

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) H. B. Robinson Plant, Unit No. 2	DOCKET NUMBER (2) 0 5 0 0 0 2 6 1	PAGE (3) 1 OF 0 4
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TITLE (4)
Main Steam Isolation Valves

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	1	0	5	8	5	0	0	2			0 5 0 0 0
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OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(c)	<input type="checkbox"/> 50.73(e)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 30.38(c)(1)	<input checked="" type="checkbox"/> 50.73(e)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 30.38(c)(2)	<input type="checkbox"/> 50.73(e)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)						
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)				TELEPHONE NUMBER			
NAME Carson L. Wright				AREA CODE			
				8 0 3 3 8 3 - 4 5 2 4			

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
B	S	B	I S V	S 0 7 5	Y				

SUPPLEMENTAL REPORT EXPECTED (14)	EXPECTED SUBMISSION DATE (15)	MONTH DAY YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	

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

The Plant was shut down in preparation to start up following an extended Steam Generator Replacement outage. On January 5, 1985, a design deficiency with the Main Steam Isolation Valves (MSIV) was identified. A single failure of a relay in the MSIV safeguards logic could result in the failure of MSIV(s) to close during a safeguards MSIV closing signal.

The MSIVs have been modified to correct this situation. The cause was the apparent lack of understanding of valve operation during the original design. This problem was identified during discussions with another utility which had reported a problem with their MSIVs to the NRC.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

As a result of discussions with another utility on their problems with MSIVs, a detailed review was conducted of the H. B. Robinson MSIV controls. On January 5, 1985, a design deficiency was discovered in the safeguards system controls for the MSIVs. The MSIV design was such that a single failure of a relay in the MSIV safeguards logic could have prevented closure of a valve.

When the MSIV Control Switch is placed in the "SHUT" position, the following response is obtained:

1. The three-way "opening" solenoids position to vent the bottom of the operating piston.
2. The "closing" solenoids open to pressurize the top of the operating piston.
3. The "test" solenoid positions to secure the vent on the top of the operating piston.

This allows operating air on the top of the operating piston and the force of the closure spring to close the MSIV. These actions are duplicated by the Steam Line Break Logic of the Engineer Safeguards Features (ESF) by action of the SL-1 ("A" Train) and SL-2 ("B" Train).

Our review of the MSIV control circuitry revealed that true redundancy was not provided by the method in which the ESF signal was applied to the MSIV operating solenoids. Because of this, it could be postulated that "B" and "C" MSIVs might not close on a failure of a single active component in "B" train of safeguards and that "A" MSIV might not close on a failure of a single active component in "A" train of safeguards. As an example, a failure in "A" train of safeguards is assumed, and the resulting operation of "A" MSIV is discussed. (Reference the enclosed sketch). In this case, the failure prevents the operation of the SL-1 contacts, and thus, the following response is obtained:

1. The three-way "opening" solenoids remain in the position which pressurizes the bottom of the operating piston.
2. One of the two "closing" solenoids opens to pressurize the top of the operating piston.
3. The test solenoid remains in position to continue venting the top of the operating piston through an orifice.

In this scenario, the forces applied by the air pressure above and below the operations cylinder are judged to be approximately equal. Therefore, the direction in which the valve moves will be determined by the spring force (CLOSE). The spring will not, however, expand to the full length required to close the valve, and once the spring is fully extended, the valve will tend to drift. Although it is expected

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

that the valve disk will enter the steam flow and then fully shut, this is not considered a responsible design. The operation of "B" and "C" MSIV is similar with the SL-1 and SL-2 logic function reversed.

To correct this deficiency, the control circuitry for the "opening" solenoids has been modified to cause the bottom side of the operating piston to "VENT OFF" in response to a steam line isolation signal from either "A" or "B" train of safeguards. This will result in positive action to close the valve in response to the air pressure on top of the operating cylinder. A modification to the test solenoid was not necessary because the vent contains an orifice which limits the "bleed off" of air above the operating cylinders. The operation of the MSIVs with the modified control circuitry has been tested and operates properly.

The cause of this error was an apparent lack of understanding of MSIV operation during the original design of the valve controls.

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H. B. Robinson S. E. Plant, Unit No. 2

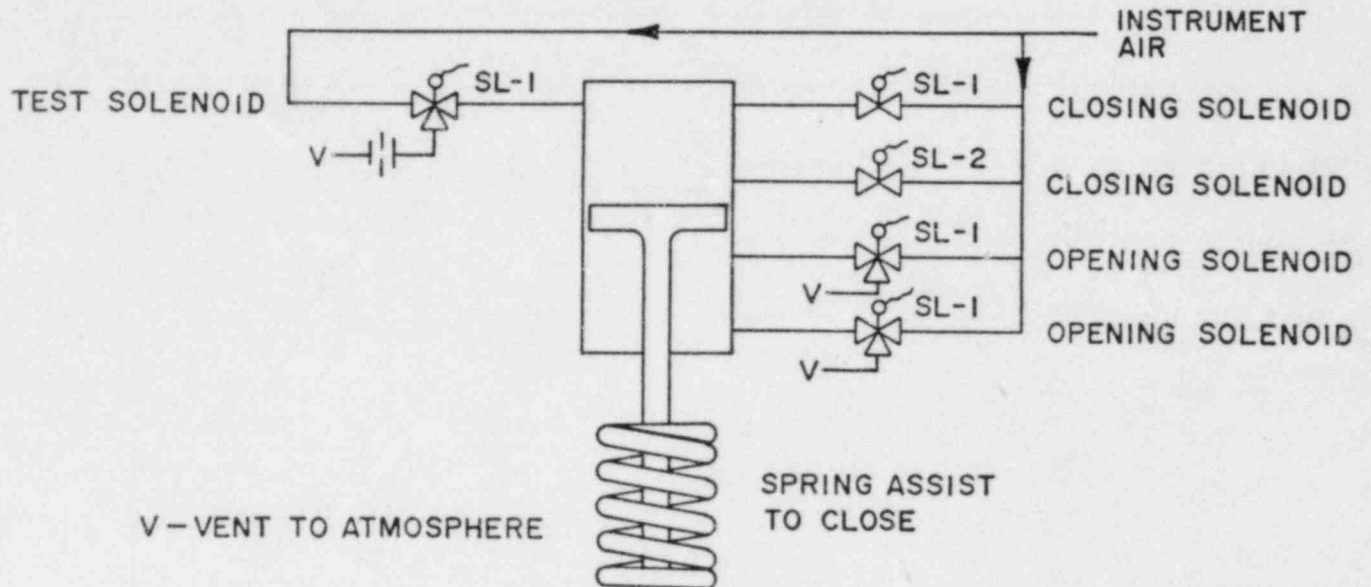
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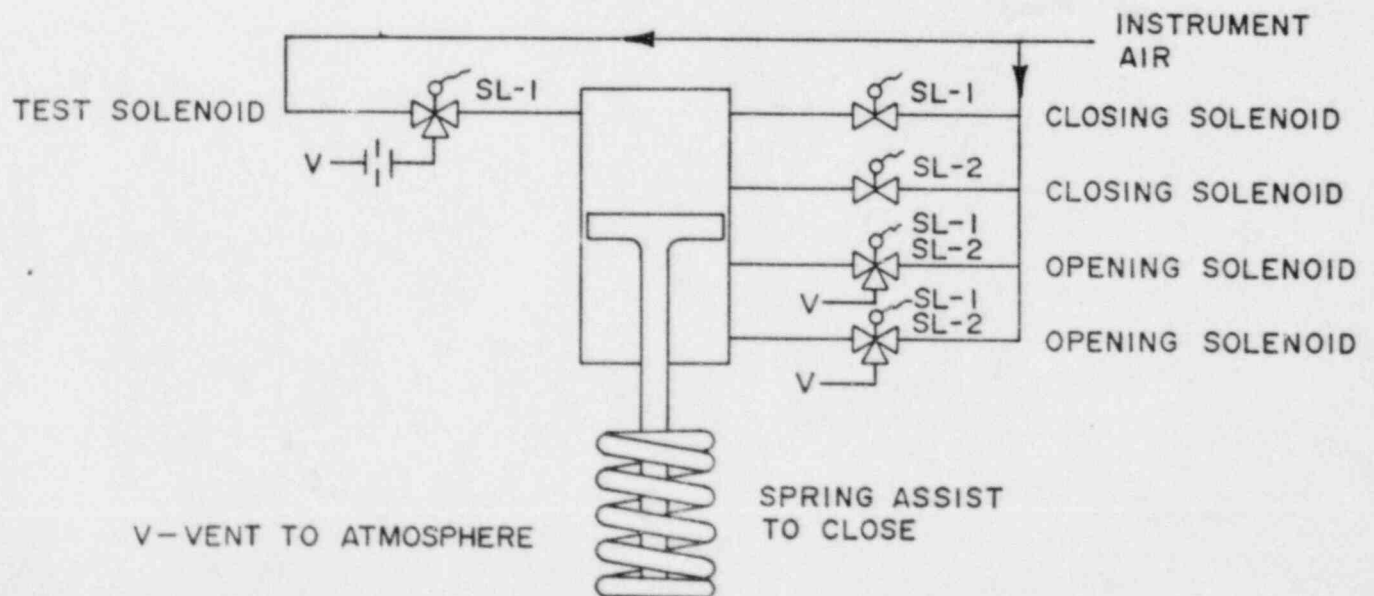
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

"A" MSIV
BEFORE MODIFICATION



"A" MSIV
AFTER MODIFICATION



CP&L

Carolina Power & Light Company

ROBINSON NUCLEAR PROJECT DEPARTMENT
POST OFFICE BOX 790
HARTSVILLE, SOUTH CAROLINA 29550
FEB - 6 1985

Robinson File No: 13510C

Serial: RNP/85-232

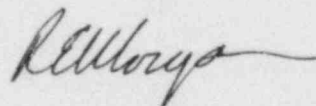
United States Nuclear Regulatory Commission
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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
LICENSEE EVENT REPORT 85-002

Dear Sir:

In accordance with 10CFR50.73, Licensee Event Report, the enclosed Licensee Event Report is submitted. This report fulfills the requirements for a written report within (30) days of a reportable event and is in accordance with the format set forth in NUREG-1022, September, 1983.

Very truly yours,



R. E. Morgan
General Manager
H. B. Robinson S. E. Plant

CLW/ac

Enclosure

cc: INPO
H. E. P. Krug
J. N. Grace

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