Duke Power
A Duke Energy Company

D. M. Jamil
Vice President, McGuire
Nuclear Generation Department

Duke Power
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-9340
(704) 875-4000

(704) 875-5333 OFFICE
(704) 875-4809 FAX

June 26, 2003

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 369/03-03, Revision 0
Problem Investigation Process No. M-03-01970

Pursuant to 10 CFR 50.73, Sections (a)(1) and (d), attached is Licensee Event Report (LER) 369/03-03, Revision 0.

On May 2, 2003, with Unit 1 at 100 percent power, both trains of the Hydrogen Mitigation System were rendered inoperable for approximately 6 hours due to human error.

Probabilistic risk assessment has determined this event to be of no significance to the health and safety of the public. This LER is being submitted per the requirements of 10 CFR 50.73 (a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v). There are no regulatory commitments contained in this LER.

D. M. Jamil

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

Mr. R. E. Martin
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

INPO Records Center
700 Galleria Parkway
Atlanta, GA 30339

Mr. S. M. Shaeffer
NRC Resident Inspector
McGuire Nuclear Station

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
McGuire Nuclear Station, Unit 1	05000 369	1 OF 5

4. TITLE

Both Trains of Hydrogen Mitigation System Inoperable Due to Human Error

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									None	
05	02	03	2003	- 003 -	00	06	26	03	FACILITY NAME: None	DOCKET NUMBER

9. OPERATING MODE	1
10. POWER LEVEL	100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)
20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	
20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	X 50.73(a)(2)(v)(D)	
20.2203(a)(2)(v)	X 50.73(a)(2)(i)(B)	50.73(a)(2)(vii)	
20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)	
20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Kay Crane, Regulatory Compliance	704-875-4306

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
		None							

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

Unit Status: At the time of this event, Unit 1 and Unit 2 were in Mode 1 (Power Operation) at 100 percent power. Train B of the Unit 1 Hydrogen Mitigation System (HMS) had been declared inoperable to implement a planned minor modification to replace cables associated with hydrogen ignitors in the ice condenser region of containment.

Event Description: On May 2, 2003, while implementing the minor modification, a cable associated with Train A was inadvertently cut. Since Train B had been previously declared inoperable, this rendered both trains of the Unit 1 HMS inoperable. Technical Specification (TS) 3.0.3 was entered at approximately 0115 hours and action was initiated to place Unit 1 in Mode 3 within 7 hours. By approximately 0741 hours, the Train A cables had been repaired, TS 3.0.3 had been exited, and Unit 1 was at approximately 45 percent power. This event was not significant with respect to the health and safety of the public.

Event Cause: The cause of this event has been attributed to human error. Personnel involved with inadvertently cutting the wrong (Train A) cable failed to appropriately apply human error prevention elements during task turnover and demonstrated a lack of rigor during task execution.

Corrective Action: Prior to this event, training regarding verification techniques including correct components was initiated for Maintenance personnel. The individuals on the Maintenance crew involved in this event had not yet received the training when the event occurred. This training is now complete. Maintenance turnover guidance, including necessary protocol and roles and responsibilities, will be enhanced as appropriate.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
McGuire Nuclear Station, Unit 1	05000369	2003	- 003 -	00	2 OF 5

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

BACKGROUND

Applicable Energy Industry Identification System (EIIS) and component codes are enclosed within brackets. McGuire unique system and component identifiers are contained within parentheses.

McGuire Nuclear Station (MNS) Unit 1 is a Westinghouse Pressurized Water Reactor with an ice condenser containment design.

10 CFR 50.44 "Standards for combustible gas control system in light-water-cooled power reactors" requires units with ice condenser containments to install suitable hydrogen control systems to reduce the potential for breach of primary containments due to a hydrogen oxygen reaction in post accident environments. The system must be capable of handling an amount of hydrogen equivalent to that generated from a metal water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the plenum volume.) This requirement was placed on ice condenser units because of their small containment volume and low design pressure (compared with pressurized water reactor dry containments). The MNS Hydrogen Mitigation System (HMS) [BB] provides this required capability.

The function of the HMS is to employ a method of controlled ignition, using thermal ignitors, to reduce the hydrogen concentration in an ice condenser containment following a degraded core accident. The HMS was installed to address beyond design basis accidents as a post-TMI requirement according to 10 CFR 50.44. Per emergency procedures, the HMS is utilized in conjunction with the Hydrogen Recombiners and the Containment Air Return and Hydrogen Skimmer System to maintain hydrogen concentrations in containment below explosive limits. At McGuire, a total of 70 ignitors (35 per train) are distributed throughout the various regions of containment in which hydrogen could be released or to which it could flow in significant quantities. Each containment region has two ignitors, one per train, controlled and powered redundantly so that ignition would occur in each region even if one train failed to energize. McGuire utilizes glow plugs, typical of those used in diesel engines, as the hydrogen ignitors. The ignitors are non-safety related.

Technical Specification (TS) 3.6.9 governs the HMS and is applicable in Modes 1 and 2. TS 3.6.9 requires that two HMS trains be operable in Modes 1 and 2. With one HMS train inoperable per Condition A, Required Action A.1 requires that the HMS train be restored to operable status within 7 days, or alternatively, per Required Action A.2, SR 3.6.9.1 may be performed on the

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
McGuire Nuclear Station, Unit 1	05000369	2003	- 003 -	00	3 OF 5

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

operable train once per 7 days. There is no condition that allows more than one train of HMS to be inoperable.

EVENT DESCRIPTION:

On May 1, 2003, Unit 1 was in Mode 1 at 100 percent power. Train B of the HMS system was declared inoperable at 1230 hours to complete a modification to replace cables feeding the Train B ignitors in the ice condenser region. The day crew began the cable replacement effort and turned the job over to the night shift. While the night shift was performing this task, a cable feeding the Train A ignitors in the ice condenser region was inadvertently cut. Operations was immediately notified. Since Technical Specification (TS) 3.6.9, "Hydrogen Mitigation System" does not contain a condition statement for two inoperable trains, TS 3.0.3 was entered on May 2, 2003 at 0115 hours and a unit shutdown was initiated. The Train A cable was repaired and Unit 1 exited TS 3.0.3 at 0741 on May 2, 2003 prior to completion of the unit shutdown. During the time that both HMS trains were inoperable, 16 required ignitors (6 on Train A and 10 on Train B) were rendered inoperable.

The event is being reported pursuant to the following requirements:

- 10CFR50.73(a)(2)(i)(B), Any operation or condition prohibited by the plant's Technical Specifications
- 10CFR50.73(a)(2)(v)(D), Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident

CAUSAL FACTORS

The cause of this event has been attributed to human error. Personnel involved with inadvertently cutting the wrong (Train A) cable failed to appropriately apply human error prevention elements during task turnover and demonstrated a lack of rigor during task execution.

CORRECTIVE ACTIONS

Immediate:

1. Technical Specification 3.0.3 was entered and unit shutdown commenced.

2. The Train A cable was repaired and TS 3.0.3 was exited prior to entry into Mode 3.

Subsequent:

1. The individuals involved with inadvertently cutting the wrong (Train A) cable were counseled.

2. Prior to this event, training regarding verification techniques including correct components was initiated for Maintenance personnel. The individuals on the Maintenance crew involved in this event had not yet received the training when the event occurred. This training is now complete.

Planned:

1. Maintenance turnover guidance, including necessary protocol and roles and responsibilities, will be enhanced as appropriate.

SAFETY ANALYSIS

The HMS provides no function required to safely shutdown the reactor. The system provides an additional means of preventing the accumulation of high concentrations of hydrogen which may be generated after a Loss of Coolant Accident (LOCA). The system's function is not required in the mitigation of any design basis event.

A probabilistic risk assessment evaluation shows that the worst case assumption results in a negligible increase in the large early release probability for the time period where both trains were inoperable in the ice condenser upper plenum. The increase in LERF is expected to come from those sequences where early containment failure would normally be prevented by operation of the ignitors. The frequency of these sequences is approximately 2.6E-05/year. With the assumed containment failure probability and a 6.5 hour period with no upper plenum ignitors, the increase in large early release probability is estimated to be less

than 5E-09. This increase is very conservative in its estimation and represents an insignificant increase in the probability of a large early release at McGuire.

Based upon the above, the risk attributable to the short period of time that both trains were inoperable in the ice condenser upper plenum is not significant with respect to the health and safety of the public.

Additional Information

This event is considered a safety system functional failure under the Reactor Oversight Process. A search of the McGuire Electronic Licensing Library did not identify any safety system functional failures during the past three years that involved the HMS or that had the same underlying concern or reason as this event. Therefore, no previous similar events were identified.