

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) McGuire Nuclear Station - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 6 9 1	PAGE (3) 1 OF 0 4
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TITLE (4)
Temperature Compensation Chart Not Included in Hydrogen Analyzer Operation Emergency Procedure

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	5	08	8	5	01	6	0	06	McGuire Unit 2		0 5 0 0 0 3 7 0
0	5	08	8	5	01	6	0	06			0 5 0 0 0

OPERATING MODE (9) 6	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"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(c)(1)(i)	<input type="checkbox"/> 50.38(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"/> 50.38(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	50.73(a)(2)(vi)						
	<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)									
NAME Jerry Day - Licensing							TELEPHONE NUMBER		
							AREA CODE		
							7 0 4	3 7 3 - 7 0 3 3	

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)		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)

On May 8, 1985 it was discovered that an operations group procedure did not specify to compensate hydrogen concentration in containment as given by the hydrogen analyzer due to temperature since there was no trace heating of the sample lines. The system design called for trace heating, though it was never installed. As an alternative to trace heat installation, it was determined that a temperature compensation chart would be used to correct the hydrogen concentration results obtained with the hydrogen analyzer. This temperature compensation chart was never incorporated into the sections of Operations' emergency procedures pertaining to the hydrogen analyzer system. However, this omission was just discovered recently during a system review.

Unit 1 was in Mode 6 for a refueling outage at the time of the discovery of the incident.

This incident is classified as a Procedural Deficiency, because a temperature compensation chart was not included in several of Operations' emergency procedures. Contributing were a construction deficiency, a design deficiency, and administrative deficiencies.

The temperature compensation charts are being incorporated into the procedures until the heat tracing is installed.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

On May 8, 1985, it was discovered that an operations group procedure did not specify to compensate the hydrogen concentration in containment given by the hydrogen analyzer due to temperature since the sample lines were not trace heated. The heat tracing had never been installed in the field on the hydrogen analyzer sample line and had been determined not to be needed. A temperature compensation chart was to be used to correct the hydrogen concentration results obtained with the hydrogen analyzer since its sample lines were not heat traced. This temperature compensation chart was never incorporated into the sections of Operations' emergency procedures pertaining to the hydrogen analyzer system. However, this omission was just discovered recently during a system review.

The hydrogen analyzer (Comsip, Inc., Delph Model K-III) monitors the hydrogen concentration in containment after a Loss of Coolant Accident (LOCA) and provides signals for indication and alarming to Operations personnel. The hydrogen recombiners are placed in service by Operations personnel based on containment hydrogen levels as indicated by the analyzer.

At the end of 1982, it was determined that the heat tracing for the Unit 1 hydrogen analyzer sample lines was never installed in the field as indicated by drawings. Discussions were held with Design and Nuclear Production personnel to investigate the possibility of deleting the heat tracing for the hydrogen analyzer.

Based on these discussions, an NSM was written on March 22, 1983, to delete the heat tracing on Unit 1 instrument details and to use the temperature compensation chart provided by Comsip, Inc. for readout correction instead.

The NSM was completed on June 8, 1983, and all Unit 1 instrument detail drawings, electrical connection diagrams, and the cable routing summary were updated. The completed NSM package with temperature compensation chart, was routed to all McGuire Station groups. Operations personnel reviewed the completed NSM package, did not consider the temperature compensation chart, and indicated that no change in station procedures was necessary. As a result, the temperature compensation chart was never incorporated into the existing Unit 1 emergency procedures, Loss of Reactor Coolant.

On August 31, 1983, heat tracing for the hydrogen analyzer system was re-evaluated based on the operating experience obtained with the Oconee Station's Comsip, Inc. hydrogen analyzer (which is heat traced). It was determined that the temperature compensation chart, which was a substitute for heat tracing on the sample lines, would do nothing to solve moisture related problems associated with the hydrogen analyzer.

The operating manual for the hydrogen analyzer indicated that excessive moisture in the sample entry lines can cause analyzer inoperability. The analyzer readings are based on a comparison of the conductivity of the air sample before and after the removal of hydrogen. The detector used to measure the conductivity of the sample is affected by moisture.

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

Since condensate would collect continuously in sample lines during a LOCA, purging of sample lines prior to sampling can not ensure condensate free operation of the system.

The Comsip, Inc. hydrogen analyzer was originally designed to measure hydrogen gas concentrations at a temperature of ~280°F which prohibited condensation. As a result, the analyzer was designed to be heat traced to ~285°F. Since heat tracing was not available, a temperature correction chart was obtained from Comsip, Inc. to correct the results obtained at a lower temperature. Lack of temperature compensation would affect hydrogen recombiner operation since it is operated only when the hydrogen gas concentration is between 0.5% to 6.0%.

As a result of this information, two NSMs were written on November 4, 1983, to install heat tracing on Units 1 and 2 hydrogen analyzer sample lines and to extend the heat tracing to the post accident gas sampling system. When these NSMs were being reviewed recently for implementation, it was discovered that the temperature compensation charts were never incorporated into existing Unit 1 and 2 emergency procedures.

During the investigation, it was determined that the heat tracing for the Unit 1 hydrogen analyzer was never installed, even though the current instrument detail drawing indicates that it exists. There has been no NSM written to delete the heat tracing reference from the instrument detail, cable routing summary, and electrical connection diagrams. An NSM was written to install heat tracing on the Unit 2 hydrogen analyzer, and the post accident containment gas sampling panel. However, it was not realized at the time the NSM was written, that the Unit 2 instrument drawings showed heat tracing for the hydrogen analyzer system.

Corrective Action:

Subsequent: Emergency procedures are in the process of being changed by the Operations procedure group to incorporate the temperature compensation chart and the steps used to obtain a temperature reading for the hydrogen analyzer.

Planned: When the NSMs to install heat tracing are implemented, the temperature compensation chart will no longer be needed and reference to it in the emergency procedures will be deleted.

The Projects group will investigate the proper course of action to pursue on NSM MG-2-298. This is the NSM that was written to add heat tracing to the Unit 2 hydrogen analyzers even though the instrument details already show heat tracing.

General Office Radwaste Engineering will provide adequate justification to ensure that the NSMs get implemented in a timely manner.

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

Safety Analysis: Upon the diagnosis of a LOCA, the glow plugs are energized immediately to burn off hydrogen gas that may form. Due to the design of the glow plug system, the hydrogen concentration in containment will not build up to a concentration where it would present a safety problem. The hydrogen recombiners are actuated upon an indication of hydrogen concentration of 0.5% and are designed to keep hydrogen concentration below the flammability level (approximately 4%) for all design basis accidents.

The health and safety of the public were unaffected by this event.

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HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

June 21, 1985

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

Subject: McGuire Nuclear Station, Unit 1
Docket No. 50-369
LER 369/85-16

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 369/85-16 concerning a temperature compensation chart that was not included in Hydrogen Analyzer Operation Emergency Procedure. 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
Hal B. Tucker

JBD/mjf

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator
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