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August 17, 2005
RC-05-0119

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
LICENSEE EVENT REPORT (LER 2005-001-01)
EMERGENCY DIESEL GENERATOR START AND LOAD DUE TO A LOSS OF VITAL BUS, SUPPLEMENT 1

Attached is Licensee Event Report (LER) No. 2005-001-01, for the V. C. Summer Nuclear Station (VCSNS). The report describes the starting and loading of the "B" Emergency Diesel Generator due to a loss of all balance of plant busses and vital bus 1DB while performing relay testing during Refueling 15 outage. This LER serves to report the safety system actuation in accordance with 10CFR50.73(a)(2)(iv)(A). This Supplement provides the results of the root cause investigation performed to determine the cause of the event.

Should you have any questions, please call Mr. Ronald B. Clary at (803) 345-4757.

Very truly yours,

Jeffrey B. Archie

AJC/JBA
Attachment

c: N. O. Lorick
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NSRC
CER (C-05-2042)
File (818.07)
DMS (RC-05-0119)

IE22

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)

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4. TITLE

Emergency Diesel Generator Start and Load Due To A Loss Of Vital Bus

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
05	18	2005	2005	- 001 -	01	08	17	2005	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

5

10. POWER LEVEL

N/A

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)
VIRGIL C. SUMMER NUCLEAR STATON	(803) 345-4757

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)*

At 0154, May 18, 2005, during performance of relay testing, differential lockout 86T3 was manually actuated resulting in lockout of transformers XTF0031 and XTF0032. This resulted in a loss of all balance of plant (BOP) busses, loss of vital bus 1DB, an auto start of 'B' Diesel Generator (DG), and the sequencing of required ESF loads.

Plant Engineered Safeguards Features (ESF) systems responded per design as the "B" DG started and sequenced ESF loads. There were no major problems due to the event; however, the Diesel Fire Pump did not start as expected on a loss of BOP bus 1C2.

A review of plant response data showed the Residual Heat Removal (RHR) flow was in the process of coasting down and was restored to full flow within 20 seconds. The inlet temperature of the RHR Heat Exchanger increased approximately 0.3°F due to this event. There was no change in Reactor Coolant System (RCS) level. VCSNS was shutdown in Mode 5 during Refueling Outage 15.

The 1DB bus was placed on normal feed at 0240 and power was completely restored to the BOP busses at 0306.

A root cause evaluation determined the following causes: (1) nothing indicated this was a new or first time performed task, (2) labeling of the lockout relay did not associate the task with the transformers, (3) maintenance procedure did not contain precautions or information related to manual actuation of the lockout relay, (4) the task sheet did not contain any reference to the transformers, and (5) the work package review failed to identify plant effects of the relay actuation.

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

PLANT IDENTIFICATION

Westinghouse - Pressurized Water Reactor

EQUIPMENT IDENTIFICATION

"B" Emergency Diesel Generator (EDG)
"B" Residual Heat Removal Pump (RHR)

IDENTIFICATION OF EVENT

At 0154, during relay testing, the 86T3 differential lockout was actuated. This resulted in a total isolation of XTF0031 and XTF0032 which de-energized all of the BOP power to the plant and the XSW1DB switchgear. Plant Engineered Safeguards Features (ESF) systems responded per design as the 'B' DG started and sequenced ESF loads. There were no major problems due to the event; however, the Diesel Fire Pump did not start as expected on a loss of BOP bus 1C2.

EVENT DATE

05/18/2005

REPORT DATE

August 17, 2005, LER 2005-001-01
July 13, 2005, LER 2005-001-00

CONDITIONS PRIOR TO EVENT

Mode 5, Refueling

DESCRIPTION OF EVENT

VCSNS was shutdown for refueling in Mode 5. At 0154, May 18, 2005, during performance of relay testing, differential lockout 86T3 was actuated in accordance with the approved procedure, resulting in lockout of XTF0031 and XTF0032. This resulted in a loss of all balance of plant busses, an auto start of 'B' DG and the sequencing of required ESF loads.

The Control Room entered AOP-304.3, "Loss of All Balance of Plant Buses" and SOP-306, Section B. "Operation Of Diesel Generator 'B' After An Automatic Start And Load".

Review of plant response data showed the RHR flow was in the process of coasting down and was restored to full flow within 20 seconds. The inlet temperature of the RHR Heat Exchanger increased approximately 0.3°F due to this event. There was no change in Reactor Coolant System level. VCSNS was shutdown in Mode 5 during Refueling Outage 15.

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

CAUSE OF EVENT

At the time of the event, a preventive maintenance task was being performed on the 86T3 lock-out relay. However, transformers XTF0031 and XTF0032 were not scheduled to be out of service at the same time the relay maintenance was being performed. Therefore, actuation of the relay resulted in total isolation of the transformers which de-energized all BOP power and the XSW1DB switchgear. The resulting undervoltage on the 1DB bus caused an auto start and loading of the "B" DG.

The initial investigation of the event revealed that the following causes of the event: (1) the preventive maintenance task sheet was too vague, (2) the pre-job brief conducted prior to the task was not thorough enough, and (3) the personnel responsible for signing for the task to start were not thorough in reviewing the consequences of tripping the lockout.

A root cause evaluation determined the following causes: (1) nothing indicated this was a new or first time performed task, (2) labeling of the lockout relay did not associate the task with the transformers, (3) maintenance procedure did not contain precautions or information related to manual actuation of the lockout relay, (4) the task sheet did not contain any reference to the transformers, and (5) the work package review failed to identify plant effects of the relay actuation.

ANALYSIS OF EVENT

All normal offsite power sources were available at all times throughout the event. Operations personnel monitored the plant to ensure conditions were stable prior to realigning XTF0031 and XTF0032 to their normal offsite power feeds, after which the "B" DG was subsequently secured. There was no equipment damage and no unexpected transients occurred. The Diesel Fire Pump did not start as expected on the loss of BOP bus 1C2.

RHR flow was never completely lost and RCS temperature increase was miniscule. The RCS level did not change during the event.

CORRECTIVE ACTIONS

Condition Evaluation Report (CER) C-05-2042 was generated to document the event and lessons learned. Immediate corrective actions taken include:

- A team of engineers, relay department personnel, and plant personnel were assembled to provide guidance for the remaining relays to be tested during the remainder of Refuel15.
- Protection relay testing was suspended until the incident was reviewed.
- A "Protected Train" placard was placed in front of XTF0031/0032 relay panel.
- A site awareness email was distributed discussing pre-job briefs and procedure focus.
- A management review team meeting was held to review the event.

CER C-05-2033 was written to document the failure of the Diesel Fire Pump to autostart on loss of bus 1C2. The pump circuitry was repaired and tested satisfactorily on 07/28/2005.

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

OTHER CORRECTIVE ACTIONS

The following corrective actions to prevent recurrence were established during the root cause evaluation performed for this event, which will be tracked under the corrective action program (CER 05-2042).

1. Change SAP-143 to include guidance for identifying new tasks on PM task sheets and for determining plant affect or proper equipment associations for new tasks being generated.
2. Change equipment labels and CHAMPS reference for the 86T3 lockout relay to provide proper association with XTF0031 and XTF0032.
3. Revise EMP-405.024 to include limits and precautions which properly define plant effects.
4. Change MSI-49 to include specific instructions for review of necessary documentation for workers to fully understand the potential effects on the plant of the work being performed.

PRIOR OCCURRENCES

There are no prior occurrences of the loss of the normal incoming ESF feed to the plant due to actuation of the 86T3 differential lockout relay while being tested.