

U. S. NUCLEAR REGULATORY COMMISSION
REGION II

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Report No: 50-400/98-03

Licensee: Carolina Power & Light (CP&L)

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road
New Hill, NC 27562

Dates: March 1 - April 11, 1998

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E2, and E8.2)
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Enclosure 2

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EXECUTIVE SUMMARY

Shearon Harris Nuclear Power Plant, Unit 1
NRC Inspection Report 50-400/98-03

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection; in addition, it includes the results of announced inspections by a senior project manager.

Operations

- Operations performance during the period was acceptable (Section 01.1). Response to an electrical ground and containment fire alarms on a non-safety containment air handler was good (Section 01.2).
- A violation with two examples was identified by the inspectors for failures to properly classify condition reports as significant in accordance with required procedures. The inspectors also identified a non-cited violation for a failure to maintain equipment clearances as quality assurance records (Section 03.1)
- Control Room operators exhibited a questioning attitude, a clear understanding of Technical Specifications, and a determination to properly implement Technical Specification requirements in relation to implementation of Technical Specification Interpretation 89-003. Operator performance during the period was good (Section 04.3).
- Plant Nuclear Safety Committee discussions were appropriately focussed on safety and preventing recurrence of problems. Identification of adverse conditions continued to be a strength (Section 07.1).
- Operator performance over the last eight months improved significantly due to the creation of a better operations environment. Administrative distractions were removed from the control room and an hourly work scheduling system was implemented. These improvements allowed the operators to focus better on operating the plant, which significantly reduced errors (Section 08.3).

Maintenance

- Maintenance activities were performed adequately. Minor planning deficiencies were noted on one of four maintenance activities observed (Section M1.1).
- Surveillance activities were adequately conducted (Section M2.1).

Engineering

- In general, engineering activities were being conducted adequately and in accordance with required procedures (Section E1.1).
- A 10 CFR 21 report on the Turbine-Driven Auxiliary Feedwater Water Pump governor valve stem was being adequately addressed (Section E4.1).



- Nuclear Assessment Section audits in Engineering were good (Section E7.2).

Plant Support

- The control of contamination and dose for the site was good and was attributable to good teamwork between the various departments (Section R1.1).
- Fire protection activities were being adequately conducted (Section F1.1).
- The performance of security and safeguards activities was good (Section S1.1).



Report Details

Summary of Plant Status

Unit 1 began this inspection period at 100 percent power and remained there for the entire period.

I. Operations

01 Conduct of Operations

01.1 General Comments (71707)

In general, the conduct of operations was professional and safety-conscious. Routine activities were adequately performed. Operations shift crews were appropriately sensitive to plant equipment conditions and maintained a questioning attitude in relation to unexpected equipment responses.

01.2 Potential Fire in Containment

a. Inspection Scope (93702)

The inspectors reviewed the site response to a suspected fire in containment on March 28, 1998, and the related failure of air handler AH-39B.

b. Observations and Findings

At 3:40 a.m. on March 28, 1998, with the plant operating at 100 percent power, the unit experienced alarms which indicated that a ground fault had occurred in the motor for containment air handler AH-39B, and that a fire had possibly occurred at the same time inside the containment building. AH-39B was one of two non-safety-related air handlers that provided cooling air to the "C" Reactor Coolant Pump (RCP) motor cubicle; at the time of this event, the other air handler was out of service due to motor problems. Following the event, the "C" RCP motor winding temperature increased from its normal operating temperature of approximately 200°F to approximately 231°F. Operators promptly started the safety-related air handlers and the emergency service water (ESW) system to provide additional cooling to containment, in accordance with Procedure AOP-018, Reactor Coolant Pump Abnormal Conditions, Revision 9. This procedure required that the RCP be tripped when the motor winding temperature reached 300°F. An administrative limit of 265°F was established to allow operators time to prepare, prior to tripping the pump. The "C" RCP motor winding temperatures remained between 225°F and 228°F, which was well below the administrative limit. Later that morning, maintenance personnel made a containment entry to inspect for evidence of a fire, particularly around the motor's associated electrical cables outside the biological shield. They did not find any indications that a fire had occurred. The plant remained in stable steady-state operation at 100 percent power.



The inspectors attended licensee meetings related to the event that were held at 8:00 a.m., 1:00 p.m., and 4:00 p.m. and noted that an "ad-hoc" site team was formed to diagnose the event and to plan and implement appropriate responses. The inspectors also attended the maintenance personnel pre-briefing prior to the containment entry. The inspectors found that the response of the shift crew to the event was timely and appropriate, that diagnostic and troubleshooting efforts were timely and comprehensive, and that the focus of the ad-hoc site team shifted appropriately from diagnosis to immediate response, and then to long-term response, as related information was gathered and analyzed. The inspectors also observed that both the control-room staff and the ad-hoc site team had the correct safety focus.

c. Conclusions

The response to an electrical ground fault on air handler AH-39B and associated fire alarms in containment was good.

02 Operational Status of Facilities and Equipment

02.1 Engineered Safety Feature System Walkdowns (71707)

The inspectors performed a general walk-down of accessible portions of the auxiliary feedwater and component cooling water systems. Equipment operability, material condition, and housekeeping were acceptable in all cases. The operational status of these systems was as required by the Technical Specifications and required procedures.

03 Operations Procedures and Documentation

03.1 General Comments

a. Inspection Scope (71707)

The inspectors conducted reviews of operations logs and procedure usage.

b. Observations and Findings

The inspectors found that a change had been made to Administrative Procedure PLP-202, Verify Working Document Program, Section 3.3, in Revision 9. This change required operators to verify the correct revision for controlled documents in the control room prior to use, except for emergency operating procedures, abnormal operating procedures, and alarm panel procedures. This meant that all other controlled documents in the control room, including drawings, were to be verified prior to use. The change to PLP-202 was made because two aspects of the document-control program raise the possibility that controlled documents in the control room may not be current: one aspect is that some time may lapse between approval of a document change and incorporation of the change into the controlled documents; the other aspect is that some changes which affect controlled documents are simply posted against those documents until the changes are incorporated into a



later revision. The intent of the change to PLP-202 was apparently to ensure that operators in the control room do not unknowingly use a controlled document without being aware of pending and/or posted changes against that document.

The inspectors observed that an operator had written condition report CR 98-00571 to identify that the PLP-202 change placed a significant administrative burden on the plant operators. The inspectors reviewed this issue and found that FSAR Section 13.5.1.3 indicated that the shift supervisor shall not engage in administrative functions that detract from the overall responsibility of safe operation of the unit. The inspectors also reviewed TMI Action Plan Item I.A.1, Shift Supervisor Administrative Responsibilities, and determined how that item had been satisfied for the licensing of the Harris Plant. Safety Evaluation Report Supplement 4 and NRC Inspection Report 50-400/86-34 indicated that a shift clerk had been assigned to the control room, to limit the administrative responsibilities of the shift superintendent, which had previously included maintaining the controlled documents in the control room. During initial licensing of the Harris Plant, the NRC accepted that method of limiting the administrative functions of the shift superintendent.

Technical Specification 6.8.1.a requires that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, 1978 which includes administrative procedures. Administrative Procedure AP-615, Condition Reporting, Revision 24, Attachment 2, Criteria for Significant Adverse Conditions, listed the criteria for identification of significant adverse conditions, which included the failure to comply with regulatory requirements or explicit commitments to regulatory agencies (Item 3.e). The shifting of the administrative responsibilities for ensuring that control room documents are verified to be the current revision prior to use from administrative personnel to the TS-required on-shift control room operators was contrary to the intent of TMI Action Plan Item I.A.1 and the FSAR. Consequently, CR 98-00571 should have been classified as significant. The failure to follow Procedure AP-615 in classifying CR 98-00571 as significant was considered a violation of TS 6.8.1.a and is designated violation 50-400/98-03-01, example 1: Failure to properly classify condition reports.

After the inspectors identified the procedure verification issue, the licensee initiated CR 98-00967 to address this concern. (The licensee classified the CR as significant.) Procedure PLP-202 was subsequently revised to allow the use of control room procedures without verification. However, a review of this issue by the licensee revealed an additional vulnerability where Engineering Service Requests (ESRs) had been implemented with outstanding changes against procedures. Procedures that could have been affected by implemented ERSs were identified and attached to a night order for the operators that was issued on January 30, 1998, and updated on April 1, 1998. The inspectors pointed out that instructions attached to the night order did not provide adequate direction for effectively using the list.



Operations management was revising the list and the night order to make it more useful.

The inspectors verified that Harris Plant was appropriately responding to a violation issued at the Brunswick Nuclear Power Plant in NRC Inspection Report 50-325,324/97-13. The violation was associated with the retention of equipment clearances as Quality Assurance (QA) Records. The violation was caused by an inadequate corporate procedure, OPS-NGGC-1301, Equipment Clearance. This corporate procedure also controlled how Harris's equipment clearances were retained. The Harris Plant had initiated CR 97-05376 to address this issue. The Harris Plant had not retained clearances as QA records since approximately 1994, when Carolina Power and Light had begun work on a corporate clearance procedure. Harris Plant conducted the pilot program and changed from maintaining clearance records as QA Records by developing new procedures.

As corrective action for CR 97-05376, the Harris Plant began recovering the records, which were stored either in boxes in the work control center or in the computer system. In addition, the inspectors reviewed the Brunswick Plant's violation response and determined that the corporate procedure would be corrected. 10 CFR 50 Appendix B Criterion XVIII, Quality Assurance Records, requires that sufficient records shall be maintained to furnish evidence of activities affecting quality. CP&L Corporate Quality Assurance Plan, Revision 18, section 14.2 required that collection, storage, and maintenance of records shall be in accordance with commitments to Regulatory Guide 1.88 and/or ANSI N45.2.9 and the plant Technical Specifications. ANSI N45.2.9 requires that records which would be of significant value in demonstrating capability for safe operation or in determining the cause of an accident or malfunction of an item be maintained for the life of the plant. Clearance records document the positioning of plant equipment, including those necessary for safe operation. Because equipment that is mispositioned during some clearance activities could contribute to an accident or malfunction, clearance records should be maintained for the life of the plant. The failure to maintain clearance records as quality assurance records was a violation of 10 CFR 50 Appendix B Criterion XVIII. This issue was considered licensee-identified at Harris since it was found due to feedback from the Brunswick Plant and was promptly corrected. This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy and is designated NCV 50-400/98-03-02; Clearances as Quality Assurance Records.

The inspector reviewed the classification of CR 97-05376 and found that it was classified as non-significant. Procedure AP-615, Condition Reporting, Revision 24, Attachment 2, section 3e required that the CR be classified as significant since a regulatory requirement was violated. The failure to follow Procedure AP-615 in classifying CR 98-05376 as significant was considered a violation of TS 6.8.1.a and is designated Violation 50-400/98-03-01, example 2, Failure to Properly Classify Condition Reports.



Proper classification of condition reports is important because significant condition reports are subject to a formal root-cause investigation. The licensee initiated significant CR 98-00876 to address the failure to properly classify condition reports. Immediate corrective action included posting a copy of Attachment 2 of procedure AP-615 in the room where condition reports are evaluated. The licensee responded immediately by reviewing similar condition reports and identified that several others were also misclassified.

c. Conclusions

A violation with two examples was identified by the inspectors for failures to properly classify condition reports as significant in accordance with required procedures. A Non-Cited Violation was also identified by the inspectors for a failure to maintain equipment clearances as QA records.

04 Operator Knowledge and Performance

04.1 Technical Specification Interpretation 89-003

a. Inspection Scope (71707)

The inspectors examined the circumstances associated with the initiation of CR 98-01026, which was associated with a Technical Specification Interpretation (TSI) and its conflict with TS.

b. Observations and Findings

On April 5, 1998, control room personnel entered the action statement associated with TS 3.4.11.b, due to both Reactor Coolant System head vent valves being inoperable. In a related discussion, licensed personnel noted that TSI 89-003 gave instructions which were not consistent with TS requirements. They raised the issue to the attention of site management, who, after considerable discussion, agreed. At the end of the inspection period, the licensee was conducting a review to identify circumstances in which TSI 89-003 had been applied in the past.

04.2 Completion of OST-1119

a. Inspection Scope (71707)

The inspector observed control room operators and an auxiliary operator (AO) performing part of the following evolution/activity:

- OST-1119 Containment Spray Operability Train B Quarterly Interval, Modes 1 - 4, Revision 15

b. Observations and Findings

The operators referred to and followed the applicable procedures and gave adequate answers to the inspector's questions. The AO coordinated



component manipulations well with the control room, and used effective communication techniques. During this evolution, neither the AO nor the inspector identified any plant deficiencies.

04.3 Conclusions on Operator Knowledge and Performance

Control room operators exhibited a questioning attitude, a clear understanding of the TSs, and a determination to literally implement TS requirements in relation to implementation of TSI 89-003. Operator performance during the period was good.

07 Quality Assurance in Operations

07.1 Licensee Self-Assessment Activities

a. Inspection Scope (71707, 40500)

During the inspection period, the inspectors reviewed licensee self-assessment activities, including Plant Nuclear Safety Committee (PNSC) meetings conducted on March 4, 1998, March 18, 1998, and April 7, 1998. The inspectors also reviewed the disposition of numerous condition reports.

b. Observations and Findings

The PNSC meeting discussions were thorough with good questions from all members. Condition Report 97-5320 addressed the steam generator blowdown waterhammer event and was discussed at the March 4, 1998 meeting. The initial root-cause investigation had been rejected by the PNSC previously, as discussed in NRC Inspection Report 50-400/98-01. The revised root-cause investigation was much better and addressed those issues identified by the inspectors in Inspection Report 50-400/98-01, with the exception of trending. The issue of trending was discussed at the PNSC meeting with little agreement between the members as to whether procedural guidance on trending and adverse trends was adequate. In addition, the PNSC could not agree on whether the steam generator blowdown waterhammer data should have been identified as an adverse trend prior to the December 1997 waterhammer event. The inspectors determined that this indecision was caused in part by the limited procedural guidance in the trending area as discussed in Inspection Report 50-400/97-13.

The inspectors reviewed numerous CRs. The threshold for identification of adverse conditions was appropriate. However, Section 03.1 describes several instances in which conditions were not always classified in accordance with procedures.

c. Conclusions

PNSC discussions were appropriately focused on safety and preventing recurrence of problems. Identification of adverse conditions continued to be a strength.



08 Miscellaneous Operations Issues (92700, 92901)

- 08.1 (Closed) VIO 50-400/97-10-01: Failure to establish and implement operating procedures; 4 examples. This violation involved operator errors associated with a turbine-driven auxiliary feedwater pump (TDAFWP) forced outage and corresponding plant startup. The inspectors reviewed the licensee's response dated December 16, 1997, and the root-cause investigations for condition reports 97-04109, 97-04112-1, and 97-04094. The licensee committed to counsel the individuals involved, provide lessons learned from the violation to other operators, revise procedure GP-005, Power Operation (Mode 2 to Mode 1) to provide additional guidance on the operation of the main feed regulating valves when synchronizing to the grid, revise procedures associated with the runback setpoint, and revise Engineering Procedure EGR-NGGC-0005 to clarify that modifications shall not be relied upon for routine operation unless the turnover process was completed. The inspectors reviewed these corrective actions and found them acceptable.

During the inspectors' review of the turbine runback procedure issue identified in example 4 of the violation, a communications issue was identified. The inspectors found that the communications between engineering, maintenance, and operations was weak in relation to the first stage main turbine pressure switch set point for turbine runback with only one main feedpump running. This resulted in engineering and operations assuming that the setpoint was approximately 10 psig higher than maintenance had set it. The setpoint was within instrument accuracy for this nonsafety signal and did not affect the wording in procedure GP-005. However, it was outside the band defined in procedure EPT-093, Turbine 1st Stage Pressure Data, which would require the setpoint to be reset. Condition report 98-00906 was generated for this issue. This had no safety impact and was being appropriately addressed by the licensee. This item is closed.

- 08.2 (Closed) LER 50-400/97-17-00: Failure to recognize inoperable reactor axial flux difference (AFD) monitor, resulting in violation of Technical Specification surveillance requirements.

This LER was submitted because control room operators failed to satisfy Technical Specification surveillance 4.2.1.1.b requirements for an inoperable AFD monitor. The inspectors reviewed the associated root-cause investigation (CR 97-03092-1) and the resulting corrective actions. The corrective actions included installing features which would annunciate on the main control board whenever the AFD monitor is disabled as it was in this event, and reviewing this event with operations crews. The inspectors noted a weakness in the investigation, in that the investigators did not reconcile an apparent contradiction between computer records and statements prepared by control room personnel. Despite that weakness, the inspectors determined that the licensee had implemented corrective actions which should effectively preclude a recurrence of this violation. This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy



and is designated NCV 50-400/98-03-03, Missed Surveillance on AFD Monitor. This item is closed.

- 08.3 (Closed) VIO 50-400/97-04-02: Three examples of failure to effectively implement corrective actions for previous non-conformances.

The inspectors reviewed the licensee's response dated July 9, 1997, the root-cause investigations, and the licensee's corrective actions. Examples 1 and 2 related to minor dilution events. The corrective actions included a change in operations management, including a reevaluation of operations crew assignments. The new management focus was to be on eliminating operations shift crew distractions, improving the daily work schedule, and improving training.

The inspectors found that operator performance over the last eight months had improved significantly due to the creation of a better operations environment. Administrative distractions were removed from the control room and an hourly work scheduling system was implemented. These improvements allowed the operators to better focus on operating the plant, which significantly reduced errors. Thus, the improvements were effective. However, the new Operations Manager that implemented these changes has taken a leave-of-absence and whether he will return is unknown.

In reviewing the root-cause investigations, the inspectors noted that two root-cause investigations were performed by individuals that were not completely independent of the event (i.e., shift superintendents). These investigations were for (CR 97-01252) component cooling water TS 3.0.3 entry and (CR 97-01348) the first dilution event. The PNSC initiated CR 97-02137 when the lack of independence problem was brought to their attention. The inspectors found that operations subsequently stopped the practice of having the control room operators involved in performing root-cause investigations. The inspectors reviewed CR 97-02692, RCS Boron Concentration Change and determined that the incident described in this CR was not an inadvertent dilution event. The issues described in CR 97-02692 were adequately addressed by operations initiatives at eliminating administrative distraction.

Example 3 involved inadequate corrective actions for Violation 50-400/96-013-01. The licensee's corrective actions were not effectively implemented to prevent the connecting of the non-seismic qualified component cooling water chemical addition piping section to both trains of the component cooling water system. The inspectors reviewed the root-cause investigation for CR 97-01252 and the associated corrective actions. The inspectors determined that the licensee had implemented appropriate changes to OP-145 section 6.7.2, and had completed event-specific training for the operating crews, and concluded that those corrective actions should be effective in preventing recurrence of this event. This item is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62707)

The inspectors observed all or portions of the following work activities:

- WR/JO 96-AHHZI Boron Recycle System, Valve 3BR-242 Packing Leak
- WR/JO 97-AKTJI Replace Seal for IDLO-E003. ("A" Emergency Diesel Generator Lube Oil Keep Warm Pump)
- WR/JO 97-AMMHI HVAC Fan Discharge Expansion Joint & Drive Belt Replacement
- WR/JO 98-ABMGI Support For Spent Fuel Shipment

b. Observations and Findings

The observed maintenance work activities were properly conducted and exhibited professionalism. In all observations, the inspectors noted that the work package was present and in use.

WR/JO 96-AHHZI - This maintenance activity was from the licensee's backlog list and had originally been scheduled for early 1997. During the conduct of the job, the inspectors noted the following minor problems associated with the work package:

- The work package indicated that the job had originally been scheduled for early 1997, and even noted that a clearance had been established at that time; the work package gave no indication why the job had not been completed at the time that the first clearance was established. (During the conduct of the job, the mechanics were apprehensive about why the earlier clearance had been terminated.)
- The work package included a generic drawing for the valve, but it did not include a list of special tools that might be required, (e.g., deep socket for the packing retainer). Because of the possibility of contamination from materials contained in the associated piping, the mechanic working on the valve was required to be in full "anti-C" clothing. The surrounding area was clean enough that the barrier and associated step-off pad could be established a few feet away from the valve. This allowed full communication between the mechanic working on the job and an associate outside the barrier, who had to make three trips to the tool room for additional tools as the job progressed.

The minor planning problems noted during the performance of this job were not noted during the performance of the other jobs observed.



c. Conclusions

Maintenance activities observed were adequately performed. Minor planning deficiencies were noted on one of four maintenance activities observed.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Surveillance Observation

a. Inspection Scope (61726)

The inspectors observed all or portions of the following surveillance tests:

- MST I0475 Diesel Generator 1A-SA Starting Air Pressure Calibration, Revision 6 & Revision 7
- MST I0149 Steam Generator C Narrow Range Level Loop (L-0494) Operational Test, Revision 4
- OST-1119 Containment Spray Operability Train B Quarterly Interval, Modes 1 - 4, Revision 15

b. Observations and Findings

The observed surveillance activities were conducted in a professional manner. In all observations, the inspectors noted that the work package was present and in constant use.

During the initiation of the Diesel Generator 1A-SA starting air pressure calibration (using revision 6 of procedure MST I0475), the Instruments and Controls (I&C) technician noted discrepancies between the procedure and the equipment tags and stopped the job until the procedure could be revised. The technician noted that the procedure identified the pressure switches as PS-01EA-9670A1SAV and PS-01EA-9670A2SAV, and the pressure control valves as PCV-01EA-9670A1SAV and PCV-01EA-9670A2SAV, while the metal tags attached to the components did not contain the "SA" before the final "V".

The procedure was revised in a few hours and the calibration was completed during the scheduled day. The quick completion of a procedure revision was indicative of good working relationships between engineering, operations, and maintenance personnel. The inspectors informed the licensee that the I&C technician's findings and resulting actions were noteworthy, but questioned why this type of mistake was not found earlier than in the implementation of Revision 6 of the procedure.

c. Conclusions

Surveillance activities were adequately conducted.



III. Engineering

E1 Conduct of Engineering

E1.1 Engineering Service Requests

a. Inspection Scope (37551)

The inspectors reviewed all or portions of the following Engineering Service Requests (ESRs) to determine if procedure NGR-NGGC-005, Engineering Service Requests, Revision 5, was being followed:

- ESR 9800100 Evaluation of Runout Protection for the TDAFWP, Revision 0
- ESR 9800016 Justification for Continued Operation - MFIV Actuators, Revision 0

b. Observations and Findings

In general, the ESRs reviewed were adequate. ESR 9800100 was associated with a one-hour report made under 10 CFR 50.72 on March 13, 1998, for inadequate runout protection of the turbine-driven auxiliary feedwater pump (TDAFWP). ESR 9800016 was associated with LER 97-002-00 and provided the engineering evaluation for main feedwater isolation valve operability. The inspectors found these documents to be adequate.

c. Conclusions

In general, engineering activities were being adequately conducted in accordance with required procedures.

E2 Engineering Support of Facilities and Equipment

E2.1 Steam Generators (50002)

The inspectors discussed the current status of the steam generators with the responsible licensee engineer. The discussion included the results of the latest eddy current examination, the licensee's plans for continued inspections, and plans for scheduled steam generator replacement. The most recent eddy current examination, conducted during RFO 7 in the Spring of 1997, resulted in the plugging of 46 tubes (30 of the 46 were plugged due to top-of-tubesheet axial and circumferential cracking), bringing the total number of tubes plugged to 92. The next steam generator inspections had been scheduled for RFO 8 in the Fall of 1998, and the steam generator replacement outage had been scheduled for RFO 10 in the Fall of 2001. The inspectors had no additional questions concerning the status of the steam generators.

E4 Engineering Staff Knowledge and Performance

E4.1 Auxiliary Feedwater Pump Turbine Governor Valve



a. General Comments (37551)

The inspectors reviewed a 10 CFR 21 report related to turbine-driven auxiliary feedwater pump governor valve stem size problems. The inspectors found that the licensee was aware of this issue and was taking action. CR 97-04839 had been initiated to address the use of an Inconel 718 governor valve stem which had a higher coefficient of thermal expansion than the previous 410 stainless steel stem. The result at one plant was sticking of the governor valve.

The system engineer had evaluated the installed Inconel 718 stem and associated carbon washers. The stem was the type described in the 10 CFR 21 report and was installed in 1995. The stem was inspected on May 7, 1997, and new spacers were installed at that time. The pump had been operated considerably since then and had run long enough in several instances for the stem to reach thermal equilibrium. Since the issue involved thermal expansion, the system engineer concluded that the stem to spacer clearance issue was not a problem for this stem and its associated spacers. However, the inspector found that the spare parts had not been put on hold for evaluation. The system engineer immediately placed them on hold. The inspector found the engineering actions associated with this issue adequate.

c. Conclusions

A 10 CFR 21 report on the TDAFW governor valve stem was being adequately addressed.

E7 Quality Assurance in Engineering Activities

E7.1 Special FSAR Review (37551)

A recent discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report (FSAR) description highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the FSAR descriptions. While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the FSAR that related to the areas inspected. The inspectors did not find any additional discrepancies other than those identified by the licensee.

E7.2 Licensee Self-Assessment Activities (40500)

During the inspection period, the inspectors reviewed licensee self-assessment activities, including Nuclear Assessment Section Audits on 50.59 Safety Evaluations (HNAS 98-015) and In-Service Inspection (HNAS 98-035). The inspectors also reviewed the disposition of numerous condition reports. The inspectors found that the Nuclear Assessment Section audits and the condition reports related to engineering were good.



E8 Miscellaneous Engineering Issues (92700)

- E8.1 (Closed) Unresolved Item 50-400/97-13-01: 'C' Steam Generator Blowdown System Waterhammer. This item was reviewed in NRC Inspection Report 50-400/98-01 and was left open pending review of the licensee's completed root-cause investigation. The licensee's root-cause investigation was issued after discussion at the March 5, 1998, PNSC meeting. The initial root cause had been rejected by the PNSC previously, as discussed in NRC Inspection Report 50-400/98-01. The revised root-cause investigation was much better and addressed those issues identified by the inspectors in Inspection Report 50-400/98-01 with the exception of trending. The Regulatory Affairs manager was in the process of developing procedures to address the site-wide trending issues. This item is closed.
- E8.2 (Open) LER 50-400/97-002-00: Inoperable Main Feedwater Isolation Valves caused by cold weather conditions. This LER was also discussed in Inspection Reports 50-400/97-03, and 50-400/97-12. During a review of the work schedule for the week of March 9 through 13, 1997, the inspectors noted that WR/JO 97-ALZQI was scheduled for the completion of temporary modification ESR-9700785, "Relocate TE-01AV-4870AS and 4870BS..." and attempted to observe a part of the modification activity. This modification was intended to relocate the temperature elements involved with the control of fans in the steam tunnel area.

On Monday, March 9, 1998, Temporary Modification ESR-9700785 was sent back to engineering for reconsideration after the maintenance supervisor, the planner, and the design engineer performed a final pre-job walkdown during which they identified unexpected conditions in the newly selected locations for the temperature elements. The elements were to be located near the steam generator power-operated relief valves, main steam safety valves, and the steam line atmospheric dump valves. Engineering spent the rest of the week trying to determine a better location for the temperature elements. By the end of the week, engineering had reconsidered the modification and decided that moving the temperature elements would not solve the problem; they decided that providing shielding for the elements in the original locations would have the required effect with less effort.

The final pre-job walkdown by maintenance and engineering personnel precluded the implementation of an unnecessary modification to the fan control system. It was noteworthy that once the engineers recognized that the temporary modification to relocate the temperature elements was not the proper approach, there was no hesitation to change direction. However, the inspectors did question why months of engineering effort had not adequately considered the atmospheric conditions in the selected area due to the release of steam. Licensee staff indicated that they were planning to supplement the LER to provide the final corrective action. This LER will remain open pending final resolution of the problem.



IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 General Commentsa. Inspection Scope (71750)

The inspectors observed radiological controls during the conduct of tours and during observations of maintenance activities.

b. Observations and Findings

The inspectors found radiological controls to be acceptable. The general approach to the control of contamination and dose for the site was good. Teamwork between the various departments continued to be a major contributor to the good control of dose.

c. Conclusions

The control of contamination and dose for the site was good and was attributable to good teamwork between the various departments.

S1 Conduct of Security and Safeguards Activities

S1.1 General Commentsa. Inspection Scope (71750)

The inspectors observed security and safeguards activities during the conduct of tours and during observations of maintenance activities.

b. Observations and Findings

The inspectors found that the performance of these activities was good. Compensatory measures were posted when necessary and properly conducted.

c. Conclusions

The performance of security and safeguards activities were good.

S7 Quality Assurance in Security and Safeguards Activities

S7.1 General Comments (40500)

The inspectors reviewed the nuclear assessment section audit on security (HNAS 98-029) and found that it was thorough.

F1 Control of Fire Protection Activities

F1.1 General Comments



a. Inspection Scope (71750)

The inspectors observed fire protection equipment and activities during the conduct of tours and during observations of maintenance activities.

b. Observations and Findings

The inspectors found the fire protection activities to be acceptable.

c. Conclusions

Fire protection activities were being adequately conducted.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on April 17, 1998. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Batton, Superintendent, On-Line Scheduling
D. Braund, Superintendent, Security
B. Clark, General Manager, Harris Plant
A. Cockerill, Superintendent, I&C Electrical Systems
J. Collins, Manager, Maintenance
J. Cook, Manager, Outage and Scheduling
J. Donahue, Director Site Operations, Harris Plant
J. Eads, Supervisor, Licensing and Regulatory Programs
W. Gurganious, Superintendent, Environmental and Chemistry
M. Keef, Manager, Training
G. Kline, Manager, Harris Engineering Support Services
B. Meyer, Manager, Operations
K. Neuschaefer, Superintendent, Radiation Protection
W. Peavyhouse, Superintendent, Design Control
W. Robinson, Vice President, Harris Plant
S. Sewell, Superintendent, Mechanical Systems
D. Tibbitts, Manager, Nuclear Assessment
C. VanDenburgh, Manager, Regulatory Affairs

NRC

S. Flanders, Harris Project Manager, NRR
M. Shymlock, Chief, Reactor Projects Branch 4



INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
 IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
 IP 50002: Steam Generators
 IP 61726: Surveillance Observations
 IP 62707: Maintenance Observation
 IP 71707: Plant Operations
 IP 71750: Plant Support Activities
 IP 92700: Onsite Followup of Events
 IP 92901: Followup - Plant Operations
 IP 93702: Onsite Response to Events

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-400/98-03-01 VIO Failure to properly classify condition reports; two examples (Section 03.1).
 50-400/98-03-02 NCV Clearances as quality assurance records (Section 03.1).
 50-400/98-03-03 NCV Missed surveillance on AFD monitor (Section 08.2).

Closed

50-400/98-03-02 NCV Clearances as quality assurance records (Section 03.1).
 50-400/98-03-03 NCV Missed surveillance on AFD monitor (Section 08.2).
 50-400/97-10-01 VIO Failure to establish and implement operating procedures; four examples (Section 08.1).
 50-400/97-17-00 LER Failure to recognize inoperable reactor axial flux difference (AFD) monitor, resulting in violation of Technical Specification surveillance requirements (Section 08.2).
 50-400/97-04-02 VIO Three examples of failure to effectively implement corrective actions for previous non-conformances (Section 08.3).
 50-400/97-13-01 URI "C" steam generator blowdown system waterhammer (Section E8.1).

Discussed

50-400/97-002-00 LER Inoperable main feedwater isolation valves caused by cold weather conditions (Section E8.2).

