

LICENSEE EVENT REPORT (LER)

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

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-8 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)
Clinton Power Station

DOCKET NUMBER (2)
05000461

PAGE (3)
1 OF 4

TITLE (4)
Inadequate Work Instructions Leads to Potential Overgreasing of Motor Bearings Causing Potential Failure of Various Motors

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
11	07	97	97	023	00	12	05	97	None
									DOCKET NUMBER
									05000
									FACILITY NAME
									None
									DOCKET NUMBER
									05000

OPERATING MODE (9) 4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)					
POWER LEVEL (10) 000	20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)					
	20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71					
	20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER					
	20.2203(a)(2)(iii)	50.36(c)(1)	X 50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A					
	20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)						

LICENSEE CONTACT FOR THIS LER (12)

NAME
P. M. Thompson, Supervisor-Electrical Maintenance

TELEPHONE NUMBER (Include Area Code)
(217) 935-8881, Extension 3357

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

YES (If yes, complete EXPECTED SUBMISSION DATE.) X NO

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

On November 7, 1997, it was determined that all safety related motors that contain bearings requiring the periodic addition of grease, may potentially fail. The possible premature failure of the motors is due to the use of an incorrect method for adding grease to safety-related motor bearings. The incorrect method for adding grease to safety related motor bearings could cause the motor to fail due to overheating of the windings or bearing damage. Approximately seventy safety-related motors, in various systems, are potentially affected by this condition. The cause of this event is that inadequate job instructions were provided in the preventive maintenance tasks. Corrective actions for this event include: revising appropriate preventive maintenance tasks that add grease to motors to provide the necessary instruction to properly perform the task, briefing of electrical and mechanical maintenance supervisors on this condition, and inspection of safety-related and risk significant electric motors that are susceptible to this condition.

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

DESCRIPTION OF EVENT

On September 17, 1997, a member of the Integrated Safety Assessment Team, during a plant walkdown, identified excessive grease underneath the Division III shutdown service water system (SX) [BT] pump [P] motor [MO]. The bearings for this motor are greased every 18 months in accordance with the preventive maintenance program. The preventive maintenance task for adding grease to the Division III SX pump motor bearings was last performed on May 27, 1997.

On September 18, 1997, condition report 1-97-09-232 was written to investigate the impact and cause of the excessive grease found underneath the Division III SX pump motor. Investigation into the cause of the excessive grease revealed that the vendor manual requires that the drain plug be removed and the motor operated following the addition of grease. Operating the motor after the addition of grease helps remove excess grease from the motor bearings. The preventive maintenance task did not contain instructions to remove the drain plug or detail the amount of grease to add.

Engineering personnel were requested to assist in the investigation to evaluate the effect of not removing the drain plug when adding grease to the motor's bearings. Their evaluation revealed that if the drain plug is not removed, and the correct amount of grease is not added, the bearings could contain an excessive amount of grease. Excess grease in a motor bearing could, depending on the bearing and motor design, force grease into the motor windings. Grease in the motor winding area could cause degradation of the motor winding insulation. This degradation occurs as grease, and the dirt it attracts, reduces the heat transfer of winding surfaces and blocks cooling air flow through the motor leading to overheating of the windings. Overgreasing the motor bearings could also cause degradation of the motor bearings by increasing the operating temperature of the bearing due to increased bearing friction.

Maintenance work request (MWR) D81227 was initiated for the Maintenance Department to inspect the Division III SX pump motor and determine if grease was in contact with the motor winding area. The results of that inspection indicated that there was no grease in the area of the Division III SX pump motor windings. A megger test of the motor's windings determined the winding resistance was satisfactory. Also, a review of the most recent vibration data did not show any abnormalities that would indicate bearing degradation.

Further review of the motor overgreasing concern revealed that the preventive maintenance tasks that provide instructions for greasing motor bearings do not provide direction to the maintenance technician to remove the drain plug and operate the motor to remove excessive grease. Also, the preventive maintenance tasks do not provide instructions on the amount of grease to use when greasing a motor.

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

On November 7, 1997, the plant was in Mode 4 (Cold Shutdown) for the sixth refueling outage (RF-6), reactor [RCT] coolant temperature was being maintained within a band of 100 to 120 degrees Fahrenheit and pressure was atmospheric. Plant personnel determined that there was a potential for safety-related motor bearings, that require periodic grease addition, to be overgreased. Due to the potential detrimental effects of overgreasing on motor operation the Operations Shift Supervisor declared all safety-related motors, that contain bearings that are periodically greased, inoperable. A review of the potentially affected safety-related motors revealed that, except for the 4160 volt Division I and II SX pump motors, all of the potentially affected motors operated at 480 volts. The safety-related systems potentially affected by the condition are: combustible gas control [BB], main control room ventilation [VI], standby gas treatment [BH], standby liquid control [BR], diesel fuel oil [DC], diesel generator [EK], reactor core isolation cooling [BN], residual heat removal [BO], low pressure core spray [BM], high pressure core spray [BG], switchgear heat removal [VJ], shutdown service water, and emergency core cooling equipment room cooling. Approximately seventy safety related motors are potentially affected by this condition.

CAUSE OF THE EVENT

The cause of this event was attributed to inadequate direction in the work documents on the proper method for adding grease to motor bearings.

CORRECTIVE ACTION

Electrical maintenance and mechanical maintenance supervisors were briefed on this issue in order to prevent additional occurrences of overgreasing. Safety-related and risk significant electric motors that are potentially subject to overgreasing, will be inspected for this condition prior to startup from the current refueling outage. A review of the results of this inspection will be used to determine if any actions are necessary for the remaining non-risk significant, non-safety related motors. Preventive maintenance tasks that add grease to motor bearings will be revised, prior to their next use, to provide instructions for the proper method to add grease to the bearings.

ANALYSIS OF EVENT

This event is reportable under the provisions of 10 CFR 50.73(a)(2)(v) as a condition that alone could have prevented the fulfillment of the safety function of structures or systems needed to shutdown and maintain the reactor shutdown, remove residual heat, control the release of radioactive material or mitigate the consequences of an accident. The overgreasing of the safety-related motors could have alone affected their ability to operate.

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

This event is potentially nuclear safety significant because it is a potential common mode failure of multiple pieces of safety-related equipment. It is not known to what degree the motors at Clinton Power Station (CPS) may have been affected by this condition. If grease is found on the motor windings, it is not known if the grease would have caused failure of the windings under accident conditions. The results of the investigation into this event revealed that failure of a motor due to the addition of too much grease has not been observed at CPS. It is expected that early warning signs of bearing failure could be detected through the use of periodic vibration monitoring of the potentially affected motors that are in the monitoring program.

It is not known how long these motors may have been affected by this condition.

ADDITIONAL INFORMATION

No equipment or components failed during this event.

Illinois Power has not reported a similar failure of inadequate job instructions in multiple preventive maintenance tasks leading to the inoperability of multiple pieces of safety related equipment.

For further information on this event contact P. M. Thompson, Supervisor-Electrical Maintenance, at (217) 935-8881 extension 3357.

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Clinton Power Station	05000461	97	023	00	4 OF 4

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

This event is potentially nuclear safety significant because of the potential for a common mode failure of multiple pieces of safety-related equipment. It is not known to what degree the motors at Clinton Power Station (CPS) may have been affected by this condition. If grease is found on the rotor windings, it is not known if the grease would have caused failure of the windings under accident conditions. The results of the investigation into this event revealed that failure of a motor due to the addition of too much grease has not been observed at CPS. It is expected that early warning signs of bearing failure could be detected through the use of periodic vibration monitoring of the potentially affected motors that are in the monitoring program.

It is not known how long these motors may have been affected by this condition.

ADDITIONAL INFORMATION

No equipment or components failed during this event.

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