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ACCESSION NBR: 8901100367 DOC. DATE: 89/01/04 NOTARIZED: NO DOCKET #
 FACIL: 50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
 AUTH. NAME AUTHOR AFFILIATION
 WATSON, R.A. Carolina Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-034-00: on 881205, Tech Spec violation. Caused by failure to reterminate fan motor. W/890104 ltr. W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: Application for permit renewal filed. 05000400

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LICENSEE EVENT REPORT (LER)

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|---|---|-------------------------------|
| FACILITY NAME (1) SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1 | DOCKET NUMBER (2) 0 5 0 0 0 4 0 1 0 1 | PAGE (3) 1 OF 0 1 5 |
|---|---|-------------------------------|

TITLE (4) **TECHNICAL SPECIFICATION VIOLATION DUE TO INOPERABLE RAB EMERGENCY EXHAUST SYSTEM CAUSED BY FAILURE TO REITERMINATE FAN MOTOR**

| 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) | | | | | | | | | | | | | | | |
| 1 | 2 | 0 | 5 | 8 | 8 | 8 | 8 | 8 | 0 | 3 | 4 | 0 | 0 | 0 | 1 | 0 | 4 | 8 | 9 | | 0 | 5 | 0 | 0 | 0 |

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|----------------------------------|--|--|------------------|------------------|--|----------------|----------------------|--|--|--|--|--|
| OPERATING MODE (8) 1 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | | | | | | | | | |
| POWER LEVEL (10) 1 0 0 | 20.402(b) | | | 20.405(c) | | | 50.73(a)(2)(iv) | | | 73.71(b) | | |
| | 20.405(a)(1)(i) | | | 50.38(c)(1) | | | 50.73(a)(2)(v) | | | 73.71(c) | | |
| | 20.405(a)(1)(ii) | | | 50.38(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)(vii)(B) | | | | | |
| 20.405(a)(1)(v) | | | 50.73(a)(2)(iii) | | | 50.73(a)(2)(x) | | | | | | |

| LICENSEE CONTACT FOR THIS LER (12) | | TELEPHONE NUMBER | |
|--|-----------------------------|--|--|
| NAME JOSEPH R. JOHNSON SENIOR SPECIALIST - REGULATORY COMPLIANCE | AREA CODE 9 1 1 9 | NUMBER 3 1 6 2 1 - 1 2 1 0 8 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 | | |
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| 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)

The plant was operating in Mode 1, Power Operation, at 100% reactor power on December 5, 1988. At approximately 1346, during the conduct of routine preventive maintenance, plant workers discovered that the fan motor to the Heating and Ventilation Equipment Room Number 2 Cooling Unit Air Handler AH-26 1A-SA (referred to as AH-26) was not electrically connected to its power supply. After being notified of this condition, Operations personnel declared the AH-26 Unit inoperable. Since the operability of AH-26 directly affects the operability of the Reactor Auxiliary Building (RAB) Emergency Exhaust Fan, E6-A-SA, this fan was also declared inoperable. Investigation revealed that the AH-26 fan motor had been electrically disconnected since September 23, 1988, when the motor bearings were replaced during a plant refueling outage. Further investigation revealed that the clearance on the fan was cancelled, and the post maintenance test sheet was completed, on September 29, 1988.

Following the refueling outage, the plant entered Mode 4 at 1811 on October 5, 1988. Since the E6-A-SA fan is required to be operable prior to entry into Mode 4, the event resulted in a violation of plant Technical Specifications.

The event was caused by several factors, including inadequate communications between maintenance crews, failure to follow procedures, and failure to properly implement post maintenance testing requirements. Corrective actions include requiring independent verification for connecting motor electrical leads, and additional post maintenance testing instructions for Air Handling Units.

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

DESCRIPTION

On December 5, 1988, the plant was operating in Mode 1, Power Operation, at 100% reactor power. Plant electricians were preparing to perform preventive maintenance on the fan motor to the Heating and Ventilation Equipment Room Number 2 Cooling Unit Air Handler AH-26 1A-SA (referred to as AH-26) (EIIS:VF). The work required the electricians to take voltage and current readings on the fan motor.

Upon arriving at the Air Handler at 1346 hours, the electricians discovered that the fan motor was not running and that a termination in a junction box at the unit was not connected. They notified the Control Operator and Operations personnel declared the AH-26 unit inoperable. The operability of AH-26 directly affects the operability of the Reactor Auxiliary Building (RAB) Emergency Exhaust Fan, E6-A-SA (EIIS:VL), and this fan was also declared inoperable. Investigation revealed that the AH-26 fan motor had been electrically disconnected since September 23, 1988, when the motor bearings were replaced during a plant refueling outage. Further investigation revealed that the clearance on the fan was cancelled, and the post maintenance test sheet was completed, on September 29, 1988.

Plant Technical Specifications 3.0.4 and 3.7.7 require the RAB Emergency Exhaust Fan, E6-A-SA, to be operable prior to entry into Mode 4, and allow the fan to be inoperable for a maximum period of seven days when operating in Modes 1-4. Following the refueling outage, the plant entered Mode 4 at 1811 on October 5, 1988. Since the AH-26 fan is required to be operable prior to entry into Mode 4, the event resulted in a violation of plant Technical Specifications.

CAUSE:

This event was caused by several factors. Included were inadequate communications between Maintenance crews, failure to follow applicable procedures, and failure to properly implement the specified Post Maintenance Test Requirements (PMTR). Based on the completed work documents and interviews with appropriate personnel, the sequence of events for this specific job are presented below.

July 7, 1988 - Work Request and Authorization (WR&A) No. 88-AQPM1 was initiated to grease motor bearings and to install grease fittings as necessary. This particular job was one of many affecting safety-related air handling unit motors. The jobs were subsequently revised to require complete replacement of the motor bearings due to a concern over the mixing of different types of grease in the motor bearings. These tasks

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

CAUSE (continued)

involved 26 air handling unit motors and became critical path for the outage. The work was divided between several mechanical crews which performed the bearing replacement and several electrical crews which performed the motor electrical determination and retermination.

September 15, 1988 - WR&A 88-AQPM2 was initiated for an electrical crew to determinate and reterminate the motor for the mechanical crew. (The numeral "2" at the end of this WR&A number indicates that this work is related to WR&A 88-AQPM1). Independent verification of the retermination was not required.

September 15, 1988 - A Mechanical Maintenance Foreman requested a clearance for AH-26 fan. A Master clearance was prepared (recognizing there would be multiple WR&As worked under the same clearance), and an Equipment Inoperable Record (EIR) was initiated to track the inoperable status of AH-26.

September 15, 1988 - A PMTR sheet was prepared for WR&A 88-AQPM2. The PMTR required maintenance personnel to check for proper motor rotation.

September 16, 1988 - The clearance was hung and accepted by the initiator.

September 21, 1988 - A PMTR sheet was prepared for WR&A 88-AQPM1. The PMTR required maintenance personnel to check for unusual noise or vibration after the fan was started.

September 23, 1988 - The motor leads were disconnected under WR&A 88-AQPM2.

September 24, 1988 - The motor bearings were replaced.

September 28, 1988 - Understanding that the motor leads were reconnected, the Mechanical Maintenance Foreman cancelled the clearance.

September 29, 1988 - The PMTR sheets were completed by Operations personnel. The investigation revealed that the individual that signed off the sheets had provided a list of fans to a control operator to test run. Normally an Operations Surveillance Test (OST) would be used to verify operability; however, such an OST does not exist for room coolers, and the ad hoc PMTR instructions were the only information available to the operators. The fans were started from a control panel in the Main Control Room. There was no record that maintenance personnel were contacted to witness the test run. The only indication of the fan status in the Main Control Room are red and green lights which indicate the

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

CAUSE (continued)

position of the feeder breaker. The control operator could not explicitly recall having an auxiliary operator observe the fan's operation locally. The only indication available locally is the delta pressure across a rough filter on the fan's intake. The fan motor is enclosed in the air handling unit and cannot be observed without opening the unit. Signs on the unit's doors caution against opening the doors while the fan is in operation. Based on the report from the Control Operator, the Shift Foreman Designee signed off the PMTR as satisfactory.

September 30, 1988 - The clearance forms were reviewed by the Shift Foreman and the EIR was cancelled.

October 3, 1988 - Final documentation for WR&A 88-AQPM1 was approved by the Mechanical Maintenance Foreman.

October 5, 1988 - The plant entered Mode 4.

October 18, 1988 - Final documentation for WR&A 88-AQPM2 was approved by the Electrical Foreman.

December 5, 1988 - The problem was discovered.

The other 25 air handling units that were worked on were subsequently reverified to be functioning properly. This indicates that the failure to properly restore AH-26 was isolated.

In summary, the failure to detect an error was caused by both the administrative controls applied to the maintenance work and by failure to implement the specified PMTR.

ANALYSIS OF EVENT:

There were no safety consequences as a result of this event. The room temperatures throughout the time the fan was inoperable did not exceed the limits established in Technical Specifications for the particular area. The operability of AH-26 is not directly addressed in Technical Specifications. Because the unit is required to support the long term operations of the E6-A-SA fan, it is considered as a required support system for the RAB Emergency Exhaust System. The E6-A-SA fan operates during a design basis loss of coolant accident to minimize the off-site dose from a postulated leak of water into the Reactor Auxiliary Building. There are two independent trains to accommodate this postulated accident. The B train components were not affected by the inoperability of the AH-26.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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ANALYSIS OF EVENT (continued)

This event is being reported in accordance with 10CFR50.73(a)(2)(i)(B) as a violation of Technical Specifications.

There has been one other similar event that involved communication of the status of maintenance activities. This was reported in LER 88-030-00. LER 88-030-00 describes an event in which inadequate communication between maintenance crews caused inoperability of a containment isolation valve resulting in a Technical Specification required plant shutdown.

CORRECTIVE ACTION:

1. The motor leads for AH-26 were reconnected and fan operation was verified on December 6, 1988.
2. In the future, when it is necessary to disconnect and reconnect motor electrical leads, there will be a maintenance hold point on the work request requiring independent verification that the motor leads have been reconnected.
3. Maintenance Management Manual (MMM-019), Post Maintenance Testing, will be revised to include additional testing instructions for Air Handling Units. Personnel responsible for performing the PMTR will be informed of the revised requirements.
4. It was verified that the other 25 air handling units that were worked during the refueling outage were operating properly; no problems were found.



Carolina Power & Light Company

HARRIS NUCLEAR PROJECT
P.O. Box 165
New Hill, NC 27562

JAN 04 1989

File Number: SHF/10-13510C
Letter Number: HO-890001 (0)

U.S. Nuclear Regulatory Commission
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SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 88-034-00

Gentlemen:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,

R. A. Watson
Vice President
Harris Nuclear Project

RJS:lem

Enclosure

cc: Mr. W. H. Bradford (NRC - SHNPP)
Mr. B. Buckley (NRR)
Mr. M. L. Ernst (NRC - RII)

MEM/LER-88-034/1/OS1

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