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**DUKE POWER**

February 23, 1994

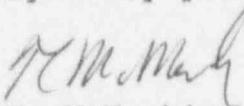
U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Subject: McGuire Nuclear Station Unit 1  
Docket No. 50-369  
Licensee Event Report 369/93-11, Revision 1  
Problem Investigation Process No.: 1-M93-1195

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report 369/93-11, Revision 1 concerning the past inoperability of Unit 1B Diesel Generator due to and equipment malfunction resulting in a Technical Specification violation. This report is being submitted in accordance with 10 CFR 50.73 (a) (2) (1) (b). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

  
T.C. McMeekin

RJD/bcb

Attachment

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NSRB Support Staff (EC 12-A)

APPROVED OMB NO. 3150-0104  
 EXPIRES: 5/31/95  
 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 2-07 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-330), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20541, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

# LICENSEE EVENT REPORT (LER)

FACILITY NAME(1)

McGuire Nuclear Station, Unit 1

DOCKET NUMBER(2)

05000 369

PAGE(3)

1 OF 7

TITLE(4) Unit 1 Diesel Generator 1B Was Past Inoperable Due An Equipment Malfunction Resulting In A Technical Specification Violation.

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)
11	15	93	93	11	1	12	16	93	NA	05000
										05000

OPERATING MODE(9)	1	THIS REPORT IS SUBMITTED PURSUANT TO REQUIREMENTS OF 10CFR (Check one or more of the following)(11)								
POWER LEVEL(10)	100	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)(vii)		OTHER (Specify in Abstract below and in Text NRC Form 366A)		
		20.405(a)(1)(iii)	X	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)(x)				

LICENSEE CONTACT FOR THIS LER(12)

NAME	Terry L. Pedersen, Manager		TELEPHONE NUMBER	875-4487	
	AREA CODE	704			

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS
X	FD	LS	I204	N					

SUPPLEMENTAL REPORT EXPECTED(14)

YES (if yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE(15) MONTH DAY YEAR

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

On November 15, 1993, Instrumentation and Electrical (IAE) personnel were performing preventive maintenance (PM) on the Diesel Generator (DG) 1B Fuel Oil Storage Tank level instrument 1FDLS5150. The PM required a calibration check of the level gauge. This work was performed according to procedures IP/O/B/3204/01A, FD (DG Fuel Oil) System Storage Tank Level Indicator Calibration, and IP/O/A/3204/01, Calibration Procedure For Barton Model 288A And 289A D/P (Differential Pressure) Switch. At approximately 1200, it was determined by IAE personnel that the level gauge was out of tolerance, in a non-conservative direction. The fuel oil level was 4500 gallons below the Technical Specification (TS) required minimum of 39,500 gallons. On November 16, 1993, 7000 gallons of fuel oil was delivered and added to the 1B Fuel Oil Storage Tank bringing the level in the tank above the required 39,500 gallons. This event has been assigned a cause of Equipment Failure/Malfunction due to the malfunction of the 1B DG Fuel Oil Storage Tank gauge. Unit 1 was in Mode 1, Power Operation, at 100 percent at the time of this discovery. As a result of this event, Unit 1A and Unit 2A and 2B DG Fuel Oil Storage Tank gauges were checked. As part of the corrective actions, the DG fuel oil storage tank level gauges will be replaced on Units 1 and 2.

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05000 369

**EVALUATION:**

**Background**

The Standby Diesel Generator (DG) [EIIS:EK] provides AC power to the equipment required to safely shutdown the reactor in the event of a loss of normal power. The DG also supplies power to the safeguards equipment as required during a major accident coincident with a loss of normal power source. As part of the DG auxiliary equipment, the DG fuel oil (FD) storage tank supplies fuel to the DG fuel oil day tank, which in turn supplies the fuel to run the DG. There is a separate DG fuel oil storage tank for each DG.

Technical Specification (TS) 3/4.8 states in part, that there will be two separate and independent DGs with separate fuel oil storage systems containing a minimum volume of 39,500 gallons of fuel during Modes 1 (Power Operation), 2 (Start Up), 3 (Hot Standby), and 4 (Hot Shutdown). With one DG inoperable, restore the DG to operable status within 72 hours or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours.

**Description of Event**

On November 15, 1993, Instrument and Electrical (IAE) technicians were performing a preventative maintenance (PM) calibration check on the 1B DG Fuel Oil Storage Tank level gauge [EIIS:LS] 1FDLS5150. The PM which was covered under work order (WO) 93044452, is required to be performed every two years to maintain the level gauge within its operating tolerance. As part of the PM, procedure IP/O/B/3204/01A, FD System Storage Tank Level Indicator Calibration, requires the IAE technician to record the "as found" data on the gauge indicator and the switch. The as found data for the indicator was found to be out of tolerance. The IAE technician recording the data repeated the calculations used to collect this data two more times, with the same results. The technician consulted with his supervisor to make sure the calculations used were correct. Next, the IAE technician recorded the as found data for the switch and found the switch to be in tolerance. The switch also activated the alarm at the DG Control Panel when exercised by the technician. Subsequently, the level gauge was calibrated to bring it back within tolerance.

Prior to recording the as found data, the fuel oil storage tank indicator was reading a volume of 43,000 gallons; however, because the gauge was out of tolerance, the volume was only 35,000 gallons. As a result of this discovery, the TS required minimum fuel oil storage tank level was violated by 4500 gallons. Operations personnel were informed of this information by the IAE supervisor, and 1B DG was logged inoperable by Operations Control Room [EIIS:NA] personnel in the TS Action Item Logbook on November 15, 1993. An order was then

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placed by Operations personnel to have 7,000 gallons of fuel oil delivered to the McGuire site. On November 16, 1993, a tanker truck delivered the fuel oil and pumped it into the 1B DG Fuel Oil Storage Tank, increasing the level to 42,000 gallons. DG 1B was logged operable at 1512, on November 16, 1993. As a result of this event, WOs were issued to perform PM calibration checks on DG Fuel Oil Storage Tank gauges 1A, 2A, and 2B. The results of these PMs revealed the Unit 1, 1A level gauge, 1FDLS5140, to be out of tolerance. However, the tank volume was above the TS required minimum volume of 39,500 gallons. The level gauge was subsequently calibrated. The Unit 2 level gauges, 2FDLS5140 and 2FDLS5150, were in tolerance.

During the course of this event, Ops staff personnel checked previous documentation to determine if DG 1B was past inoperable at any time, and learned that the DG had been past inoperable since June 7, 1993, which is the date Unit 1 entered mode 4 from refueling outage (EOC) 8. During the outage, maintenance activities performed on the DG caused the DG to be run several times, burning additional fuel.

**Conclusion**

This event has been assigned a cause of Equipment Failure/Malfunction due to the malfunction of the DG fuel oil storage tank gauge. The gauge in question is a Barton 288A pressure switch. The gauge consists, in part, of an indicator and a switch. The two segments are calibrated separately. The switch is setup to send an annunciator [EIIS:ANN] alarm [EIIS:LA] to the DG Control Panel [EIIS:PL] when the setpoint, 40,886 +/- 750 gallons, is reached, which in turn sends an alarm to the Control Room.

Operations personnel routinely check the DG fuel oil storage tank level gauge to ensure the fuel oil level does not drop below 39,500 gallons. This check is done twice a day. The day the gauge was worked on, November 15, 1993, the gauge indicator read 43,000 gallons. However, the indicator was found to be below the as found level by 8000 gallons. After recording the as found readings, the IAE technician proceeded to calibrate the gauge, bringing it back within tolerance. When the switch calibration was checked, it was found to be within tolerance and at the correct setpoint. Therefore, when the switch reached its setpoint, there should have been an annunciator alarm at the DG Control Panel. This alarm was never received. The IAE supervisor verified with the IAE technician that there was no alarm present prior to beginning work on the gauge. The switch did alarm, however, when the IAE technician was obtaining the as found data. It has been speculated by the IAE supervisor and technician involved that the possibility exists that the switch may have become stuck; however, this cannot be proven. The switch had been previously exercised when the IAE technician was getting the as found data on the indicator. The switch is connected to the same drive arm as the indicator. The switch and indicator; however, work off different linkages. If the switch had become stuck, it would have freed itself when it was exercised.

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A review of PMS on 1FDLS5150, dated back to 1989, indicates that the gauge has been out of tolerance on several occasions when calibration checks were performed. However, the amounts of fuel oil available were well above the TS required volume of 39,500 gallons. A review of previous calibration checks performed on the remaining Unit 1 and Unit 2 level gauges indicates the gauges have also been out of tolerance on occasions. This had been identified by IAE management. The need was not felt by IAE management to increase the frequency on the level gauges since the out of tolerance conditions were more prevalent in the lower levels of the gauge and not at the higher levels where the tank level is normally maintained. Consequently, Minor Modification (MM)-5032 was initiated to replace the gauges with gauges proven to be more reliable in this type of application. As a result of this event, the implementation of MM-5032, approved in January, 1992, will be expedited. As part of the safety discussion associated with the MM, the accuracy of the proposed gauges far exceeds the existing gauges. Currently the accuracy of the Barton 288A gauge is -3.8/+11.1 percent for the indicator, and -3.2/+10.4 percent for the switch. The replacement gauge has a stated accuracy of +/- 0.025 percent.

Operations personnel will also evaluate enhancing procedure PT/O/B/4700/65, Monthly Fuel Oil Report, to better trend fuel oil usage. This procedure attempts to account for all DG fuel oil received and used by both units DGs and the Standby Shutdown DG.

A review of the OEP database for twenty-four months prior to this event revealed one event involving an Equipment Failure/Malfunction resulting in a TS violation. This event; however, involved different equipment, a different system, and procedures. This event is not considered to be recurring.

This event did not result in any uncontrolled releases of radioactive material, personnel injuries, or radiation overexposures.

This report is not Nuclear Plant Reliability Data System (NPRDS) reportable.

**CORRECTIVE ACTIONS:**

- Immediate: 1) The IAE technician calibrated the level gauge to bring it back into tolerance.
- Subsequent: 1) Seven thousand gallons of fuel oil was added to the 1B DG Fuel Oil Storage Tank.
- 2) IAE personnel performed a calibration check on 1A, 2A, and 2B DG Fuel Oil

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2) IAE personnel performed a calibration check on 1A, 2A, and 2B DG Fuel Oil Storage Tank gauges.

**Planned:**

1) MM-5032 will be implemented to replace the DG fuel oil storage tank level gauges on Unit 1 and Unit 2.

2) Operations personnel will evaluate the need to enhance procedure PT/O/B/4700/65, Monthly Fuel Oil Report.

3) Regulatory Compliance personnel will evaluate TS 3/4.8.1.1 and initiate appropriate changes to the TS as suggested by Generic Letter 93-05.

**SAFETY ANALYSIS:**

The Standby DG is required to supply emergency AC power to equipment required to safely shutdown the reactor in the event of a loss of normal power. The McGuire DG fuel oil storage system will allow the DG to provide power to this equipment for approximately five days. This requires that the fuel oil storage tank maintain a minimum fuel oil supply of 39,500 gallons.

During this event, the fuel oil dropped below this minimum by 4500 gallons. In the event the DG had been required to perform its design function, it would not have been able to maintain a full load for five days at this decreased capacity. However, Operations personnel do have the ability to crosstie DG fuel oil storage tanks 1A and 1B, according to procedure OP/1&2/A/6550/10, Transfer of Fuel Oil Between A and B Fuel Oil Storage Tanks, encl. 4.2, therefore, allowing the storage tanks to supply either DG. This would be an available option in the event the DG was required to run for an extended period of time. Additionally, past history of the ability of the fuel oil supplier to deliver fuel to the site reveals fuel is routinely delivered within twenty-four hours of placing an order. Based on this analysis, this event is not considered to be significant from a safety standpoint.

Standby DG 1B was not required to perform its design bases function during the time it was determined to be past inoperable.

The health and safety of the public was not effected as a result of this event.

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Addendum 1

Additional Information

Problem Investigation Process (PIP) 0-93-1222, initiated on December 30, 1993, investigated a problem with the TS interpretation for TS 3/4.8.1.1, Action d. It was determined the interpretation was not consistent with the requirements of the TS. Therefore, the interpretation provided guidance, that if followed, allowed the requirements as specified by the TS to be violated. The interpretation allowed the TS requirement to test the remaining DG to be waived in cases where a DG was inoperable due to a separately testable support system or if the inoperable support system was covered by another TS or Selected Licensee Commitment. The implementation of the interpretation without a TS change was an inappropriate action because it provided invalid instruction for Plant personnel to use in determining required TS actions.

During this event DG 1B was determined to be inoperable due to inoperability of the FD system. At the time of the discovered inoperability, the interpretation was used to determine required actions as specified by the TS. Because of the interpretation, the required surveillance was not performed on DG 1A. Also, further investigation revealed that DG 2A had been declared inoperable on February 6, 1992, due to inoperability of a fuel oil transfer pump. Because of the interpretation, the required surveillance was not performed on DG 2B.

Upon discovery of the problem, the interpretation was removed from use. Special Order 93-25 was issued to OPS personnel alerting them of the fact that the interpretation had been removed and directing that the actions of TS 3/4.8.1.1, Action d must be followed if a DG is declared inoperable for any reason other than preplanned testing or preventative maintenance. Regulatory Compliance personnel will evaluate the TS and initiate appropriate actions to change the TS as suggested by Generic Letter 93-05. Additionally, Regulatory Compliance personnel revised Compliance Manual Section 3.4, to better specify requirements for Regulatory Compliance reviews of proposed TS interpretations and establish a file to facilitate recovery of the bases associated with future TS interpretation decisions.

The purpose of the surveillance involved is to ensure the capability of the remaining DG to perform required safety functions when one of the DGs is removed from service. The interpretation, which was added to the TS manual, was written with essentially the same purpose. The intention of the interpretation was to limit the number of unnecessary starts that the DGs experience, due to auxiliary support equipment. However, the guidance given in the interpretation was less limiting than the TS allowed. During the times that

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this interpretation was applied, the remaining DG was fully operable. Further, during these times both sources of offsite power were operable. A review of the DG test history revealed that there were no valid failures of any DG within the last three years due to the failure of auxiliary support equipment. Therefore, had this interpretation not been in effect, it is reasonable to surmise that no problems would have been discovered in the performance of additional DG surveillances. This problem is considered to be technical in nature only.

The corrective actions and safety analysis associated with LER 369/93-11, Revision 0 are still valid.