NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

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

TITLE (4) Safety Injection/Reactor Trip When "A" Main Steam Isolation Valve Closed During Testing and Inadequate Review of Post Trip Data

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 5	1 2	8 8	8 8	— 0 0 6	— 0 0	0 6	0 9	8 8		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
W. R. Higgins, Supervisor, Regulatory Compliance	AREA CODE 8 0 3 — 3 4 5 - 4 0 4 2

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	
X	M S			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)

At 0446 hours, May 12, 1988, a Safety Injection (SI)/Reactor Trip occurred when "A" Main Steam Isolation Valve (MSIV) shut during testing. When the test switch was released following the testing of "A" MSIV, the valve went fully shut decreasing the steam flow from its associated steam generator. This decrease of steam flow on "A" steam header caused a corresponding increase in steam flow and a decrease in steam pressure on B and C steam headers. As part of the "Reactor Protection System," this rapid decrease in steam pressure on two headers caused a Safety Injection (SI)/Reactor Trip.

A Notification of an Unusual Event (NUE) was declared at 0510 hours as the result of the SI and was downgraded to normal plant condition at 0515 hours.

On May 16, 1988, during a review of the post trip data by the Independent Safety Engineering Group (ISEG), it was identified that Service Water flow to the Reactor Building Cooling Units (RBCU) decreased below the Technical Specifications limit during the event.

On May 17, 1988, a Management Review Board meeting, chaired by the acting Vice President, Nuclear Operations, was convened to review this event. As a result of this meeting, the following action is to be taken:

Engineering is to review the design requirements of the MSIV circuitry, identify what is common in both the normal and test circuit, and what can be monitored during the next test. With respect to the reviewing of post trip data, Computer Services is to evaluate the feasibility of displaying various parameters in graphic form for higher visibility.

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

PLANT IDENTIFICATION

Westinghouse - Pressurized Water Reactor

EQUIPMENT IDENTIFICATION

Main Steam - EIIS (SB)
Containment Fan Cooling System - EIIS (BK)
Essential Service Water System - EIIS (BI)

IDENTIFICATION OF EVENTS

Safety Injection and Reactor Trip when "A" Main Steamline Isolation Valve shut during testing.

Post trip review identified that Service Water flow to the Reactor Building Cooling Units deteriorated below the Technical Specifications minimum value during the event.

EVENT DATE

May 12, 1988

DISCOVERY DATE

May 12, 1988 and May 16, 1988

REPORT DATE

June 7, 1988

This report was initiated by Off-Normal Occurrence Report 88027.

CONDITION PRIOR TO EVENT

Mode 1
100% Power

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DESCRIPTION OF EVENT

On May 12, 1988, at approximately 0446 hours, Surveillance Test Procedure (STP) 121.002, "Main Steam Line Operability Test," was being performed on "A" Main Steam Isolation Valve (MSIV). The subject test verifies operability of the valve by stroking it from 100% open to 90% and back to 100% open.

The test was being performed at a local control test switch by a Reactor Operator (RO) and was observed by the Shift Supervisor. The movement of the valve is confirmed by observing the valve indication on the Main Control Board and therefore, communications had been established with the Control Room.

The RO notified the Control Room of his action and placed the two position (Normal/Test) switch to the test position. NOTE: The switch has a spring return to the normal position. When the Control Room notified the RO that movement of the valve was satisfactory, he released the switch and it spring returned to normal. At this time, the valve went shut instead of returning to the full open position.

Shutting of "A" MSIV isolated steam from a steam generator which resulted in an increased steam flow and a rapid decrease in steam pressure from the remaining steam generators (SG) B and C. Low steam line pressure is "rate sensitive" and the rapid decrease in steam line pressure resulted in initiating a Safety Injection (SI)/Reactor Trip. As a result of the valid SI, the Shift Supervisor declared the plant to be in a Notification of an Unusual Event (NUE) at 0510 hours on May 12, 1988. Approximately five minutes later (0515 hours), the condition of the plant was downgraded to normal.

Following the replacement of the test switch, restart was authorized and criticality was established at 2104 hours, May 12, 1988.

On May 16, 1988, during a review of the post trip data by the Independent Safety Engineering Group (ISEG), it was identified that Service Water flow to the Reactor Building Cooling Units (RBCU) deteriorated below the Technical Specifications limit during the subject event.

CAUSE OF EVENT

The cause of the closure of "A" MSIV is believed to be attributed to the operation of the test switch. The RO stated that on completion of the test, he may have "relaxed" holding the switch in the test position prior to releasing it and allowing it to spring return to normal. The Licensee has tested similar switches and found that continuity could be "broken" if it is slowly moved from the "Test" to "Normal" position. No interruption in continuity has been witnessed when allowing the switch to spring return from test to normal.

The cause of low Service Water flow to the RBCU's during the event is believed to be due to an unidentified (at present) aquatic growth and/or silt deposits. The operations personnel could not specifically state that they saw or acknowledged the low Service Water flow alarm prior to securing the Service Water Booster Pumps (SWBP). Within five minutes of the initiation of this combined (SI/Reactor Trip) event, there were approximately 84 alarms which had to be acknowledged by control room personnel which contributed to their uncertainty with respect to the low flow condition.

The reviewers, performing the initial post trip review, verified the starting of the SWBP's and the initial flow rate of a minimum 4000 gpm, but failed to notice the flow deterioration below the minimum value as required by the Technical Specifications.

ANALYSIS OF EVENT

The consequences due to these events were minimal. The Reactor Protection System responded to the abnormal conditions by initiating the SI/Reactor Trip. The computer printout verifies proper starting of the Service Water Booster Pumps and the initial flow of a minimum 4000 gpm to the RBCU's. In addition, both trains of Reactor Building Spray System remained operable and are redundant to the RBCU's as stated in the Bases of the Technical Specifications.

Due to a previous steam generator tube leak, the steam exhausted to atmosphere from the Turbine Driven Emergency Feedwater Pump resulted in an unmonitored radioactive release. The release has been calculated to be a small fraction of the allowable release limits and is of minimal consequences.

IMMEDIATE CORRECTIVE ACTION

On receipt of the Safety Injection and Reactor Trip, the Control Room Supervisor initiated action as required by the appropriate Emergency Operating Procedure (EOP). Action, in part, required the verification of equipment starting such as Service Water Booster Pumps, Motor Driven Emergency Feedwater Pump, Turbine Driven Emergency Feedwater Pumps, and Diesel Generators.

At approximately 0510 hours, the Shift Supervisor declared a Notification of an Unusual Event (NUE) as a result of the SI which was downgraded to normal plant condition at 0515 hours.

Upon replacement of the MSIV switch, restart was authorized and criticality was established at 2104 hours on May 12, 1988.

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When identified on May 16, 1988 by ISEG that Service Water flow to the RBCU's had been below the Technical Specifications limit, both trains of RBCU's were declared inoperable. Service Water flow balance was conducted and flow adjusted, as required, to other heat exchangers which increased the flow to "A" RBCU above the minimum required and the unit was declared operable after twenty-five hours and thirty minutes.

ADDITIONAL CORRECTIVE ACTION

On May 17, 1988, a Management Review Board meeting, chaired by the acting Vice President, Nuclear Operations was convened to review these events.

The following corrective action is to be taken:

Engineering is to review the design requirements of the MSIV circuitry, evaluate what is common to the "Normal" and "Test" circuitry, and identify what can be monitored during any future test. In addition, the circuitry is being evaluated to determine if the "Test" circuitry can be segregated from the "Normal" circuitry.

A sign has been posted on the test panels that instructs the test performer on the proper operation of the switch. In addition, Operations personnel have been instructed not to operate the MSIV or test switch if another failure occurs until a complete inspection of the switch and associated solenoid valves has been performed.

With respect to the failure to identify the low flow condition, the following action is planned. Computer Services is to expedite the feasibility of displaying post trip parameters in graphical form to enhance review. Shift Engineers will be required to review this Licensee Event Report to increase awareness of the requirements for an indepth review of post trip data.

The A and B Train RBCU's have been acid cleaned and flow established to above the minimum required by Technical Specifications. Service Water flow to the RBCU's will be monitored periodically to verify flow until the forthcoming refueling outage which is scheduled to start in September 1988.

A modification to the Service Water system is scheduled for this outage. This modification will install qualified valves which will allow the isolation of one RBCU per train and therefore reducing the flow requirement to 2,000 gpm.

PRIOR OCCURRENCES

LER 85-005, April 16, 1985

10CFR50.73

SCE&G
A SCANA Company

South Carolina Electric & Gas Company
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Jenkinsville, SC 29065
(803) 345-4041

Dan A. Nauman
Vice President
Nuclear Operations

June 10, 1988

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

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
Operating License No. NPF-12
LER 88-006

Gentlemen:

Attached is Licensee Event Report No. 88-006 for the Virgil C. Summer Nuclear Station. This report is submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv).

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

Very truly yours,

D. A. Nauman

RJB/DAN:lcd
Attachment

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