REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8806090[redacted] DOC. DATE: 88/06/02 NOTARIZED: NO DOCKET #
FACIL: 50-287 Oconee Nuclear Station, Unit 3, Duke Power Co. 05000287
AUTH. NAME AUTHOR AFFILIATION
NORTH, P. J. Duke Power Co.
TUCKER, H. B. Duke Power Co.
RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-001-00: on 880406, three low pressure injection pumps declared inoperable. Caused by mgt failure to perform operability tests after maint lubrication. Pump periodic tests, lubrication & maint program reviewed. W/880602 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 9
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: AEOD/Ornstein: lcy. 05000287

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	RGN2 FILE 01	1	1			
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NRC Form 366
(9-83)

LICENSEE EVENT REPORT (LER)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

FACILITY NAME (1): Oconee Nuclear Station, Unit 3

DOCKET NUMBER (2): 0 5 0 0 0 2 8 7

PAGE (3): 1 OF 0 8

TITLE (4): Low Pressure Injection System declared inoperable due to a Management Deficiency

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 4	0 6	8 8	8 8	0 0 1	0 0	0 6	0 2	8 8		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 8 8

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check one or more of the following)* (11)

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)	X OTHER *(Specify in Abstract below and in Text, NRC Form 366A)*
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	Voluntary
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: Philip J. North, Licensing

TELEPHONE NUMBER: AREA CODE 7 0 4 — 3 7 3 - 7 4 5 6

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)

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

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

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

On April 6, 1988 at 0800, all three Low Pressure Injection (LPI) pumps on Unit 3 were declared inoperable because no operability tests were performed after preventative maintenance (PM) lubrication. The pumps were tested and declared operable on April 6, at 1102. Unit 3 was at 88% full power throughout this incident.

The root cause of this incident was determined to be a management deficiency, because management failed to implement administrative controls to ensure post lubrication testing was performed in accordance with agreed testing criterion.

During this incident, the LPI pumps were never actually inoperable. The decision to declare the pumps inoperable was based on conservative engineering judgement and not because of a Technical Specification as a result of ASME Code requirements. Therefore, there was no Technical Specification violation because the LPI pumps were operable throughout this incident.

Planned corrective actions include a review of pump periodic tests, revision of lubrication procedures, and revision of the maintenance lubrication program.

IE22
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☆ U.S.GPO:1984-0-454-441/18759

Background:

Technical Specification 4.0.4 requires Inservice examination of ASME Code Class 1, 2, and 3 pumps and valves to be performed in accordance with Section XI of the ASME Code. Section XI of the ASME Code, Article IWP-2000 defines preventative maintenance which does not require disassembly of the pump [EIIS:P] or replacement of pump parts as routine service. Section XI of the ASME Code, Article IWP-3111 states:

> "When a reference value or set of values may have been affected by repair or routine servicing of the pump, a new refernce value or set of values shall be determined or the previous value reconfirmed by an inservice test run prior to...return of the pump to service."

Technical Specification 3.3.2.b.1 requires two Low Pressure Injection (LPI) [EIIS:BP] Pumps to be operable. However, Technical Specification 3.3.2.b.2 allows one LPI Pump to be out of service for 24 hours for testing or maintenance. Both of the above Technical Specifications are contingent upon the presence of fuel in the core [EIIS:AC], and the Reactor Coolant System [EIIS:AB] in a condition with pressure greater than or equal to 350 psig or temperature greater than or equal to 250 degrees F.

Sequence of Events:

January 22, 1988 - A meeting was held to determine the best method to perform maintenance lubrication in conjunction with performance testing on station components.

January 29, 1988 - A letter, stating the conclusions of the January 22 meeting, was sent to the attendees of the meeting.

February 10, 1988 - A standing work request was originated to perform the annual preventative maintenance on Unit 3 safety related pumps and fans.

February 14, 1988 - The standing work request and the "Lubrication-Unit 3 Annual Safety-Related Preventative Maintenance" procedure were received by maintenance shift personnel.

February 15, 1988 - Maintenance shift crews started on the lubrication outlined in the lubrication procedure.

- Operations gave clearance to begin work for the standing work request.

April 5, 1988 1200 - Performance called Unit 3's Operating Engineers and requested permission to perform the LPI System Performance Test (PT) procedure.
- The PT was scheduled for 0730, April 6.

1530 - The Planning and Scheduling Section was contacted to schedule lubrication for the LPI Pumps.
- The work schedule for night shift personnel was sent to the Maintenance Supervisor.

2130 - Two members of maintenance shift crew 'A' contacted Unit 3's Assistant Shift Supervisor for clearance to begin work on the lubrication procedure.
- The Assistant Shift Supervisor reviewed the maintenance lubrication procedure, Station Directives, maintenance section manual and the work request for guidance on post maintenance testing.

April 5, 2159 - 3A LPI Pump was removed from service for lubrication.
2200-2350 - Lubrication was performed on 3A LPI Pump.
2350 - 3A LPI Pump was returned to service.
- No functional test was performed.
April 6 0100 - 3B LPI Pump was removed from service for lubrication.
0100-0223 - Lubrication was performed on 3B LPI Pump.
0223 - 3B LPI Pump was returned to service.
- No functional test was performed.
0226 - 3C LPI Pump was removed from service for lubrication.
0226-0317 - Lubrication was performed on 3C LPI Pump.
0317 - 3C LPI Pump was returned to service.
- No functional test was performed
0730-0755 - An Operations Engineer was reviewing the status of Unit 3 with the Shift Supervisor and notice all three LPI Pumps had been lubricated the night before without an operability test performed.
0800 - After talking to Station Compliance, all three LPI Pumps were declared inoperable.
1000 - 3'A' LPI Pump was tested and declared operable.
1102 - All three LPI Pumps were tested and declared operable.
1117 - A non-emergency 4-hour phone call was made to the NRC.

Description of Incident

On January 22, 1988, a meeting was held to determine the best method to perform maintenance lubrication in conjunction with Performance testing on station components. The Operations Group had expressed a concern that they were performing redundant functional testing on station components. Specifically, Performance would do their periodic test (PT) on station components. Shortly after the PT was finished, Maintenance would request permission to work on the same components as part of their Preventative Maintenance (PM) Lubrication Program. Therefore, Operations redundantly performed functional test lineups for

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

several pumps when it was not necessary. This was causing problems in unnecessary radiation dose, Operations' manpower and scheduling of pump maintenance and testing. Operations Shift, Maintenance and Operations Engineering, Planning and Scheduling, Performance and Station Compliance were present at the meeting. As a result of the meeting, Operations, Planning and Scheduling and Performance agreed to work together so that both the PT and PM were done at the same time. This reduced the number of lineups that Operations was required to do.

On January 29, the Station Compliance representative at the January 22 meeting sent out a letter stating the conclusions of the meeting. The letter was received by the attendees of the meeting as well as applicable personnel in Operations, Maintenance, Performance and Quality Assurance. The letter stated that oil changes and/or additions do not affect the operating characteristics of the equipment and therefore, do not require a post maintenance run prior to returning the equipment to service. The letter also stated, "However, grease replacement in pump motors and fast coupling [EIIS:CPLG] has the potential to change the operating characteristics of the equipment; therefore, this equipment must have a post maintenance test per ASME Section XI prior to returning the equipment to service or declaring the equipment operable". The statement regarding grease replacement was subsequently determined to be in error.

Over the next three months, no changes were made to the work request, procedures or directives responsible for lubrication. Therefore, the results of the meeting were not incorporated into administrative controls for the lubrication program.

On February 10, the standing work request was originated to perform the annual preventative maintenance on Unit 3 safety-related pumps and fans [EIIS:FAN]. Included with the work request was "Lubrication-Unit 3-Annual Safety Related-Preventative Maintenance" procedure and an equipment clearance sheet.

On February 14, the work request and lubrication procedure were sent from Planning and Scheduling to Maintenance Shift for implementation. Due to the amount of work involved with this procedure, it was necessary to hold it open for months. Scheduling for components included in the procedure was performed by a daily work list sent from Planning and Scheduling to the Maintenance Shift.

On April 5, Performance called an Operations Staff Engineer to schedule the LPI System Performance Test for the following day. The Operating Staff Engineer asked if a maintenance lubrication PM was required. The Performance Supervisor stated Maintenance had been informed and had scheduled the PM. However, later that day, while performing a review of the work request scheduled for night shift personnel, the Operations Staff Engineer noticed the maintenance lubrication PM was not included. He contacted the planner responsible for the work request to obtain information on the PM not being included in the night shift schedule. The planner stated that the lubrication PM would not be started until the next morning. However, since shift turnover would occur before the Planner reported back to work, the lubrication PM for the LPI Pumps was placed on Maintenances' night shift work list.

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The night shift crew did not check the working copy of the lubrication procedure, to the control copy within the required 14 days. Station Directive 2.2.1 requires the validity of the working copy to be verified with the control copy no more than 14 days prior to its use. The last Control Copy Check was performed on March 17, which was 19 days earlier.

Later that night, two maintenance shift personnel requested permission to work on the 3'A' LPI Pump from the Unit 3 Operations Supervisor. The Operations Supervisor reviewed the work request, the maintenance lubrication procedure, the maintenance lubrication directive and Station Directives. No indication of inoperability due to lubrication of the pump was included in the procedures and directives. Operations granted clearance to begin work on the Equipment Clearance sheet, but did not sign the Lubrication Data Sheet as required by Step 5.1 of the maintenance lubrication procedure. Therefore, at 2159, the 3'A' LPI Pump was taken out of service (4160 V breaker [EIIS:BRK] opened) for Maintenance to perform their PM lubrication. The lubrication was performed and the 3'A' LPI Pump was returned to service at 2350. The lubrication consisted of changing the grease in both motor bearings, changing the oil in the pump and changing the grease in the fast coupling. The pump, motor and fast coupling were never disassembled, and following the lubrication, no functional test was performed on the LPI Pump. The maintenance lubrication procedure required a run of the pump as good maintenance practice; however, no test was performed because the maintenance crew was waiting for the scheduled performance PT at 0730 the next morning. Both the 3'B' and 3'C' LPI Pumps were taken out of service, lubricated and returned to service in a similar manner.

On April 6, at 0730, the Unit 3 Operations Engineer, who tried to schedule the LPI Pump lubrication, was reviewing the previous nights activities with the Unit 3 Supervisor. He noticed the removal and restoration procedures for all three LPI Pumps. Upon finding a Performance Operability Test had not been performed, he contacted Station Compliance. As a result of his conversation with Compliance, all three LPI Pumps were declared inoperable at 0800. Performance was notified and started their Operability Test on the LPI Pumps. At 1000, the testing on the 3A LPI pump was completed and the pump was declared operable. At 1102, the LPI System Performance Test was completed and all three LPI Pumps were declared operable. At 1117, a non-emergency four-hour phone report was made to the NRC on this incident pursuant to 10CFR50.72(b)(2)(iii).

Cause of Occurrence:

This root cause of this incident was determined to be a Management Deficiency, because management failed to administer administrative controls to ensure post lubrication testing was performed in accordance with agreed testing criterion that was a result of the January 22 meeting. After the January 22 meeting, no changes were made to Maintenance Directive 5.3.3 (Lubrication Program) or to the Unit 3 -PM- lubrication procedure or to the standing work request for Lubrication on Unit 3 Pumps and Fans. These directives and procedures should have been changed to incorporate the change in the lubrication program that was a result of the January 22 meeting. However, this was not done and when the Shift Supervisor reviewed the three documents, he found no guidance on the LPI Pumps being inoperable.

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A contributing cause to this incident was the conservative decision taken during the January meeting. The decision was based on a good maintenance practice and not ASME Code or Technical Specification requirements. Per Article IWP-2000 of the ASME Code, Section XI, maintenance that does not require disassembly of the pump is considered routine servicing. This fact was not understood by all the individuals involved at the January meeting. IWP-3111 states that routine servicing may affect the operating characteristics of the pump. Based on past operating experience, proper greasing of the pump bearing reduces both pump vibration and bearing temperatures. Lubrication PM only serves to enhance pump performance and will not degrade pump performance. Per Section XI of the ASME Code, post lubrication testing as described in this incident is not required. Thus this incident did not result in a violation of Technical Specifications and is therefore not reportable per 10CFR50.73. However, Oconee Nuclear Station management believes that post lubrication testing is a good engineering practice and plans to perform it in the future.

There were two other problems discovered during this investigation of this incident. Step 5.1 of the Unit 3 Lubrication procedure requires the user to stamp on the Lubrication Data Sheet the statement "Clearance to Begin Work". After this statement has been stamped on the Lubrication Data Sheet, the Operations Unit Supervisor giving clearance to begin work signs that step. This assures that proper clearance is given and documented prior to work beginning. Of the 16 data sheets completed at the time of this investigation, none were performed in compliance with Step 5.1 of the procedure, although clearance was given on the Equipment Clearance Sheet (this sheet is not an official document). The Equipment Clearance Sheet is not part of the lubrication procedure or any directives. It is used by Planning and Scheduling, maintenance crews and Operations as a quick reference of the status of the lubrication procedure.

The other problem that was discovered during this investigation was the failure of the maintenance crew to check the working copy to the control copy within the required 14 days. Station Directive 2.2.1 requires the validity of the working copy to be verified with the control copy no more than 14 calendar days prior to use and every 14 days thereafter. This was not done on April 5, when the 3'A' LPI Pump was taken out of service. However, this problem did not contribute to this incident because no changes to the procedure had occurred.

Since there was no component failure, this incident is not reportable to NPRDS. There was no release of radioactive material, radiation exposure, or personnel injury as a result of this incident. This incident is not reportable pursuant to 10CFR50.73.

CORRECTIVE ACTIONS

The immediate corrective action was to declare the LPI pumps inoperable and begin an operability test for the LPI pumps.

Subsequent corrective actions were to:

- Declare the LPI Pumps operable after the LPI Performance Test was completed on April 6, at 1102;

- Hold a meeting to determine the impact of lubrication on pump operability. Based on past post lubrication pump performance and Section XI of the ASME Code; Station Management determined no post lubrication maintenance testing is necessary. However, ONS will continue to run the pumps after lubrication as a good engineering practice.

Planned corrective actions are for:

- Performance, with assistance from Mechanical Maintenance, to review their pump PTs to include a method to schedule maintenance lubrication in conjunction with the Performance PTs. Changes to the PTs will be made in order to support the scheduling between Maintenance and Performance for functional testing of components;

- Maintenance's lubrication procedures to be revised to identify testing requirements, LCO's and other appropriate sign-offs for tag outs. This change will include a "clearance to begin work" sign-off on each Lubrication Data Sheet. This procedure will be cross disciplinary reviewed by Operations. The changes to the procedure are required for safety-related pumps only;

- the Superintendent of Operations to review, with the Operating Staff and Shift, management's decision on when and how functional/operability testing will be performed after lubrication,

- the Superintendent of Maintenance to review, with his staff, how/when functional/operability testing will be performed after lubrication. During this review, he will reinforce the responsibility of his staff to incorporate changes into existing programs;

- the Mechanical Maintenance Engineer to review Station Directive 2.2.1 with Maintenance shift personnel on how to properly perform procedures and their responsibility to perform each step;

- the Maintenance Directive 5.3.3 (Lubrication Program) to be changed to reflect management's decision on how/when to perform post maintenance testing after lubrication.

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Analysis of Occurrence:

Based on good engineering judgement and past post lubrication pump performance, it is concluded that the lubrication of the LPI Pumps, motors and fast coupling did not adversely affect the operating characteristics of the LPI Pumps. In fact, the proper lubrication of these components would improve the operating characteristics of the pump.

Throughout this incident, the LPI Pumps were operable. The decision to declare the LPI Pumps inoperable was based on a good engineering practice. Section XI of the ASME Code or Technical Specifications were not violated during this incident. However, ONS management plans to do post lubrication functional testing of components as a good safety practice.

This incident did not have an impact on the health and safety of the public.

DUKE POWER COMPANY
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HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

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June 2, 1988

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

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
LER 287/88-01

Gentlemen:

Pursuant to 10CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report (LER) 287/88-01 concerning an incident where the Unit 3 Low Pressure Injections pumps were declared inoperable.

This report is submitted on a voluntary basis. This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

Hal B. Tucker

PJN/331/bhp

Attachment

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