

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Virgil C. Summer Nuclear Station DOCKET NUMBER (2) 0 5 0 0 0 3 9 5 PAGE (3) 1 OF 0 3

TITLE (4) Main Turbine Trip - Reactor Trip

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)												
0	4	2	8	4	8	4	0	1	0	7	0	2	8	4		0	5	0	0	0		
																0	5	0	0	0		

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

OPERATING MODE (8) <u>1</u>	20.402(b)	20.405(c)	<input checked="" type="checkbox"/> XXXX	80.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) <u>0112</u>	20.405(a)(1)(i)	80.38(e)(1)		80.73(a)(2)(v)	73.71(e)
	20.405(a)(1)(ii)	80.38(e)(2)		80.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 386A)
	20.405(a)(1)(iii)	80.73(a)(2)(i)		80.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	80.73(a)(2)(ii)		80.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	80.73(a)(2)(iii)		80.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
<u>A. R. Koon, Jr., Assoc. Mgr., Regulatory Compliance</u>	<u>81013 314151-1512109</u>
AREA CODE	

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS
X	TIG		GI 0180	N	X	AAA	FU		N
X	SJ	MO	A 391	Y	X	IG	DET	130	Y

SUPPLEMENTAL REPORT EXPECTED (14)

YES (if yes, complete EXPECTED SUBMISSION DATE) XXXX

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On April 22, 1984, with reactor power at 12%, and on April 29, 1984, with reactor power at 11%, the reactor tripped due to a main turbine trip. Both main turbine trips occurred as a result of main turbine shaft oil pump low discharge pressure while rolling the main turbine up to 1800 rpm. The Reactor Protection System functioned properly on both events, and Engineering Safety Feature actuated as designed (i.e., Emergency Feedwater Pump start on Low-Low Steam Generator Level). The causes of these events were attributed to conservative switch settings and loss of suction on the motor suction pump.

Inspection of the motor suction pump and check valve will be performed during the First Refueling outage. The procedure has been changed to delete the head correction on the pressure switch, and the pressure switch setpoint will be changed during the First Refueling Outage.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Virgil C. Summer Nuclear Station	0   5   0   0   0   3   9   5	84	- 0   2   4	- 0   1	0   2	OF	0   3

TEXT (If more space is required, use additional NRC Form 365A's) (17)

At approximately 0903, April 22, 1984, the reactor tripped from 12% power due to a main turbine trip. While rolling the main turbine to 1800 rpm, the main turbine shaft oil pump discharge low pressure switch actuated causing the main turbine to trip. NOTE: First Out Annunciator was Turbine Trip and P-7 Permissive. The Reactor Protection System functioned properly, and there was no actuation of any safety or Power Operated Relief valves. The Steam Dump Valves functioned properly and no Safety Limits nor Limiting Safety Setting were exceeded.

Subsequent investigation revealed actual lube oil pressure to be normal when checked locally with the turbine rolling between 1600 and 1700 rpm. Maintenance personnel manually actuated the switch several times, verified calibration, and found it to be satisfactory. Inadvertent switch operation was attributed to the cause of the reactor trip.

The unit was placed in a stable condition after the trip; the cause of the reactor trip was adequately evaluated, and a restart was authorized in accordance with Emergency Operating Procedure (EOP) 5, "Recovery from Reactor Trip."

On April 29, 1984, at approximately 0855 hours, the reactor tripped from 11% power due to a main turbine trip. The main turbine tripped while rolling up to 1800 rpm on main turbine shaft pump discharge low pressure. This again was verified by First Out Annunciator. Local readings taken immediately following the reactor trip showed the discharge pressure of the main turbine motor suction pump and the shaft driven lube oil pump to be zero. The Reactor Protection System functioned properly, and there was no actuation of any safety or Power Operated Relief Valves. Steam Dump Valves functioned properly, and there were no Safety Limits nor Limiting Safety Setting exceeded. Steam Generator "B" Feedwater Isolation Valve XVG-1611B failed to auto close on reactor trip; however, the Feedwater Control Valve provided Feedwater Isolation. Valve XVG-1611B was manually closed approximately seven (7) minutes into the event. The operator also received an urgent failure alarm on rod control, and NI-31, Source Range Detector "B", developed excessive spiking before falling low. Maintenance work requests were initiated to investigate and repair XVG-1611B, NI-31, and the urgent failure alarm in rod control. The air motor on the hydraulic pump for the operation of XVG-1611B was found to be defective and was replaced. The valve was tested satisfactorily and declared operable April 30. Blown fuses were found in the rod control power cabinets. The fuses were replaced and the rod control returned to service April 29. Investigation into the spiking of NI-31 attributed the cause to a defective detector. The detector was replaced, calibrated, and declared operable May 3, 1984.

As noted previously, local reading on the main turbine motor suction pump discharge pressure indicated zero. When the motor suction pump was manually stopped and restarted, oil pressure indications were obtained. Discussion with General Electric Corporation (G.E.) revealed that other plants had experienced similar problems because of the motor suction pump discharge check valve sticking closed.

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

Preventive Test Procedure (PTP) 102.006, "Main Turbine Lube Oil Suction Pressure Monitoring," was written to be implemented on the next turbine roll up. The PTP was initiated to gather information to help determine the root cause of the trips because of low lube oil pressure. The PTP was conducted on May 3 and May 7, 1984. From the test data results, the turbine would have tripped in both roll ups because of low shaft driven pump discharge pressure at 1300 rpm. The main turbine motor suction pump, on occasions appeared to lose prime causing the discharge pressure to decrease. The discharge pressure of the shaft driven pump did not increase linear with pump speed, but there appeared to be a droop in the discharge pressure.

G.E. was also questioned concerning the set points of the pressure switch. The schematics show the pressure setpoints in relation to the centerline of the turbine. The Licensee, therefore, applied a "head correction" of 23.5 psig due to the location of the switch in respect to the centerline of the turbine.

Confirmation was received from G.E. on May 16, 1984, that the value shown at centerline should be the value at the pressure switch. As such, the setting has been conservative. A procedure change has been issued to delete the head correction from the setpoint.

Inspection of the pump and check valve has been scheduled during the First Refueling Outage.

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE 764

COLUMBIA, SOUTH CAROLINA 29218

O. W. DIXON, JR.  
VICE PRESIDENT  
NUCLEAR OPERATIONS

July 2, 1984

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

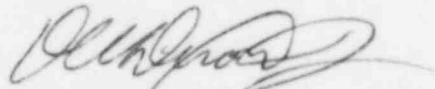
SUBJECT: Virgil C. Summer Nuclear Station  
Docket No. 50/395  
Operating License No. NPF-12  
LER 84-024, Revision 1

Dear Sir:

Please find attached Revision 1 to Licensee Event Report #84-024 for the Virgil C. Summer Nuclear Station. The changes are denoted by the bar lines in the right hand margin on pages 1, 2 and 3. This Report was previously submitted on May 22, 1984, in accordance with the requirements of 10 CFR 50.73(a)(2)(iv).

Should there be any questions, please call us at your convenience.

Very truly yours,



O. W. Dixon, Jr.

ARK:RJB:OWD/dwf  
Attachment

cc: V. C. Summer	J. F. Heilman
T. C. Nichols, Jr./O. W. Dixon, Jr.	C. L. Ligon (NSRC)
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