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AUTH.NAME AUTHOR AFFILIATION
KANSLER,M.R. Virginia Power (Virginia Electric & Power Co.)
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 91-010-00:on 911031,determined that damage to C main steam trip valve/bypass valve 2-MS-155 rendered valve incapable of immediate closure.Caused by failure of yolk bushing threads in valve.Valve closed.W/911202 ltr.

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TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:1cy NMSS/IMSB/PM. 05000281

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	AEOD/ROAB/DSP	2	2	NRR/DET/ECMB 9H	1	1
	NRR/DET/EMEB 7E	1	1	NRR/DLPQ/LHFB10	1	1
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	NRR/DST/SRXB 8E	1	1	REG FILE 02	1	1
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EXTERNAL:	EG&G BRYCE,J.H	3	3	L ST LOBBY WARD	1	1
	NRC PDR	1	1	NSIC MURPHY,G.A	1	1
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Virginia Electric and Power Company
Surry Power Station
P. O. Box 315
Surry, Virginia 23883

December 2, 1991

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

Serial No.: 91-718
Docket No.: 50-281
License No.: DPR-37

Gentlemen:

Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report for Unit 2.

REPORT NUMBER

91-010-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be reviewed by the Corporate Management Safety Review Committee.

Very truly yours,

M. R. Kansler
Station Manager

Enclosure

cc: Regional Administrator
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30323

IE22
1/1

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Surry Power Station, Unit 2	0 5 0 0 0 2 8 1	1 OF 0 4

TITLE (4) Loss of Containment Integrity Caused by Failure of Main Steam Trip Valve Bypass Valve

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 0 0 0
1 0	3 1	9 1	9 1	— 0 1 0	— 0 0	1 2	0 2	9 1		0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check one or more of the following)* (11)			
POWER LEVEL (10)	0	20.402(b)	20.405(c)	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)	X 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
M. R. Kansler, Station Manager	AREA CODE 8 0 4 3 5 7 - 3 1 8 4

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS
B	S B	I S V	C 6 6 5	Y					

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)

On October 31, 1991, at 0017 hours, with Unit 2 critical at 10E-8 amps intermediate range indication, it was determined that damage to the "C" Main Steam Trip Valve (MSTV) Bypass Valve, 2-MS-155, rendered the valve incapable of immediate closure. The on-shift operations staff determined that the inability to close this manual valve immediately was contrary to the requirements of Technical Specification 3.8.A.1 concerning containment integrity. An action statement was entered in accordance with Technical Specification 3.0.1. The "C" Main Steam Non-Return Valve and associated drain valves were closed at 0605 hours to re-establish containment integrity and terminate the action statement. The "C" MSTV Bypass Valve was closed using a hydraulic jacking device and mechanically blocked closed by 0900 hours. No adverse consequences to public health and safety were created by the event since the Non-Return Valve was available to isolate the main steam line. The event was caused by failure of the yoke bushing threads in 2-MS-155, which is believed to be the result of galling on the valve stem threads. A failure evaluation will be performed on 2-MS-155 and it will be repaired or replaced. This report is required by 10 CFR 50.73(a)(2)(i)(B).

1.0 - DESCRIPTION OF THE EVENT

On October 31, 1991, at 0017 hours, with the Unit 2 reactor critical at 10E-8 amps intermediate range indication, it was determined that the "C" Main Steam Trip Valve (MSTV) Bypass Valve [EIIS-SB, ISV], 2-MS-155, was in a condition where it could not be immediately closed. The MSTV Bypass Valves, which are manual, rising stem gate valves, were being opened in accordance with procedure 2-GOP-1.4, "Unit Startup - HSD to 2% Reactor Power", to admit steam to the main steam lines prior to opening the MSTVs. While opening 2-MS-155, the operator noticed that the yoke bushing threads, which engage the valve stem threads, appeared to be stripping. Since a complete failure of the bushing threads would result in a sudden forcing open of the valve by main steam pressure, the operator refrained from any additional turning of the valve handwheel.

Technical Specification (TS) 3.8.A.1 requires that containment integrity be maintained at all times except when in cold shutdown. The definition of containment integrity requires in part that non-automatic containment isolation valves, when opened for operational activities, be under administrative control and be capable of immediate closure if required. Since 2-MS-155 bypasses the "C" MSTV,which is a containment isolation valve, 2-MS-155 was conservatively treated as a containment isolation valve even though it is not listed as such in the TS. Specifically, since 2-MS-155 was in a condition where it could not be closed immediately, the on-shift operations staff considered that TS 3.8.A.1 was not being satisfied. Because TS 3.8.A.1 does not specify remedial actions to be taken when containment integrity requirements are not satisfied, TS 3.0.1 applies. In accordance with TS 3.0.1, an action statement requiring hot shutdown within 6 hours and cold shutdown within the following 30 hours was entered at 0017 hours.

The Station Nuclear Safety and Operating Committee (SNSOC) approved a temporary modification whereby 2-MS-155 would be closed using a hydraulic jacking device and secured with a mechanical blocking device. At 0520 hours, 2-MS-155 was closed but was not yet secured with the blocking device. At 0605 hours, the "C" Main Steam Non-Return Valve (NRV) [EIIS-SB, ISV] and associated drain valves, which are downstream of the MSTV, were closed to restore containment integrity. The TS action statement was terminated at that time. At 0900 hours, 2-MS-155 was secured to prevent it from going open and the hydraulic jack was removed. Startup of Unit 2 was then resumed.

This report is required by 10 CFR 50.73(a)(2)(i)(B) because Unit 2 was operated in a condition not addressed by the Technical Specifications.

2.0 - SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

The main steam system is separated from the reactor coolant system and the containment atmosphere by a membrane barrier (pipe, tubing, or a component wall). A second isolation barrier is provided by the MSTVs. The membrane

barriers were intact throughout the event. In the event steam line isolation had been necessary to mitigate the consequences of a steam line break or steam generator tube rupture, the "C" NRV, which is listed in the Updated Final Safety Analysis Report (UFSAR) as a containment isolation valve, would have been closed in accordance with Emergency Operating Procedures. It is concluded that no adverse consequences to public health and safety resulted from the event.

3.0 - CAUSE OF THE EVENT

The event was caused by failure of the yoke bushing threads on 2-MS-155. Failure of the yoke bushing threads is believed to have been caused by galling of the stem threads. A Component Failure Analysis will be performed to determine the specific cause of the stem damage.

4.0 - IMMEDIATE CORRECTIVE ACTIONS

After it was determined that TS 3.8.A.1 was not being satisfied, an action statement was entered in accordance with TS 3.0.1. A temporary modification was developed and then SNSOC approved to close 2-MS-155 and secure it in the closed position. The valve was closed by turning the handwheel while using a hydraulic jacking device to apply a force to the valve stem in the close direction, reducing the load on the damaged yoke bushing. Containment integrity was restored by closing the "C" NRV. A mechanical blocking device was installed on 2-MS-155 to prevent it from opening. The device consists of an internally threaded block which is split longitudinally. The two halves of the block are bolted together around the valve stem and transfer any opening force on the valve stem to the valve yoke rather than the damaged yoke bushing. The Unit 2 "A" and "B" MSTV Bypass Valves were examined and no damage was observed.

5.0 - ADDITIONAL CORRECTIVE ACTIONS

It was determined that an increased level of administrative control over the MSTV bypass valves was necessary in order to fully satisfy the intent of TS 3.8.A.1. Although they are not specifically listed as containment isolation valves in the TS, the MSTV bypass valves will be controlled as such, since they bypass the MSTVs. Specifically, the MSTV bypass valves will be locked closed and under administrative control. The valves will remain under administrative control with an operator standing by when required to be open for operational activities. Other piping systems penetrating the containment were reviewed to identify valves which perform a containment integrity function but are not listed as containment isolation valves in the TS. Verification of the resulting valve list is in progress and proper administrative controls over these valves will be confirmed. Additional controls will be established if necessary.

Consistent with NRC Generic Letter 91-08, a license amendment will be requested to relocate the containment isolation valve listings from the TS to UFSAR. These lists will be updated as needed to reflect the results of the above review.

6.0 - ACTIONS TO PREVENT RECURRENCE

A Component Failure Analysis will be performed on 2-MS-155 and the valve will be repaired or replaced during the next outage of sufficient duration. Preventive measures will be taken on other valves if a generic concern is identified.

7.0 - PREVIOUS EVENTS

None

8.0 - ADDITIONAL INFORMATION

Failed Components:

Crane 6in., 600 lb. Cast Steel Gate Valve, Model 76 1/2