



H. B. Barron  
Vice President

Duke Energy Corporation  
McGuire Nuclear Station  
12700 Hagers Ferry Road  
Huntersville, NC 28078-9340  
(704) 875-4800 OFFICE  
(704) 875-4809 FAX

February 7, 2000

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

Subject: McGuire Nuclear Station, Unit 1  
Docket No. 50-369  
Licensee Event Report Number 369/00-01, Revision 0  
Problem Investigation Process No. M-99-5015

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report 369/00-01, Revision 0 concerning a violation of Technical Specification 3.4.12, Low Temperature Overpressure Protection (LTOP) System. This report is being submitted in accordance with 10 CFR 73 (a) (2) (I) (B).

As noted in the dissenting comments of Inspection Report Nos. 50-369/99-08 and 50-370/99-08, Duke Energy respectfully disagrees that the conditions outlined in this Licensee Event Report constitute a violation of Technical Specification 3.4.12. For the plant conditions, Required Action A.2.2.2 of Technical Specification 3.4.12 requires verification of reactor coolant system cold leg temperature  $>107^{\circ}\text{F}$  and a cooldown rate  $<20^{\circ}\text{F/hr}$ . Given that all Reactor Coolant Pumps were off, this required action was satisfied by monitoring the outlet temperature of the Residual Heat Removal System heat exchanger that was in service supplying cooling water to the reactor. However, Duke will not contest the violation and as such, submits the attached LER describing this occurrence.

This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

H. B. Barron, Jr.

Attachment

IE22

cc: Mr. L. A. Reyes  
U.S. Nuclear Regulatory Commission  
Region II  
Atlanta Federal Center  
61 Forsyth St., SW, Suite 23T85  
Atlanta, GA 30323

INPO Records Center  
700 Galleria Parkway  
Atlanta, GA 30339

F. Rinaldi  
U.S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D.C. 20555

Mr. Scott Shaeffer  
NRC Resident Inspector  
McGuire Nuclear Station

# LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)  
McGuire Nuclear Station,

DOCKET NUMBER (2)  
05000369

PAGE (3)

TITLE (4). Failure to meet temperature requirements of Technical Specification Action Statement when more than one centrifugal charging pump or safety injection pump was capable of injecting into the Reactor Coolant System

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 NAME	DOCKET NUMBER(S)
01	07	00	00	01	0	02	07	00		

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check one or more of the following) (11)											
5	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)
POWER LEVEL (10) 0%	<input type="checkbox"/> 20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)		<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)		<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME	AREA CODE	AREA CODE	NUMBER
M. T. Cash	(704)	(704)	875-4117

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 *	

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
YES (f/yes, complete EXPECTED SUBMISSION DATE)	MONTH	DAY	YEAR	DATE	DATE	DATE

**ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)**  
**Unit Status:** On October 30, 1999, Unit 1 was in Mode 5 at 0% power.  
**Event Description:** At 16:24, on 10/30/99, Technical Specification Action Statement A.2.2.2 was entered when the 1A Safety Injection (NI) pump was racked in to fill and vent the NI piping inside containment. Reactor Coolant System fill was in progress with charging of 120 gpm to the 1A cold leg and reactor coolant pump seals with letdown of approximately 20 gpm. The Residual Heat Removal (ND) System was aligned and flowing at 1300 gpm to the 1C and 1D cold legs. The ND heat exchanger discharge temperature was approximately 119°F. Technical Specification 3.4.12, Action Statement A.2.2.2 requires that cold leg temperature be maintained >107°F when in this condition. No reactor coolant pumps were in operation. In this condition, Reactor Coolant (NC) cold leg temperature indication used during normal operation does not provide reliable indication of cold leg water flow to the core. As such, during this time, operators used decay heat removal discharge temperature as indication of "cold leg temperature." The temperature measured at the outlet of this heat exchanger met the Technical Specification limit at all times. This practice was questioned by the Resident Inspectors from a literal compliance perspective and a non-cited violation was issued on January 7, 2000 (discovery date).  
**Event Cause:** Incomplete guidance document for interpretation of Technical Specification 3.4.12.  
**Corrective Action:** Duke Energy will document a Technical Specification Bases change to reflect the use of decay heat removal temperature for the purposes of meeting this Technical Specification requirement.

## Background:

10 CFR 50, Appendix G specifies fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary of light water nuclear power reactors to provide adequate margins of safety during any conditions of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the pressure boundary may be subjected over its service lifetime. The Low Temperature Overpressure (LTOP) System at McGuire is designed to control Reactor Coolant System pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G. The Low Temperature Overpressure Protection (LTOP) System is OPERABLE with a maximum of one centrifugal charging pump or one safety injection pump capable of injecting into the Reactor Coolant System and requires all accumulator discharge isolation valves closed and immobilized when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in LCO 3.4.3. The method and location of measuring cold leg temperature is not currently specified in the McGuire Technical Specifications or Bases.

## Evaluation:

### Description of Event

On October 30, 1999 Technical Specification Action Statement A was entered when the 1A Safety Injection (NI) pump was racked in per Enclosure 4.2 of OP/1/A/6100/SU-6A, "NV and NI Post Outage Vent Procedure." The purpose of this procedure is to ensure the NI and NV portion of the ECCS suction and discharge piping has been filled and vented. At this time, Reactor coolant system fill was in progress with charging of 120 gpm to the 1A cold leg and reactor coolant pump seals with letdown of approximately 20 gpm. The Residual Heat Removal (ND) system was aligned and flowing at 1300 gpm to the 1C and 1D cold legs while taking suction from the 1C hot leg. The ND heat exchanger discharge temperature was approximately 119°F. Technical Specification 3.4.12, Action Statement A.2.2.2, requires that cold leg temperature be maintained >107°F when in this condition. No reactor coolant pumps were in operation. In this condition, Reactor Coolant (NC) cold leg temperature indication used during normal operation does not provide reliable indication of cold leg water flow to the core. As such, during this time, operators used decay heat removal discharge temperature as indication of "cold leg temperature." The temperature measured at the outlet of this heat exchanger met the Technical Specification limit at all times. This practice was questioned by the Resident Inspectors from a literal compliance perspective and a non-cited violation was issued on January 7, 2000 (discovery date).

## **CORRECTIVE ACTION**

### Immediate

Operations swapped charging to the 1D cold leg since ND train B was in operation and implemented Special Order 99-15 to tie subsequent ND alignments to charging realignments.

### Subsequent

None

### Planned

Duke Energy will document a Technical Specification BASES change to clarify the cold leg temperature monitoring requirements for Technical Specification 3.4.12 when no reactor coolant pumps are operating.

## **SAFETY ANALYSIS:**

**Based on this analysis, this event is not considered to be significant. At no time were the safety or health of the public or plant personnel affected as a result of the event.**

The Low Temperature Overpressure Protection (LTOP) System controls reactor coolant system pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G. For LTOP conditions, it is necessary to maintain Reactor Coolant System (RCS) pressure at low values and increase pressure only as temperature is increased to ensure the P/T pressure limits are satisfied. When the power operated relief valves (PORVs) are being used to meet the requirements of Technical Specification 3.4.12, then RCS cold leg temperature is limited in accordance with the LTOP analysis. When all reactor coolant pumps are secured, this temperature is measured at the outlet of the residual heat removal (ND) heat exchanger. This location will provide the most representative temperature experienced by the reactor vessel inner wall. The relatively low charging to A cold leg has a negligible effect on the vessel wall temperature when compared to the residual heat removal flow to C and D cold legs. As this fluid enters the reactor vessel downcomer region, the mixing with the higher flow, higher temperature, ND heat exchanger outlet flow (>107°) provides reasonable assurance that the reactor vessel water temperature was greater than the Technical Specification 3.4.12 minimum temperature requirement. Therefore, the P/T limits of Technical Specification 3.4.12 were satisfied.

In addition, at this time the reactor coolant system (NC) pressurizer PORVs and block valves were open, the NC system was depressurized and not at full pressurizer level. The likelihood of overpressurizing the NC system in this configuration is remote.