

CATEGORY

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 FACIL: 50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
 AUTH. NAME AUTHOR AFFILIATION
 VERRILLI, M. Carolina Power & Light Co.
 DONAHUE, J. W. Carolina Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-021-00: on 970814, spent fuel pool water level was not maintained greater than 23 feet above stored BWR fuel assemblies, was identified. Caused by misinterpretation of TS. Directions provided to Operations. W/970912 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: Application for permit renewal filed.

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Serial: HNP-97-175
10CFR50.73

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 97-021-00

Sir or Madam:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report describes a Technical Specification violation pertaining to spent fuel pool water level.

Sincerely,

J. W. Donahue
Director of Site Operations
Harris Plant

MV

Enclosure

c: Mr. J. B. Brady (HNP Senior NRC Resident)
Mr. L. A. Reyes (NRC Regional Administrator, Region II)
Mr. V. L. Rooney (NRC - NRR Project Manager)

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PDR ADDCK 05000400
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| NRC FORM 366 (4-95) | | U.S. NUCLEAR REGULATORY COMMISSION | | APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 <small>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 (IT-6 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.</small> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FACILITY NAME (1) Harris Nuclear Plant Unit-1 | | | | DOCKET NUMBER (2) 50-400 | PAGE (3) 1 OF 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TITLE (4) Spent Fuel Pool water level not maintained greater than 23 feet above stored BWR fuel assemblies. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EVENT DATE (5) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>MONTH</th> <th>DAY</th> <th>YEAR</th> </tr> <tr> <td>8</td> <td>14</td> <td>97</td> </tr> </table> | | MONTH | DAY | YEAR | 8 | 14 | 97 | LER NUMBER (6) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>YEAR</th> <th>SEQUENTIAL NUMBER</th> <th>REVISION NUMBER</th> </tr> <tr> <td>97</td> <td>-- 021</td> <td>-- 00</td> </tr> </table> | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 97 | -- 021 | -- 00 | REPORT DATE (7) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>MONTH</th> <th>DAY</th> <th>YEAR</th> </tr> <tr> <td>9</td> <td>12</td> <td>97</td> </tr> </table> | | MONTH | DAY | YEAR | 9 | 12 | 97 | | | | | | | | | | | | | | | |
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| 9 | 12 | 97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | OTHER FACILITIES INVOLVED (8) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>FACILITY NAME</th> <th>DOCKET NUMBER</th> </tr> <tr> <td></td> <td>05000</td> </tr> </table> | | | | FACILITY NAME | DOCKET NUMBER | | 05000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | 05000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OPERATING MODE (9) 1 | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>20.2201(b)</td> <td>20.2203(a)(2)(v)</td> <td><input checked="" type="checkbox"/></td> <td>50.73(a)(2)(ii)</td> <td>50.73(a)(2)(viii)</td> </tr> <tr> <td>20.2203(a)(1)</td> <td>20.2203(a)(3)(i)</td> <td></td> <td>50.73(a)(2)(iii)</td> <td>50.73(a)(2)(x)</td> </tr> <tr> <td>20.2203(a)(2)(i)</td> <td>20.2203(a)(3)(ii)</td> <td></td> <td>50.73(a)(2)(iii)</td> <td>73.71</td> </tr> <tr> <td>20.2203(a)(2)(ii)</td> <td>20.2203(a)(4)</td> <td></td> <td>50.73(a)(2)(iv)</td> <td>OTHER</td> </tr> <tr> <td>20.2203(a)(2)(iii)</td> <td>50.36(c)(1)</td> <td></td> <td>50.73(a)(2)(v)</td> <td rowspan="2">Specify in Abstract below or in NRC Form 366A</td> </tr> <tr> <td>20.2203(a)(2)(iv)</td> <td>50.36(c)(2)</td> <td></td> <td>50.73(a)(2)(vii)</td> </tr> </table> | | | | 20.2201(b) | 20.2203(a)(2)(v) | <input checked="" type="checkbox"/> | 50.73(a)(2)(ii) | 50.73(a)(2)(viii) | 20.2203(a)(1) | 20.2203(a)(3)(i) | | 50.73(a)(2)(iii) | 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) | | 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) | | | | |
| 20.2201(b) | 20.2203(a)(2)(v) | <input checked="" type="checkbox"/> | 50.73(a)(2)(ii) | 50.73(a)(2)(viii) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.2203(a)(1) | 20.2203(a)(3)(i) | | 50.73(a)(2)(iii) | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| POWER LEVEL (10) 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LICENSEE CONTACT FOR THIS LER (12) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>NAME</th> <th>TELEPHONE NUMBER (Include Area Code)</th> </tr> <tr> <td>Michael Verrilli Sr. Analyst - Licensing</td> <td>(919) 362-2303</td> </tr> </table> | | | | | | NAME | TELEPHONE NUMBER (Include Area Code) | Michael Verrilli Sr. Analyst - Licensing | (919) 362-2303 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NAME | TELEPHONE NUMBER (Include Area Code) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Michael Verrilli Sr. Analyst - Licensing | (919) 362-2303 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>CAUSE</th> <th>SYSTEM</th> <th>COMPONENT</th> <th>MANUFACTURER</th> <th>REPORTABLE TO NPRDS</th> <th></th> <th>CAUSE</th> <th>SYSTEM</th> <th>COMPONENT</th> <th>MANUFACTURER</th> <th>REPORTABLE TO NPRDS</th> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table> | | | | | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | | | | | | | | | | | | | | | | | | | | | |
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| SUPPLEMENTAL REPORT EXPECTED (14) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>YES (If yes, complete EXPECTED SUBMISSION DATE).</td> <td><input checked="" type="checkbox"/> NO</td> <td rowspan="2"> EXPECTED SUBMISSION DATE (15) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>MONTH</th> <th>DAY</th> <th>YEAR</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table> </td> </tr> <tr> <td colspan="2"> </td> <td> </td> </tr> </table> | | | | | | YES (If yes, complete EXPECTED SUBMISSION DATE). | <input checked="" type="checkbox"/> NO | EXPECTED SUBMISSION DATE (15) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>MONTH</th> <th>DAY</th> <th>YEAR</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table> | MONTH | DAY | YEAR | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16) <p>On August 14, 1997, with the plant at approximately 100% power in mode 1, a condition was identified during a Technical Specification (TS) surveillance procedure review project related to inadequate maintenance of Spent Fuel Pool water level. Specifically, Technical Specification (TS) 3/4.9.11 requires that "at least 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated in the storage racks." This depth of water will provide sufficient "scrubbing" to remove 99% of the assumed 10% iodine gas activity released from the rupture of an irradiated fuel assembly. Contrary to this requirement, water level has not been verified greater than 23 feet above the boiling water reactor (BWR) fuel assemblies received from CP&L's Brunswick Plant, which are currently stored in the Harris Plant fuel pools. These BWR assemblies have a bail handle that extends approximately 6 inches above the top nozzle base plate. When the BWR storage racks were installed in 1991, the 23 foot water level reference mark was established from the top nozzle base plate of the BWR fuel seated in the storage racks, not from the top of the bail handles. This approach was determined at the time to be conservative since the base plate elevation exceeds that of the fuel rods which would be the source of any released fission gasses. However, verbatim compliance with the TS requirements would require 23 feet of water over the BWR fuel assembly structure, including the top bail handle.</p> <p>This condition was caused by a misinterpretation of TS requirements and design inputs during the establishment of the 23 foot water level reference mark and the subsequent setup of water level indicators, when the BWR fuel storage racks were initially installed at the Harris Plant.</p> <p>Corrective actions included directions to Operations to maintain and monitor fuel pool level at or above 23 feet 7 inches to ensure required water level over the BWR bail handles. This was completed by issuing an Operations night order and revising the daily surveillance procedures. Additional actions will include reviewing this event with appropriate Engineering personnel to emphasize the importance of verbatim TS compliance and an evaluation of the fuel pool level alarm setpoints.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | |
| Shearon Harris Nuclear Plant - Unit #1 | 50-400 | 97 | 021 | 00 | 2 OF 3 |

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

EVENT DESCRIPTION:

On August 14, 1997, with the plant at approximately 100% power in mode 1, a condition was identified during a Technical Specification (TS) surveillance procedure review project related to inadequate maintenance of Spent Fuel Pool water level. Specifically, Technical Specification (TS) 3/4.9.11 requires that "at least 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated in the storage racks." As described in the TS Bases section for this TS, this depth of water will provide sufficient "scrubbing" to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. Contrary to this, water level has not been verified greater than 23 feet above the boiling water reactor (BWR) fuel assemblies received from CP&L's Brunswick Plant, which are currently stored in the Harris Plant (HNP) fuel pools. These BWR assemblies have a bail handle that extends approximately 6 inches above the top nozzle base plate. When the BWR storage racks were installed in 1988, the 23 foot water level reference mark was established from the top nozzle base plate of the BWR fuel seated in the storage racks, not from the top of the bail handles. This approach was determined at the time to be conservative since the top nozzle base plate elevation exceeds that of the fuel rods which would be the source of any released fission gasses. However, verbatim compliance with the TS requirements would require 23 feet of water over the BWR fuel assembly structure, including the top bail handle. The method of verifying adequate water level in the Spent Fuel Pools at HNP involved confirming that the low-level alarm was not present. The low level alarm setpoint was established at 23 feet 2.5 inches and was consistent with the 23 foot reference mark from the top nozzle base plate. Therefore water levels could have dropped below 23 feet above the top of the BWR assembly bail handles and not result in a low level alarm.

CAUSE:

This condition was caused by a misinterpretation of TS requirements and design inputs during the establishment of the 23 foot water level reference mark (above the BWR top nozzle base plate) and the subsequent setup of water level indicators, when the BWR fuel storage racks were initially installed at the Harris Plant.

SAFETY SIGNIFICANCE:

There were no actual safety consequences associated with this event. Adequate water depth (23 feet) has been maintained above the active fuel rods, which would be the source of any released fission gasses. This ensures the iodine removal capability required by TS in the event of a ruptured irradiated fuel assembly.

This condition is being reported per 10CFR50.73.a.2.i as a condition prohibited by Technical Specifications.

PREVIOUS SIMILAR EVENTS:

There have been no previous events related to inadequate verification of Spent Fuel Pool water level.

CORRECTIVE ACTIONS COMPLETED:

1. Directions were provided to Operations to maintain and monitor Spent Fuel Pool water level at or above 23 feet 7 inches to ensure required water level over the BWR bail handles. This was completed by issuing an Operations Night Order on August 14, 1997, revising the Reactor Auxiliary Building Operator Logs on August 25, 1997 and requiring the actual Spent Fuel Pool water level to be entered in the daily surveillance requirement test, rather than the previous practice of confirming the absence of the low level alarm.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

| FACILITY NAME (1) | DOCKET | LER NUMBER (6) | | | PAGE (3) |
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| Shearon Harris Nuclear Plant - Unit #1 | 50-400 | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 3 OF 3 |
| | | 97 | .. 021 | .. 00 | |

TEXT (If more space is required, use additional copies of NRC Form 368A) (17)

CORRECTIVE ACTIONS PLANNED:

1. This event will be reviewed with appropriate Engineering personnel to emphasize the importance of verbatim TS compliance. This will be completed by September 30, 1997.
2. The Spent Fuel Pool water level alarm setpoints will be evaluated and modified as needed to ensure 23 feet of water over the BWR assembly bail handles. The evaluation and implementation schedule will be completed by November 15, 1997.