evaluation of the NMP1, JAF, and National Grid data indicated that the bus bar connector failure had existed since approximately 0951 hours on November 29, 2005, resulting in an out of service (OOS) duration of approximately 21 days. Walkdowns of the JAF switchyard concluded that no other similar failures were evident.

The failure was not identified by any alarm at NMP1, JAF, or National Grid installations. There is no definitive 115 kV phase amperage indication instrumentation in the JAF Control Room. The NMP1 Control Room does have 115 kV phase amperage indication but the anomalous indication was not noted. Because of the design of the off-site power systems supplying JAF and NMP1, there was no interruption of voltage to either station and no alarms in either Control Room to alert Operators of the abnormal condition.

JAF Technical Specifications (TS) Limiting Conditions for Operation (LCO) 3.8.1, "Electrical Power Systems – AC Sources – Operating," requires that two 115 kV transmission lines be Operable in Modes 1, 2 and 3. TS 3.8.1 also requires that an inoperable 115 kV transmission line be restored to Operable status within 7 days, or the plant must be placed in Mode 3 in 12 hours and Mode 4 in 36 hours. As Line #4 was inoperable for a duration in excess of the TS allowed out of service time (AOT), this report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications."

There were no nuclear, radiological or safety consequences associated with this event.

Cause of Event:

The cause of the undetected inoperability of Line #4 was an ineffective monitoring plan for 115 kV Line #4. Surveillance test ST-9W, "Electrical Lineup and Power Verification", performed on a 7 day frequency, records 115 kV bus voltages and requires JAF to contact National Grid to confirm power is available from Line #3 and Line #4. However, it does not contain sufficient detail to verify current is flowing in all 3 phases. [Cause Code D]

The broken bus bar connector was promptly weld repaired to restore Line #4 and consequently could not be sent out for failure analysis. The apparent mechanistic failure mode is mechanical overload. It is postulated that mishandling during previous maintenance activities caused a stress riser at the rigid connection of the bus bar connector. The addition of winter weather conditions (wind induced vibration, temperature cycling, ice loading) acting on the stress riser caused the bus bar connector to fail. The applicable maintenance procedure, MP-071.61, "115 kV Oil Circuit Breaker Maintenance", contains no cautions or special instructions for handling or proper removal and/or disconnecting the bus bar from the breaker during maintenance. [Cause Code D]

Event Analysis:

There were no nuclear, radiological or safety consequences associated with this event.

The function of the 115 kV transmission system is to provide an independent offsite power supply to safety related components. The two redundant 115 kV lines are part of the qualified off-site circuits and are required to provide power to both reserve transformers and their safety loads.

A probabilistic risk assessment (PRA) determined that, with conservative assumptions regarding concurrent maintenance activities and regarding the capability of the remaining 115 kV transmission line (Line #3), the resultant conditional core damage probability (CCDP) was determined to be below the risk significance threshold of 1.0E-06. As the CCDP was determined to be below the risk significance threshold, the safety significance of this event was minimal. All required safety functions were maintained.

Extent of Condition:

The type of bus bar connector that failed is also installed in eleven other locations on the 115 kV transmission system. A visual inspection was performed on all eleven of these bus bar connectors. No abnormalities were found. The 345 kV lines do not have the same type of bus bar connector but instead have a connector that precludes the potential for mechanical damage during normal maintenance activities.

Monitoring phase amperage at Line #4 (using NMP1 instrumentation) also provides phase amperage monitoring for Line #3, because Line #4 is normally connected with Line #3. However, when Line #4 is taken OOS, Line #3 phase amperage cannot be monitored from the NMP1 Line #4 monitoring location. National Grid has instrumentation to monitor phase amperage of both Line #3 and Line #4. JAF will revise the applicable surveillance tests to utilize National Grid's phase amperage monitoring capability.

Compensatory actions taken to verify amperage readings each shift will reduce the risk of a similar failure remaining undetected.

Corrective Actions:

Corrective Actions Completed by JAF Prior to this Report:

1. Repaired the failed bus bar connector.
2. Performed a visual inspection of other similar connectors on both 115 kV transmission lines.
3. Revised Operations Shift Standing Order (OSSO) 05-001 to include a once per shift check of NMP1 Line #4 phase amperage to verify intact 115 kV phases and flow of electricity through the JAF switchyard.
4. Completed Cause Evaluations for this event.
5. Reviewed National Grid's monitoring of JAF's 115 kV transmission lines. Confirmed that National Grid has instrumentation to monitor phase amperage of both Line #3 and Line #4. Created corrective actions to revise applicable surveillance tests to utilize this monitoring.

Corrective Actions not yet Completed:

1. Revise surveillance test ST-9W, "Electrical Lineup and Power Verification", to include the current criteria from OSSO 05-001.

   (Due 03/01/2006)

2. Revise ST-9W, "Electrical Lineup and Power Verification" and ST-9R, "EDG System Quick-Start Operability Test and Offsite Circuit Verification," to require confirmation (via National Grid) that the 115 kV line phases are intact by monitoring the line current (amperage).

   (Due 03/01/2006)

3. Revise MP-071.61, "115 kV Oil Circuit Breaker Maintenance", to reduce the potential for creating a stress riser at the rigid end of the bus bar connector.

   (Due 03/10/2006)

4. Perform a detailed inspection and evaluation of the eleven other bus bar connectors on Line #3 and Line #4 at the next available time to determine reliability and any potential need for additional repair or replacement. A bus and transformer outage is required for each line to perform these evaluations.

   (Due 10/31/2006)

Safety System Functional Failure Review:

A review of this event determined that a safety system functional failure as defined by NEI 99-02, Revision 3, did not occur.

Similar Events:

1. LER-05-001, "Inoperable Offsite Circuit in Excess of Technical Specifications Allowed Out of Service Time", dated March 31, 2005.

   The cause of this event was due to a misinterpretation of the JAF TS. As a result of this misinterpretation, JAF did not correctly declare the applicable offsite power source inoperable in accordance with TS. Corrective actions from LER-05-001 would not be expected to prevent the event discussed in LER-05-006.

Failed Component Identification:

Manufacturer:	Penn Union
Model Number:	Model # WLAC-20-E
NPRDS Manufacturer Code:	P145
NPRDS Component Code:	Connector
FitzPatrick Component ID:	071BRK-10012 (Line #4) Bus Bar Connector

References:

1. Apparent Cause Evaluation (ACE), JAF Condition Report CR-JAF-2005-05180, Failure of bus connector on load side of the "A" phase of 071-DSC-10011, dated 1/11/2006.
2. Apparent Cause Evaluation (ACE), JAF Condition Report CR-JAF-2005-05289, Failure of bus connector on load side of the "A" phase of 071-DSC-10011, Determination of why deviation was not discovered more promptly, dated 1/30/2006.

Constellation Energy
Nine Mile Point Nuclear Station

P.O. Box 63
Lycoming, NY 13093

February 17, 2006

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Nine Mile Point Nuclear Station
Unit No. 1; Docket No. 50-220

Licensee Event Report 05-004, "Operation Prohibited by Technical Specifications due to Unrevealed Inoperability of One Off-site Power Source"

In accordance with 10 CFR 50.73(a)(2)(i)(B), we are submitting Licensee Event Report 05-004, "Operation Prohibited by Technical Specifications due to Unrevealed Inoperability of One Off-site Power Source."

Should you have questions regarding the information in this submittal, please contact M. H. Miller, Licensing Director, at (315) 349-1510.

Very truly yours,

James A. Hutton
Plant General Manager

JAH/RF/sac
Attachment

cc: S. J. Collins, NRC Regional Administrator, Region I
L. M. Cline, NRC Senior Resident Inspector

IE22

bcc: L. S. Larragoite
C. W. Fleming, Esquire
T. J. O'Connor
J. A. Hutton
M. H. Miller
J. L. Lyon

NMP1L 2025

COMMITMENTS IDENTIFIED IN THIS CORRESPONDENCE:

- NONE

Responsible Person/Organization:

Due Date:

SAR/TSB Revision Required? If yes, No

Type:

Initiation Date:

NCTS No.:

Posting Requirements for Responses -- NOV/Order ***No***

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Nine Mile Point Unit 1	05000220	1 OF 4

4. TITLE

Operation Prohibited by Technical Specifications due to Unrevealed Inoperability of One Off-site Power Source

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	19	2005	2005	- 004 -	00	02	17	2006	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Mary H. Miller, Licensing Director	(315) 349-1510

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On December 19, 2005, at 1509 hours, National Grid (NG) Regional Control notified the Nine Mile Point Unit 1 (NMP1) Control Room that a Traveling Operator had noted abnormal readings on one of the 115 KV off-site power lines (Line 4) and suggested the indication could be the result of an open phase. The James A. Fitzpatrick Nuclear Power Plant (JAF) Control Room was contacted and an investigation revealed a failure of the bus bar connector on the "A" phase of Line 4 in the JAF switchyard. The unknown failure had existed from November 29, 2005, to December 19, 2005, and during that time, NMP1 exceeded the Technical Specification (TS) 3.6.3.b, "Emergency Power Sources," allowed out-of-service time for inoperable off-site power line. Additionally, during that time, NMP1 exceeded the TS 3.6.3.c allowed out-of-service time for inoperable diesel-generator power system on two occasions. Line 4 was restored to operable status on December 20, 2005, at 1512 hours.

The cause of the failure to identify the Line 4 failure is a functional design deficiency regarding the adequacy of Control Room indications and alarms. Because of the design of off-site power to JAF and NMP1, and alarms and indications, there was no interruption of power to either unit and no alarm to alert personnel of the abnormal situation. There is an ampere loading indication for both off-site lines at NMP1, but the typical operating value falls in an uncalibrated and unmarked area of the meter.

Corrective actions have been developed such that, when completed, a loss of current on any of the phases of off-site power sources will be accompanied by a plant process computer alarm and will be clearly visible on control panel indications.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2005	-- 004 --	00	2 OF 4

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

I. Description of Event

On December 19, 2005, at 1509 hours, National Grid (NG) Regional Control notified the Nine Mile Point Unit 1 (NMP1) Control Room that a Traveling Operator had noted abnormal readings on one of the 115 KV off-site power lines (Line 4) and suggested the indication could be the result of an open phase. The James A. Fitzpatrick Nuclear Power Plant (JAF) Control Room was contacted and an investigation revealed a failure of the bus bar connector on the "A" phase of Line 4 in the JAF switchyard. The unknown failure had existed from November 29, 2005, to December 19, 2005. Line 4 was declared inoperable as of November 29, 2005, and removed from service for repairs. The failure was not flagged by any alarms at NMP1, JAF or NG installations and was not noted by Control Room operators at NMP1 or JAF.

During the time that the unknown failure existed, NMP1 exceeded the Technical Specification (TS) 3.6.3.b, "Emergency Power Sources," allowed out-of-service time for inoperable off-site power line. Line 4 was inoperable for longer than the allowed out-of-service time of 7 days. Additionally, during that time, NMP1 exceeded the TS 3.6.3.c allowed out-of-service time for inoperable diesel-generator power system on two occasions. After Line 4 became inoperable on November 29, 2005, Emergency Diesel Generator (EDG) 102 was already inoperable for planned maintenance and was restored to operable status 4 days later, on December 3, 2005, at 0406 hours. Thus, TS 3.6.3.c allowed EDG out-of-service time of 24 hours was exceeded. On another occasion, on December 12, 2005, at 1612 hours, EDG 103 was declared inoperable and restored to operable on December 13, 2005, at 1718 hours, which is another instance of non-compliance with TS 3.6.3.c.

Line 4 was restored to operable status on December 20, 2005, at 1512 hours.

II. Cause of Event

The underlying cause of failure to identify the Line 4 deviation is a functional design deficiency regarding the adequacy of Control Room indications and alarms. Because of the "ring bus" design of off-site power to JAF and NMP1 and alarms and indications, there was no interruption of power to either unit and no alarm to alert personnel of the abnormal situation. There is ampere loading indication for both off-site lines at NMP1, but the typical operating value falls in an uncalibrated and unmarked area of the meter.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2005	– 004	– 00	3 OF 4

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

III. Analysis of Event

This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications...."

There were no actual safety consequences associated with this event. The most risk significant time period was during the overlapping of Line 4 out-of-service concurrent with EDG 102 out-of-service. Prior to taking EDG 102 out of service, the risk assessment of the maintenance activities resulted in the following risk management actions being taken:

- The redundant EDG was verified operable and no elective testing or maintenance activities were scheduled on the redundant (operable) EDG
- No elective testing or maintenance activities were scheduled in the 115 kV switchyard or on the 115 kV power supply lines and transformers which could cause a line outage or challenge offsite power availability
- The NMP1 diesel driven firewater pump (DFP) was verified operable as a feedwater makeup source to the NMP1 reactor pressure vessel (RPV)
- The Nine Mile Point Unit 2 DFP and cross-tie to NMP1 were verified operable as a feedwater makeup source to the NMP1 RPV.

The incremental core damage probability for Line 4 being unavailable for the duration of the event was calculated as 8.7E-8.

Based on the above, the event did not pose a threat to the health and safety of the public or plant personnel.

IV. Corrective Actions

A. Action Taken to Return Affected Systems to Pre-Event Normal Status

On December 20, 2005, at 1317 hours, NMP1 was notified by the JAF that repairs were complete. The same day, at 1512 hours, Line 4 was returned to service and declared operable based on the plant process computer indications.

B. Action Taken or Planned to Prevent Recurrence

NOTE: There are no NRC regulatory commitments in this Licensee Event Report.

Corrective actions have been developed such that, when completed, a similar failure will be accompanied by an alarm and will be clearly visible on the control panel indications. These actions include:

- Implement a plant process computer alarm modification for low amperage on all 3 phases of off-site power lines.
- As a compensatory measure, amperage readings from the plant process computer of 3 phases of both off-site power lines will be verified and logged twice each shift until the corrective action (alarm modification) is implemented.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	2005	-- 004	-- 00	4 OF 4

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

V. Additional Information

A. Failed Components:

None

B. Previous similar events:

None

C. Identification of components referred to in this Licensee Event Report:

Components	IEEE 805 System ID	IEEE 803.A Function
115 kV Offsite Power	FK	N/A
Emergency Diesel Generators	EK	DG

Power Reactor	Event Number: 47636
Facility: BYRON Region: 3 State: IL Unit: [1] [2] [ ] RX Type: [1] W-4-LP,[2] W-4-LP NRC Notified By: MIKE LINDEMANN HQ OPS Officer: DONALD NORWOOD	Notification Date: 02/03/2012 Notification Time: 22:10 [ET] Event Date: 02/03/2012 Event Time: [CST] Last Update Date: 02/03/2012
Emergency Class: NON EMERGENCY 10 CFR Section: OTHER UNSPEC REQMNT	Person (Organization): JAMNES CAMERON (R3DO)

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
1	N	Y	100	Power Operation	100	Power Operation
2	N	N	0	Cold Shutdown	0	Cold Shutdown

Event Text

VOLUNTARY REPORT - DESIGN VULNERABILITY IN 4.16kV BUS UNDER-VOLTAGE SCHEME

"On January 30, 2012, a design vulnerability was discovered at Byron and Braidwood stations in the Engineered Safety Feature 4.16kV bus under-voltage protection scheme for Byron Station Units 1 and 2. Specifically a voltage unbalance created by an open circuit of either the A or C phase from the offsite grid to the System Auxiliary Transformers (SAT) is not designed to actuate the protective relays on the 4.16kV safety bus that provides isolation from the offsite grid and the automatic start and loading of the emergency onsite diesel generators.

"Two under-voltage relays are provided on each 4.16kV safety bus, which are combined in a two out of two logic to generate a loss of power signal. The relays are sensing voltage between two phases (i.e., A&B and B&C). An open circuit condition on the C phase or the A phase would not satisfy the two out of two logic. This condition results in both 4.16kV safety buses remaining energized with a bus undervoltage situation and results in equipment protective devices actuating from over-current conditions.

"This configuration is a non-conforming condition in that the design of the under-voltage relays and logic was intended to identify degraded grid conditions, not loss of a single phase. With an open circuit on the A or C phase from the grid to the SATs, during normal operations, operators have to diagnose the condition and manually isolate safety buses from offsite power which would automatically start and load the emergency diesel generators. During a design basis event concurrent with an open circuit on A or C phase from the grid to the SATs, analysis performed to date indicates that starting of the ECCS loads would have caused the bus voltage to decrease sufficiently to actuate the under-voltage protective relays and restore cooling with emergency onsite power without challenging fuel design limits.

"The 4.16kV safety bus under-voltage protection scheme at Byron and Braidwood is believed to be a typical industry design. This design issue is being evaluated at the other Exelon stations. The results of this evaluation will be shared with the NRC. Therefore, this condition is being reported as a voluntary notification due to its potential generic industry applicability."

The licensee notified the NRC Resident Inspector.

Power Reactor	Event Number: 47637
Facility: BRAIDWOOD Region: 3 State: IL Unit: [1] [2] [ ] RX Type: [1] W-4-LP,[2] W-4-LP NRC Notified By: MIKE LINDEMAN HQ OPS Officer: DONALD NORWOOD	Notification Date: 02/03/2012 Notification Time: 22:10 [ET] Event Date: 02/03/2012 Event Time: [CST] Last Update Date: 02/03/2012
Emergency Class: NON EMERGENCY 10 CFR Section: OTHER UNSPEC REQMNT	Person (Organization): JAMNES CAMERON (R3DO)

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
1	N	Y	100	Power Operation	100	Power Operation
2	N	Y	100	Power Operation	100	Power Operation

Event Text

VOLUNTARY REPORT - DESIGN VULNERABILITY IN 4.16kV BUS UNDER-VOLTAGE SCHEME

"On January 30, 2012, a design vulnerability was discovered at Byron and Braidwood stations in the Engineered Safety Feature 4.16kV bus under-voltage protection scheme for Braidwood Station Units 1 and 2. Specifically a voltage unbalance created by an open circuit of either the A or C phase from the offsite grid to the System Auxiliary Transformers (SAT) is not designed to actuate the protective relays on the 4.16kV safety bus that provides isolation from the offsite grid and the automatic start and loading of the emergency onsite diesel generators.

"Two under-voltage relays are provided on each 4.16kV safety bus, which are combined in a two out of two logic to generate a loss of power signal. The relays are sensing voltage between two phases (i.e., A&B and B&C). An open circuit condition on the C phase or the A phase would not satisfy the two out of two logic. This condition results in both 4.16kV safety buses remaining energized with a bus undervoltage situation and results in equipment protective devices actuating from over-current conditions.

"This configuration is a non-conforming condition in that the design of the under-voltage relays and logic was intended to identify degraded grid conditions, not loss of a single phase. With an open circuit on the A or C phase from the grid to the SATs, during normal operations, operators have to diagnose the condition and manually isolate safety buses from offsite power which would automatically start and load the emergency diesel generators. During a design basis event concurrent with an open circuit on A or C phase from the grid to the SATs, analysis performed to date indicates that starting of the ECCS loads would have caused the bus voltage to decrease sufficiently to actuate the under-voltage protective relays and restore cooling with emergency onsite power without challenging fuel design limits.

"The 4.16kV safety bus under-voltage protection scheme at Byron and Braidwood is believed to be a typical industry design. This design issue is being evaluated at the other Exelon stations. The results of this evaluation will be shared with the NRC. Therefore, this condition is being reported as a voluntary notification due to its potential generic industry applicability."

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