

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Millstone Nuclear Power Station Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 2 4 5 1 OF 0 4					PAGE (3) 1 OF 0 4									
TITLE (4) Failure of 1-MS-1D and 1-MS-2D to Close																								
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	2	0	6	8	6	8	6	—	0	0	6	—	0	2	1	0	2	9	8	7	0 5 0 0 0 0			
OPERATING MODE (9) N			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 0 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)(vi)				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)(ix)													
LICENSEE CONTACT FOR THIS LER (12)																								
NAME Joseph A. Summa, Assistant Engineering Supervisor, X5555										TELEPHONE NUMBER 2 0 3 4 4 7 - 1 7 9 1														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC														
B	J M	0 0 3 3	N 0 0 7	N																				
B	J M	F S V	N 4 1 7	N																				
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH		DAY		YEAR								
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										NO		0		8		25 8 9								

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

On February 6, 1986, at 0240 hours while at 0% power (508°F 721 PSI), valve 1-MS-1D produced dual position indication when it's control switch was placed in the 'close' position. The backup containment isolation valve, 1-MS-2D, was closed one minute later, requiring three actuations of it's control switch to close. Valve 1-MS-1D 'valve open' limit switch had failed to reset following valve closure. The limit switch was disassembled and the slide plate and contact block were replaced. Valve 1-MS-2D air (slide) valve assembly was disassembled and a small amount of dirt was found inside the lower cover. The slide valve and air filter were replaced. There were no consequences.

On February 2, 1987, Licensee Event Report 86-006-01 reported the results of a "Substantial Safety Hazard Evaluation". These results showed that no substantial safety hazard existed and the failure was random in nature. The report further identified that during the 1987 refueling outage switch internals would be replaced on all Main Steam Isolation Valve (MSIV) limit switches and stick-on temperature indicators that were placed on the MSIV limit switches would be read.

The results of the temperature investigation showed that maximum steady state temperatures at the limit switches range between 170°F and 330°F which are within the qualification range for the limit switches. Inspection of the replaced switch internals showed that most of the phenolic internals on the limit switches were warped although their electrical characteristics were satisfactory. The switch mounting will be reviewed with possible redesign to reduce the conducted temperature seen by the limit switches.

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APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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TEXT (If more space is required, use additional NRC Form 305A's) (17)

I. Description Of Event

On February 6, 1986 while at 0% power, 508°F, 721 PSI with the mode switch in startup for precriticality checks, personnel commenced the main steam isolation valve closure test surveillance at 0225. At 0240, valve 1-MS-1D ('D' steam line inboard MSIV) produced dual position light indication when it's control switch was placed in the 'close' position. At 0241, valve 1-MS-2D ('D' steam line outboard MSIV) was closed. Valve 1-MS-2D required three actuations of it's control switch to indicate closed. The plant remained in a stable condition with all rods fully inserted. No automatic or manually initiated safety responses occurred. The immediate corrective action of closing the backup containment isolation valve 1-MS-2D at 0241 ensured containment integrity. Preparations were made for drywell entry to investigate and verify valve 1-MS-1D's position.

Valve 1-MS-1D was found to be in the closed position and a faulty limit switch was determined to be the cause of the dual indication. The limit switch contact block slide plate had warped, causing the 'valve open' switch to hang up. The limit switch was repaired by replacing the contact block and slide plate, and was satisfactorily retested and declared operable. Valve 1-MS-2D air operator slide valve and filter were then disassembled and a small amount of dirt was found in the slide valve assembly lower cover. The dirt in the slide valve assembly was the cause for the difficulty in valve operation. The slide valve assembly and filter were replaced and valve 1-MS-2D was satisfactorily retested and declared operable.

II. Cause Of Event

The dual position indication of valve 1-MS-1D was caused by binding of the 'valve open' limit switch contact block and slide plate. Inspection of the failed switch internals revealed that the slide plate had warped slightly. The difficulty in operation of valve 1-MS-2D was caused by dirt in the air operator slide valve. No personnel errors contributed to the event.

III. Analysis Of Event

The apparent failure of 1-MS-1D to close due to limit switch failure and the failure of 1-MS-2D to close on the first actuation of the control switch was initially perceived to be a loss of primary containment integrity, which is required when the reactor water temperature exceeds 212°F and irradiated fuel is in the vessel (Technical Specification 3.7.3).

No safety consequences resulted from this event. Valve 1-MS-1D had gone closed when first actuated and the backup containment isolation valve 1-MS-2D was closed within one minute of the dual position indication of valve 1-MS-1D.

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TEXT (If more space is required, use additional NRC Form 308A's) (17)

IV. Corrective Actions

The limit switch that failed on valve 1-MS-1D was repaired by replacing the slide plate and contact block. The air operator slide valve assembly on valve 1-MS-2D was repaired by replacing the slide valve and air filter and by removing the dirt from the assembly. Repair to the slide valves are controlled by a Maintenance Procedure which specifically requires flushing of air lines and cleanliness checks prior to final connection of air supply lines.

V. Additional Information

Valve 1-MS-1D position switch is a Namco Snaplok limit switch model EA 740. Valve 1-MS-2D air slide valve is a Numatics air valve assembly number 91746U. A Substantial Safety Hazard Evaluation of the failed limit switch is in progress.

There were no previous similar events.

In Licensee Event Report 86-006-00 the staff was informed of a problem with valve 1-MS-1D switch when it failed to reset following valve closure. At that time it appeared that the failure to reset was a result of the slide plate being slightly warped. Due to the concern that the switch, which is environmentally qualified, could have failed from temperature induced effects, a Substantial Safety Hazard Evaluation (SSH) was initiated. The SSH Evaluation was then sent to NUSCo Licensing to be forwarded to NUSCo Generation Engineering Special Projects for investigation.

The results of the investigation concluded that no substantial safety hazard existed and that the failure was random in nature. This is based on the fact that this is only the second failure of a limit switch out of thirty two in similar service. We continue to feel that the cause of the warped component may be related to the temperature that the switch internals experience due to conduction through the mounting bracket. The switch internals will be replaced in the 1987 refueling outage. During the generator step up transformer replacement outage which began about 12/1/86, we were able to install stick-on temperature indicators on all of the limit switches for the MSIVs. These will be read when the plant shuts down for refueling to determine the maximum temperature seen by the limit switches. Based on the results, we will determine the need to modify the switch mounting to reduce the heat conducted from the valve body.

If the switch internal material had experienced temperatures beyond its rating or which over time had caused aging beyond its qualified life, a much higher failure rate would be expected. During routine adjustments and repairs, maintenance people have observed the condition of the limit switch gasket materials, and have noted that it does not show signs of excessive heat. This material is the most sensitive to heat, and it ages faster than the phenolic used in the limit switch. Since the gaskets do not generally exhibit signs of damage due to excessive heat, there is no clear evidence that the warpage was caused by heat.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

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		01	06	02	04	OF	04

TEXT (If more space is required, use additional NRC Form 385A's) (17)

V. Additional Information (Continued)

This is a follow up to Licensee Event Report 86-006-01. The temperature monitoring stickers were read on June 10, 1987. The results of the temperature stickers were discussed with Omega Engineering, Inc., supplier of the temperature indicators. The following steady state temperatures were deduced for each of the Main Steam Isolation Valve (MSIV) limit switches.

Inside Drywell

<u>Plant I.D.</u>	<u>Temperature</u>
1-MS-1A	330°F
1-MS-1B	330°F
1-MS-1C	170°F
1-MS-1D	250°F

Outside Drywell

<u>Plant I.D.</u>	<u>Temperature</u>
1-MS-2A	250°F
1-MS-2B	170°F
1-MS-2C	200°F
1-MS-2D	230°F

The switch internals were replaced during the 1987 refueling outage. Switch number 3 (the closest to the valve) on 1-MS-1B appeared to be burned and discolored. Additionally, it was reported that most of the phenolic internals on the other valves' limit switches were warped although their electrical characteristics were satisfactory. As the results of the temperature monitoring stickers are approximate at best and due to the continuous need to replace switch internals, a special project is being initiated to redesign the switch mounting configuration in order to reduce the heat transmitted to the switch bodies by conduction through the mounting brackets.

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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October 29, 1987
MP-11052

Re: 10CFR50.73(a)(2)(i)

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

Reference: Facility Operating License No. DPR-21
Docket No. 50-245
Licensee Event Report 86-006-02

Gentlemen:

This letter forwards the Licensee Event Follow Up Report 86-006-02 required to be submitted pursuant to the requirements of 10CFR50.73.

Yours truly,

NORTHEAST NUCLEAR ENERGY COMPANY

A handwritten signature in cursive script, reading 'Stephen E. Scace'.

Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station

SES/RLB:mo

Attachment: LER 86-006-02

cc: W. T. Russell, Region I
W. J. Raymond, Senior Resident Inspector

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