

CP&L

Carolina Power & Light Company

Brunswick Nuclear Project
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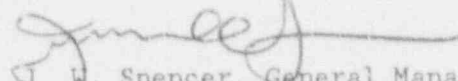
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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BRUNSWICK STEAM ELECTRIC PLANT UNIT 2
DOCKET NO. 50-324
LICENSE NO. DRP-62
LICENSEE EVENT REPORT 2-91-020

Gentlemen:

In accordance with Title 10 of 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 submitted in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,


J. W. Spencer, General Manager
Brunswick Nuclear Project

GT/

Enclosure

cc: Mr. S. D. Ebnetter
Mr. N. B. Le
BSEP NRC Resident Office

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

| FACILITY NAME (1) Brunswick Steam Electric Plant Unit 2 | DOCKET NUMBER (2) 05000324 | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="4" style="text-align: center;">LER NUMBER (6)</th> <th style="text-align: center;">PAGE (3)</th> </tr> <tr> <td style="text-align: center;">YEAR</td> <td style="text-align: center;">SEQ NO.</td> <td style="text-align: center;">REV NO.</td> <td colspan="2"></td> </tr> <tr> <td style="text-align: center;">91</td> <td style="text-align: center;">020</td> <td style="text-align: center;">0</td> <td colspan="2" style="text-align: center;">2</td> </tr> </table> | LER NUMBER (6) | | | | PAGE (3) | YEAR | SEQ NO. | REV NO. | | | 91 | 020 | 0 | 2 | |
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

INITIAL CONDITIONS

At 1400 on 12/14/91, Unit 2 Reactor was at 2% Reactor power during the startup following a refueling outage. The High Pressure Coolant Injection (HPCI) turbine was uncoupled for routine overspeed trip mechanism testing. With the exception of HPCI, the Emergency Core Cooling System (ECCS) were operable. The overspeed trip mechanism had been adjusted after an initial run during which the HPCI turbine had not tripped within the required speed range.

EVENT NARRATIVE

At 1400 on 12/14/91, the High Pressure Coolant Injection (HPCI) system was undergoing a second overspeed trip test to check the adjustments made after the initial test run. The HPCI turbine speed response during the initial test run was as expected and no other problems were noted. During the second test run, the HPCI turbine steam supply valve (E41-F001) would not open from the control room. The E41-F001 valve actuator had been rebuilt by a service vendor during the refueling outage and had been tested with satisfactory results. Investigation of the valve problem found that its limit switch assembly finger base which holds the individual limit switches was loose. The limit switch assembly finger base had been left loose enough during the rebuild to allowed it to become misaligned. The E41-F001 had been tested after the rebuild and had been cycled more than 9 times before it failed to open during the overspeed test. The E41-F001 limit switch assembly was tightened and adjusted. The other HPCI valve actuators rebuilt by the service vendor were checked and no problems were found with the limit switch assemblies.

At 1436 on 12/15/91 when overspeed testing was recommenced, the HPCI turbine speed feedback signal was erratic. Investigation found that the speed sensing gear was loose on its shaft and that the magnetic pickup was slightly damaged but operable. The speed sensing gear had not been removed from the shaft that outage, but the possibility exists that the speed sensing gear impacted the magnetic pickup during one of several removals and installations of the turbine's Woodward governor upper housing.

During the original outage inspection, the speed sensing gear was checked for security, but the procedure did not require an actual check of the set screws. One of the final checks made during the reassembly was the clearance between the magnetic pickup and the speed sensing gear. This clearance was set for maximum allowable gap of 0.010", and as it was set from outside the governor housing any damage present at this time would not have been visible. The incident investigation found no damage beyond the magnetic pickup. The magnetic pickup was replaced, the speed sensing gear set screws tightened, and the overspeed trip mechanism testing continued until it was satisfactorily completed.

CAUSE OF EVENT

The E41-F001 valve actuator had been rebuilt during the refueling outage but the limit switch assembly finger base was left loose enough to allow misalignment. The service vendor, ITI MOVAT Actuator Service Division, believes that the limit switch assembly rebuild is well within "the skill of the craft" of the individuals involved. While the vendor procedure contains no steps for tightening the screws or bolts the vendor believes the procedure is adequate considering the training received by its personnel. When the vendor contracted to

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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

rebuild the valve actuators CP&L was presented with the records of the technicians showing a lengthy history of quality work with this type actuator. The vendor also contracted for and supplied experienced personnel who implemented quality assurance inspections that were verified to meet the quality assurance program requirements of 10CFR50, Appendix B. When CP&L technicians ran the final functional acceptance testing, no problems were identified with the valve actuator limit switches. This event was the result of an isolated error by the vendor's technician.

The speed feedback signal was erratic due to loosened set screws on the speed sensing gear. As the speed sensing gear had not been removed from the shaft that outage, the possibility exists that the speed sensing gear may have impacted the magnetic pickup during one of several removals and installations of the turbine Woodward governor upper housing. The original inspection did check the speed sensing gear for security, but the procedure did not require an actual check of the set screws.

CORRECTIVE ACTIONS

- The E41-F001 limit switch assembly was tightened and adjusted.
- The other HPCI valve actuators, rebuilt on-site by the service vendor, were checked and no problems were found with these limit switch assemblies.
- The Manager of ITI MOVATs Actuator Service Division was made aware of the E41-F001 limit switch issue.
- The speed sensing gear set screws were tightened and the magnetic pickup replaced.
- The procedure for the speed pickup gear assembly inspection (MI-10-517C) is being evaluated for possible revision. This will include a check of the speed sensing gear set screws.

SAFETY ASSESSMENT

The HPCI system was still undergoing surveillance and post-maintenance testing for the extensive overhaul completed during the refueling outage. While the HPCI system itself was not available during this time, the other Emergency Core Cooling systems were operable.

PREVIOUS SIMILAR EVENTS

None

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TEXT (If more space is required, use additional NRC Form 356A's) (17)

EIIS COMPONENT IDENTIFICATION

| <u>System/Component</u> | <u>EIIS Code</u> |
|--|------------------|
| High Pressure Coolant Injection System | BJ |
| Valve Limit Switch | BJ/SHV/IEL |
| Speed Sensor | BJ/* |

* No EIIS Identifier Found