

Voluntary

**Virginia Electric And Power Company
Surry Power Station
5570 Hog Island Road
Surry, Virginia 23883**

February 2, 2005

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555-0001

Serial No.: 05-029
SPS: BAG/TJN R0
Docket No.: 50-280
License No.: DPR-32

Dear Sirs:

Pursuant to 10 CFR 50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to Surry Power Station Unit 1.

Report No. 50-280/2004-001-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Management Safety Review Committee for its review.

Very truly yours,


Donald E. Jernigan
Site Vice President
Surry Power Station

Enclosure

Commitments contained in this letter:

1. The design change for ESW pumps 1A and 1B will be revised to require the unused circuit components to be removed with implementation of the new pre-lubrication system. A detailed circuitry evaluation will be performed following implementation.
2. Engineering Training will emphasize the appropriate identification of work prerequisites, required sequences, and assumptions in design change packages.
3. Programmatic tools used by Maintenance to implement design changes will be reviewed and strengthened to ensure design change package are effectively implemented.

JE22

Serial No.: 05-029
Docket No.: 50-280

cc: United States Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23 T85
Atlanta, Georgia 30303-8931

Mr. N. P. Garrett
NRC Senior Resident Inspector
Surry Power Station

LICENSEE EVENT REPORT (LER)

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

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 (3150-0066), 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.

1. FACILITY NAME SURREY POWER STATION , UNIT 1	2. DOCKET NUMBER 05000 280	3. PAGE 1 OF 5
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4. TITLE
Emergency Service Water Pump Found Inoperable After Entry into a Mode

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCUMENT NUMBER
12	04	2004	2004	-- 001 --	00	02	02	2005	FACILITY NAME	DOCUMENT NUMBER 05000

9. OPERATING MODE N	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)			
10. POWER LEVEL 40%	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)		X OTHER			
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Voluntary Report			
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		Specify in Abstract below or in NRC Form 366A			
	20.2203(a)(2)(v)		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

FACILITY NAME Donald E. Jernigan, Site Vice President	TELEPHONE NUMBER (Include Area Code) (757) 365-2001
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPX
B	BI	MSTR	Detroit Diesel	N					

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

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

On December 4, 2004, Unit 1 was operating at 40% reactor power and Unit 2 was at 100%. While conducting a periodic test of the diesel-driven Emergency Service Water (ESW) Pump 1C, the pump failed to start. The pump was declared inoperable and a 7-day Technical Specification (TS) action statement was entered. The cause is attributed to partial implementation of a design change that failed to remove unused wiring which energized a circuit, and resulted in damage to the diesel starter motor during post-modification testing. Following the start failure, the unused wiring was removed. The starter solenoid and starter motor were replaced. The pump was successfully tested and returned to service on December 7, 2004. The pump was inoperable when the Unit 1 reactor coolant system temperature exceeded 350 degrees Fahrenheit and pressure exceeded 450 pounds per square inch on December 1, 2004. Since TS has no specific section 3.0 limitation on entry into a Mode when a LCO is not met, a voluntary LER is being submitted. This event resulted in no safety consequences or significant implications and the health and safety of the public were not affected. The design change for ESW Pumps 1A and 1B will be revised, and circuitry evaluated after implementation. Engineering training will address related items. Maintenance implementation of design changes will be strengthened.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1) SURRY POWER STATION	DOCKET 05000 - 280	LER NUMBER (6)			PAGE (3) 2 OF 5
		YEAR 2004	SEQUENTIAL NUMBER -- 001 --	REVISION NUMBER 00	

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

1.0 DESCRIPTION OF THE EVENT

Circulating water (CW) pumps [EIS: KE, P] draw water from the James River into an elevated intake canal. The canal supplies circulating water by gravity feed for the condensers as well as service water for normal and emergency cooling. Should the CW pumps not be available, three manually started diesel-driven emergency service water (ESW) pumps [EIS: BI, P] can be utilized to supply make-up water to the intake canal for cooling water needs during accident conditions.

On December 4, 2004, Surry Power Station Unit 1 was at 40% reactor power after returning to service from the fall refueling outage. Unit 2 was operating at 100% reactor power. At 0952 hours, ESW pump 1C failed to start during its monthly inservice test. The pump was declared inoperable and a 7-day Technical Specification (TS) action statement was entered.

Troubleshooting determined that the diesel's starter motor [EIS: BI, MSTR] pinion gear was damaged, and the solenoid that engages the pinion gear with the engine flywheel had failed. Further evaluation determined that damage to these parts occurred during a return-to-service run on November 24, 2004, when the solenoid was energized after the start sequence was completed and therefore, engaged the starter motor pinion gear with the flywheel while the diesel was running.

The cause for the starter solenoid being energized was the failure to remove unused wiring during the implementation of a design change on the ESW pump 1C diesel engine. Following the start failure, the unused wiring was removed and the starter solenoid and starter motor were replaced. ESW pump 1C was successfully tested and returned to service on December 7, 2004. The starting circuitry of the other two diesel driven ESW pumps 1A and 1B had not been modified and remained fully operable.

ESW pump 1C was determined to be inoperable following the November 24, 2004 post modification test until repairs were completed on December 7, 2004. When the pump became inoperable, Unit 1 was at cold shutdown (CSD) and its heat load and the spent fuel pit heat load was less than 25 million BTU/hour. In this condition, only two ESW pumps were required to be operable in accordance with TS 3.14.B. On December 1, 2004, Unit 1 reactor coolant system (RCS) exceeded 350 degrees F and 450 psig in preparation for unit startup with only two ESW pumps operable. In this condition, a 7-day limiting condition for operation allows two ESMPs to be operable in accordance with TS 3.14.B. Since TS has no specific section 3.0 limitation on entry into a Mode when a limiting condition for operation is not met, a voluntary LER is being submitted.

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

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

Each ESW pump has a design capacity of 15,000 gallons per minute (gpm). The long-term service water requirements for a loss-of-coolant accident in one unit with the simultaneous loss-of-station power and for the second unit to be brought to hot shutdown is greater than 15,000 gpm. Additional service water is required to bring the non-accident unit to cold shutdown. TSs require three ESW pumps to be operable, taking into consideration a single active failure of one pump, to ensure sufficient cooling water is available in the event of an accident. TSs permit one ESW pump to be inoperable for up to a 7-day period to provide operational flexibility for testing or maintenance without requiring unit outages. When one unit is in CSD and its heat load and spent fuel heat loads are less than 25 million BTU/HR, TSs permit two ESW pumps to be inoperable for up to a 7-day period.

During this event, the appropriate number of the ESW pumps were either operable in accordance with the TS requirements, or complied with the ESW pump TS action statements that permitted pumps to be out of service for testing or maintenance. On November 24, 2004, ESW pump 1C was declared operable without the knowledge that the starter motor was damaged. With Unit 1 at CSD and heat loads at 25 million BTU/hr or less, only two ESW pumps were required to be operable to be in full compliance with TS 3.14.B. ESW pumps 1A and 1B were fully operable. On November 28, 2004, with Unit 1 still at CSD, ESW pump 1B was removed from service due to a suspected head gasket leak. After an evaluation found no head gasket issues, ESW pump 1B was returned to service on November 29, 2004. Considering that ESW pump 1C was out of service due to its starter and ESW 1B out of service to investigate a head gasket issue, the station continued to comply with TS 3.14.B, limiting operation with one operable ESW pump to less than the 7-day action statement.

On December 1, 2004, Unit 1 RCS exceeded 350 degrees F and 450 psig. On December 4, 2004, ESW pump 1C was discovered to be inoperable. When Unit 1 exceeded 350 degrees F and 450 psig on December 1, 2004, TS 3.14.A required three ESW pumps to be operable. TS 3.14.B, however, permits modification of TS 3.14.A to allow one ESW pump to be inoperable for a period not to exceed 7-days. Repairs were made to the ESW pump 1C starter and the pump was successfully tested and returned to service within the 7-day action statement on December 7, 2004. Since TSs do not limit mode changes while in an action statement, a voluntary report is being submitted.

The unavailability of an ESW pump increases the Core Damage Frequency by less than 1.0E-8 per year and the Large Early Release Frequency by less than 1.0E-9 per year. Since the ESW pump 1C was unavailable for approximately 14 days, the Core Damage Probability is less than 1.0E-9 and the Large Early Release Probability is less than 1.0E-10. These probabilities are low and would be classified as an issue of very low safety significance.

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

Therefore, this event resulted in no safety consequences or significant implications and the health and safety of the public were not affected.

3.0 CAUSE

The cause of ESW pump 1C failure to start was the incomplete implementation of the ESW pump pre-lubrication system. Specifically, the portion of the design change package for the pre-lubrication system was to be completed in two parts; the first to install and connect the new equipment, and the second to remove circuit components that were no longer needed. During the implementation phase of the design change, the installation of the new pre-lubrication equipment was to be completed during the fall refueling outage while the demolition of the unused circuit components was to follow at a later time. The design change package did not identify the need to implement these two parts of the design change together. The result was unused wiring that should have been removed, tied into the new circuitry and energized the starter solenoid. After the start sequence was completed, the starter motor pinion gear continued to engage the flywheel with the diesel running and subsequently failed.

The post modification test plan did not identify this condition. In addition, the planning and preparation to implement the ESW design change work package was not adequate.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

At 0952 hours on December 4, 2004, the ESW pump 1C was declared inoperable and Unit 1 and Unit 2 entered a 7-day TS action statement to return the ESWP to operable status. The ESW pump 1C was quarantined, and ESW pump 1A and 1B were designated as protected equipment.

5.0 ADDITIONAL CORRECTIVE ACTIONS

The unused wiring was removed from the ESW pump 1C diesel's starting circuit. A detailed circuitry evaluation was performed to verify proper configuration. The starter solenoid and starter motor were replaced. ESW pump 1C was successfully tested and returned to service at 2031 hours on December 7, 2004.

6.0 ACTIONS TO PREVENT RECURRENCE

The design change for ESW pumps 1A and 1B will be revised to require the unused circuit components to be removed with implementation of the new pre-lubrication system. A detailed circuitry evaluation will be performed following implementation.

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

Engineering Training will emphasize the appropriate identification of work prerequisites, required sequences, and assumptions in design change packages.

Programmatic tools used by Maintenance to implement design changes will be reviewed and strengthened to ensure design change packages are effectively implemented.

7.0 SIMILAR EVENTS

None

8.0 MANUFACTURER/MODEL NUMBER

Detroit Diesel Part # 0461128P starter motor

9.0 ADDITIONAL INFORMATION

None