



**JUL 21 2003**  
U.S. Nuclear Regulatory Commission  
ATTN: NRC Document Control Desk  
Washington, DC 20555

Serial: HNP-03-085  
10CFR50.73

**SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1**  
**DOCKET NO. 50-400/LICENSE NO. NPF-63**  
**LICENSEE EVENT REPORT 2003-002-00**

Ladies and Gentlemen:

The enclosed Licensee Event Report 2003-002-00 is submitted in accordance with 10 CFR 50.73. This report describes a manual reactor trip due to a trip of the "A" condensate booster pump. Event notification EN# 39864 previously reported this event in accordance with 10 CFR 50.72.

Please refer any questions regarding this submittal to Mr. John Caves, Supervisor – Licensing/Regulatory Programs, at (919) 362-3137.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. C. Waldrep'.

B. C. Waldrep  
Plant General Manager  
Harris Nuclear Plant

BCW/jpy

Enclosure

c: Mr. R. A. Musser (HNP Senior NRC Resident)  
Mr. C. P. Patel (NRC-NRR Project Manager)  
Mr. L. A. Reyes (NRC Regional Administrator, Region II)

Progress Energy Carolinas, Inc.  
Harris Nuclear Plant  
P.O. Box 165  
New Hill, NC 27562

JE22

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**LICENSEE EVENT REPORT (LER)**

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

**1. FACILITY NAME**

Harris Nuclear Plant – Unit 1

**2. DOCKET NUMBER**

05000400

**3. PAGE**

1 OF 3

**4. TITLE**

Manual Reactor Trip Due to Trip of "A" Condensate Booster Pump

| 5. EVENT DATE                |     |      | 6. LER NUMBER  |                      |                    | 7. REPORT DATE |                    |                      | 8. OTHER FACILITIES INVOLVED                     |               |
|------------------------------|-----|------|--|----------------------|--------------------|----------------|--------------------|----------------------|--|---------------|
| MO                           | DAY | YEAR | YEAR   | SEQUENTIAL<br>NUMBER | REV<br>NO          | MO             | DAY                | YEAR                 | FACILITY NAME                                    | DOCKET NUMBER |
| 05                           | 20  | 2003 | 2003   | - 002                | - 00               | 07             | 21                 | 2003                 | FACILITY NAME                                    | DOCKET NUMBER |
| <b>9. OPERATING<br/>MODE</b> |     | 1    | <b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply) |                      |                    |                |                    |                      |  |               |
| <b>10. POWER<br/>LEVEL</b>   |     | 20   | 20.2201(b)   |                      | 20.2203(a)(3)(ii)  |                | 50.73(a)(2)(ii)(B) |                      | 50.73(a)(2)(ix)(A)                               |               |
|                              |     |      | 20.2201(d)   |                      | 20.2203(a)(4)      |                | 50.73(a)(2)(iii)   |                      | 50.73(a)(2)(x)                                   |               |
|                              |     |      | 20.2203(a)(1)  |                      | 50.36(c)(1)(i)(A)  |                | X                  | 50.73(a)(2)(iv)(A)   | 73.71(a)(4)                                      |               |
|                              |     |      | 20.2203(a)(2)(i)   |                      | 50.36(c)(1)(ii)(A) |                |                    | 50.73(a)(2)(v)(A)    | 73.71(a)(5)                                      |               |
|                              |     |      | 20.2203(a)(2)(ii)  |                      | 50.36(c)(2)        |                |                    | 50.73(a)(2)(v)(B)    | OTHER  |               |
|                              |     |      | 20.2203(a)(2)(iii)   |                      | 50.46(a)(3)(ii)    |                |                    | 50.73(a)(2)(v)(C)    | Specify in Abstract below or in<br>NRC Form 366A |               |
|                              |     |      | 20.2203(a)(2)(iv)  |                      | 50.73(a)(2)(i)(A)  |                |                    | 50.73(a)(2)(v)(D)    |  |               |
|                              |     |      | 20.2203(a)(2)(v)   |                      | 50.73(a)(2)(i)(B)  |                |                    | 50.73(a)(2)(vii)     |  |               |
|                              |     |      | 20.2203(a)(2)(vi)  |                      | 50.73(a)(2)(i)(C)  |                |                    | 50.73(a)(2)(viii)(A) |  |               |
|                              |     |      | 20.2203(a)(3)(i)   |                      | 50.73(a)(2)(ii)(A) |                |                    | 50.73(a)(2)(viii)(B) |  |               |

**12. LICENSEE CONTACT FOR THIS LER****NAME**

John Yadusky – Licensing

**TELEPHONE NUMBER (Include Area Code)**

(919) 362-2020

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

| CAUSE | SYSTEM | COMPONENT | MANU-<br>FACTURER | REPORTABLE<br>TO EPIX | CAUSE | SYSTEM | COMPONENT | MANU-<br>FACTURER | REPORTABLE<br>TO EPIX |
|-------|--------|-----------|-------------------|-----------------------|-------|--------|-----------|-------------------|-----------------------|
|       |        |           |                   |                       |       |        |           |                   |                       |

**14. SUPPLEMENTAL REPORT EXPECTED**

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

**15. EXPECTED  
SUBMISSION  
DATE**

| MONTH | DAY | YEAR |
|-------|-----|------|
|       |     |      |

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

On May 20, 2003 at 0453 with the reactor at approximately 20 percent power, the reactor was manually tripped in response to an automatic trip of the operating main feedwater pump (MFP). The "A" MFP tripped in response to an unplanned trip of the "A" condensate booster pump (CBP). Both motor-driven auxiliary feedwater (AFW) pumps started due to the trip of the MFP. Safety systems functioned as required. The operations crew responded to the event in accordance with applicable plant procedures. The plant was stabilized at normal operating no-load reactor coolant system temperature and pressure following the reactor trip.

The cause of the unplanned trip of the "A" CBP was due to low oil pressure after a gear in its variable speed fluid coupling (VSFC) failed following vendor refurbishment. Immediate corrective action was to replace the VSFC. Additional corrective action will be to specify a "run-in" of the gear set following VSFC refurbishment to develop adequate load-carrying capability of the gear teeth.

## LICENSEE EVENT REPORT (LER)

| 1. FACILITY NAME              | 2. DOCKET | 6. LER NUMBER |                      |                    | 3. PAGE |
|-------------------------------|-----------|---------------|----------------------|--------------------|---------|
|                               |           | YEAR          | SEQUENTIAL<br>NUMBER | REVISION<br>NUMBER |         |
|                               |           | 2003          | - 002                | - 00               |         |
| Harris Nuclear Plant – Unit 1 | 05000400  |               |                      |                    | 2 OF 3  |

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

### I. DESCRIPTION OF EVENT

On May 20, 2003 at 0453 with the reactor at approximately 20 percent power in Mode 1, the reactor was manually tripped as directed by plant procedures in response to an automatic trip of the single operating main feedwater pump (MFP) [SJ-P]. The "A" MFP tripped in response to an unplanned trip of the "A" condensate booster pump (CBP) [SG-P]. Both motor-driven auxiliary feedwater (AFW) pumps [BA-P] started due to the trip of the MFP. Safety systems functioned as required. The operations crew responded to the event in accordance with applicable plant procedures. The plant was stabilized at normal operating no-load reactor coolant system (RCS) [AB] temperature and pressure following the reactor trip.

The cause of the unplanned trip of the "A" CBP was due to low oil pressure after a gear [GR] in its variable speed fluid coupling (VSFC) failed following vendor refurbishment. The refurbishment included replacement of the internal oil pump pinion gear that resulted in tighter clearances in the internal oil pump. Without proper "run in" of the pinion gear, the gear teeth did not develop adequate load-carrying capability subsequently causing a mechanical overload of the pinion gear. This overloaded condition damaged the teeth of the pinion gear in the "A" CBP internal oil pump causing a decrease in oil pressure and subsequently resulted in an automatic trip of the "A" CBP.

Energy Industry Identification System (EIIIS) codes are identified in the text within brackets [ ].

### II. CAUSE OF EVENT

The cause of the unplanned trip of the "A" CBP was due to low oil pressure after a gear in its VSFC failed following vendor refurbishment.

### III. SAFETY SIGNIFICANCE

Other than the transient induced by the manual reactor trip, no safety significant consequences exist as a result of this event. The plant was manually tripped from approximately 20% power by control room operators as directed by plant procedures. The plant is designed for a loss of main feedwater, and it responded as expected for this condition. The initial plant conditions were within the bounding conditions for the plant design. The plant was promptly stabilized at normal operating no-load RCS temperature and pressure following the manual reactor trip. Plant equipment functioned as required, and no unusual conditions were observed for plant equipment following this event. No additional or compensatory measures were required for this event. The operating staff performed the required actions for the trip.

The potential safety consequences under other alternate conditions, such as operating at higher power, may have increased the severity of the transient, but they would not be expected to challenge the ability to stabilize the plant.

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| Harris Nuclear Plant – Unit 1 | 05000400  | YEAR          | SEQUENTIAL<br>NUMBER | REVISION<br>NUMBER | 3 OF 3  |
|                               |           | 2003          | - 002                | - 00               |         |

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

## IV. CORRECTIVE ACTIONS

Immediate corrective action was to replace the VSFC. Additional corrective action will be to specify a "run-in" of the gear set following VSFC refurbishment to develop adequate load-carrying capability of the gear teeth.

## V. PREVIOUS SIMILAR EVENTS

This failure is similar to the failure of the "A" CBP internal oil pump that occurred during the previous refueling outage in 2001. An apparent cause evaluation was performed at that time and concluded that the test procedure caused the failure by installing jumpers to run the CBP internal oil pump and its auxiliary oil pump simultaneously. The root cause evaluation associated with this LER confirmed that even short simultaneous runs of the two oil pumps can cause damage to the pinion gear of the CBP internal oil pump. However, in the event reported by this LER, no jumpers were installed to run the two oil pumps simultaneously. In this event, the cause of the gear failure was due to improper "run in" of the pinion gear in the CBP VSFC following vendor refurbishment. Therefore, the corrective actions of the previous failure would not have prevented the event reported by this LER.