

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) McGuire Nuclear Station, Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 6 9				PAGE (3) 1 OF 03													
TITLE (4) Failure to install T-Drains in Limitorque SMB Electrical motor operators																											
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	6	0	6	8	4	8	4	0	1	9	0	0	0	7	0	6	8	4	0	5	0	0	0	3	7	1	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)																									
1		20.402(b)				20.402(c)				50.73(a)(2)(iv)				73.71(b)													
POWER LEVEL (10)		20.405(a)(1)(i)				50.38(c)(1)				50.73(a)(2)(v)				73.71(c)													
11010		20.405(a)(1)(ii)				50.38(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 365A)													
		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 Phillip B. Nardoci, Licensing Engineer										TELEPHONE NUMBER 7 0 4 3 7 3 - 7 4 3 2																	
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	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS								
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)

Limitorque SMB electric motor actuators are qualified for active inside containment service per Limitorque Qualification Type Test Report 600456. The actuators were qualified with T-drain plugs installed in the bottom of the actuator motor housing to prevent accumulation of condensation during a LOCA or MSLB. Duke Power utilizes actuators qualified to Report 600456 for active valves in both the Containment and Doghouses. The T-drain plugs are packaged inside the actuator switch compartment and tagged with field installation instructions. An inspection conducted (6/6-10/84) at McGuire as a result of deficiencies identified on the Catawba Nuclear Station revealed several active valves with Limitorque SMB actuators were installed in the Containment and Doghouses without the T-drains in place. Both units were in Mode 1 at 100% power at the time of discovery.

Investigation was unable to determine a cause for the failure to install the T-drains. Evaluation indicated there is a very high degree of confidence that the valves would have functioned without T-drain plugs in place. The valve actuators were fitted with T-drain plugs as soon as they became accessible. Limitorque installation and instruction manuals will be revised to include T-drain plug installation requirements.

8407200100 840706
PDR ADOCK 05000369
S PDR

IE22
11

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
McGuire Nuclear Station, Unit 1	0 5 0 0 0 3 6 9	8 4	— 0 1 9	— 0 0	0 2	OF	0 3

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

Limatorque Corporation SMB "Containment Chamber" electric motor valve actuators (EIIS:XCV) are qualified for active inside containment service per limitorque qualification type test report 600456. Limitorque operators are not designed to be completely sealed from the DBE (LOCA or Main Steam Line Break) environment. The actuator configuration qualified in the Limitorque LOCA Chamber Test had T-drain plugs installed in the bottom of the actuator motor (EIIS:MO) housing to prevent accumulation of condensation due to the harsh environment created during a LOCA or MSLB. In the event of steam entrapment in the motor compartment, the T-drains would allow drainage of condensate, thus preventing possible saturation of the motor insulation and short circuiting of the motor leading to operator failure. Failure of the motor to operate would prevent the actuator from performing its intended safety function; therefore, T-drains are required to maintain the nuclear qualification of the operators. Duke Power utilizes actuators qualified to report 600456 for active valves in both the containment and doghouses.

On May 16, 1984 a deficiency was identified on the Catawba Nuclear Station in which the T-drain plugs had not been field installed, as required by the vendor, on certain Limitorque electric motor valve operators (Ref. Significant Deficiency Report SD 413-414/84-15). Subsequent inspection of McGuire revealed (June 6-10, 1984) that several active valves (EIIS:V) with Limitorque SMB actuators were installed in the containment vessel and doghouses without the T-drains in place. Both units were in Mode 1 at 100% power at the time of the discovery. The following is a list of all the McGuire valves with Limitorque actuators without T-drains for which T-drains are required (note that various other active valves have T-drains missing or don't have provisions for T-drains but don't require them for their application):

UNIT 1

-Inside Containment:

Containment Air Return Exchange & Hydrogen Skimmer System (VX) (EIIS:VD) valves 1VX-1A and 1VX-2B

--Safety Injection System (NI) (EIIS:BP) valves 1NI-430A and 1NI-431B

-Doghouse:

Auxiliary Feedwater System (CA) (EIIS:BA) valves 1CA-38B, 1CA-50B, 1CA-54A, & 1CA-66A

UNIT 2

-Inside containment:

Containment Air Return Exchange & Hydrogen Skimmer System (VX) valves 2VX-1A and 2VX-2B

Reactor Coolant System (NC) (EIIS:AB) valves 2NC-54A and 2NC-196A

Safety Injection System (NI) valves 2NI-430A and 2NI-431B

Component Cooling System (KC) (EIIS:CC) valve 2KC-424B

(Note that the unit 1 valves corresponding to 2NI-430A, 2NI-431B, and 2KC-424B do not have Limitorque operators)

-Doghouse:

Auxiliary Feedwater System (CA) valves 2CA-38B, 2CA-50B, 2CA-54A, and 2CA-66A.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1) McGuire Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 6 9	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 4	— 0 1 9	— 0 0	0 3	OF	0 3

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

The T-drains should be field installed (according to actuator orientation) in place of the two lowest (existing) solid pipe plugs in the motor end bells. The T-drain plugs are shipped packaged inside the actuator switch compartment and tagged with field installation instructions. Limitorque Nuclear Qualification Report B-0058 also briefly states T-drain installation requirements. Investigation was unable to determine a cause for the failure to install the T-drains.

Of the valves listed, only the Auxiliary Feedwater System (CA) valves and Unit 2 Containment Isolation valves 2KC-424B and 2NC-54A must function in the event of a LOCA or MSLB. All others are active but are not required to function to mitigate a LOCA or MSLB. 2KC-424B and 2NC-54A receive an automatic containment isolation signal, initiated by high containment pressure, and will reach their safety position within 40 seconds and 10 seconds, respectively, after receipt of signal. The valves are not required to operate thereafter. Condensation is not expected to form in the motor housing before the valves reach their safety position.

Auxiliary Feedwater System (CA) valves receive a manual signal from the control room operator. Several minutes could pass before the CA valves receive their signal so some condensation may form in the motor housing due to worst case 5 psig Doghouse environment. Even if condensation actually formed and it was not allowed to drain, it would have negligible affect on the Class RH motor insulation. In support of this, Limitorque has demonstrated operability of similar actuators with less durable Class H motor insulation, without motor housing drains, in a seven day LOCA test (as documented in Limitorque Report 600198).

All valve actuators listed were fitted with T-drain plugs as soon as they became accessible in order for the actuators to match the tested condition. Work was completed 6/10/84 for all valves except 2KC-424B (refer to LER-370/84-14 for discussion of this valve).

Limitorque installation and instruction manuals will be revised by Duke Power Company to include T-drain plug installation requirements.

Based on the above technical evaluation there is a very high degree of confidence that all valves in question would have functioned without T-drain plugs in place. Therefore, safety consequences to the station were negligible prior to installation of the T-drains. The health and safety of the public were unaffected by this deficiency.

DUKE POWER COMPANY

P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

July 6, 1984

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20535

Subject: McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report 369/84-19 concerning the failure to install T-Drains in Limitorque SMB Electrical Motor Operators which is submitted in accordance with §50.73(a) (2) (v)/(vi). This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

H. B. Tucker / HBT

Hal B. Tucker

PBN:slb
Attachment

cc: Mr. James P. O'Reilly, Regional Administrator
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Mr. W. T. Orders
NRC Resident Inspector
McGuire Nuclear Station

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

American Nuclear Insurers
c/o Dottie Sherman, ANI Library
The Exchange, Suite 245
270 Farmington, CT 06032

IE22
11