UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

July 16, 2012

EA-12-132

Mr. Christopher Burton
Vice President
Carolina Power and Light Company
Shearon Harris Nuclear Power Plant
P. O. Box 165, Mail Code: Zone 1
New Hill, North Carolina 27562-0165

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INSPECTION REPORT 05000400/2012007; PRELIMINARY WHITE FINDINGS AND POTENTIAL ESCALATED ENFORCEMENT VIOLATION

Dear Mr. Burton:

On June 20, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility Unit 1. The enclosed inspection report documents the inspection results which were discussed on June 21, 2012, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The enclosed inspection report discusses three Apparent Violations (AVs) associated with the Emergency Operations Facility (EOF) and Technical Support Center (TSC). Two AVs were evaluated using the NRC Reactor Oversight Process (ROP) and one AV was evaluated using the NRC Traditional Enforcement Process.

The first AV preliminarily has been determined to be a White finding with low to moderate safety significance that may require additional NRC inspections. As described in the enclosed report, the AV involved multiple examples of violations of 10 CFR Part 50.54(q) for the failure to maintain the EOF and associated equipment to support emergency response. Specifically, the EOF ventilation system was non-functional or removed from service on several occasions during a two year time frame and for protracted time periods. The finding did not present an immediate safety concern because no radiological emergencies occurred during this time. Nonetheless, these occurrences indicate a lack of adequate control over maintenance of equipment that would have significantly impacted your staff's ability to respond to a radiological emergency. Furthermore, your emergency preparedness staff was unaware of these occurrences. This issue was assessed based on the best available information, using the applicable Significance Determination Process (SDP). The final resolution of this finding will be conveyed in separate correspondence.

The second AV preliminarily has been determined to be a White finding with low to moderate safety significance that may require additional NRC inspections. As described in the enclosed report, the AV involved a violation of 10 CFR Part 50.54(q) for the failure to maintain the TSC and associated radiological habitability. The TSC alternate source term (AST) calculations were changed to use a reduced unfiltered air in-leakage value of 60 CFM, without an associated technical basis, which was below the original design basis in-leakage value of 100 – 110 CFM. This finding did not present an immediate safety concern because no radiological emergencies occurred. The NRC staff verified that appropriate compensatory measures have been established. This issue was assessed based on the best available information, using the applicable SDP. On July 11, 2012, you conducted a tracer gas test on the TSC envelope in order to quantify unfiltered air in-leakage. Once these results are finalized, we will review the test data as part of the final resolution of this finding which will be conveyed in separate correspondence.

Your staff provided information and calculations to support your determination that the EOF and TSC were still functional during the time periods in question. However, the bases for certain assumptions and the justification for the assumptions used in your calculations were not apparent to the NRC staff who did not obtain similar results or conclusions. Concerns identified included temperature and favorable atmospheric impacts, air flow required to the EOF ventilation system to maintain radiological habitability, and the TSC derived unfiltered air in-leakage.

As described in Inspection Manual Chapter (IMC) 0609, Appendix B, significance determination of an Emergency Preparedness (EP) item of non-compliance is not based on the conditions that existed during the period of non-compliance, but rather, the potential impact of the non-compliant program element on a licensee's capability to effectively implement the emergency plan should an accident occur. To develop a more complete understanding of the issue, the NRC is requesting that Carolina Power and Light Company (CPL) provide any additional information which would assist the staff in making a final significance determination.

The two AVs associated with these findings are also being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy can be found on the NRC's Web site at http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html.

In accordance with NRC IMC 0609, Significance Determination Process, we intend to complete our risk evaluations using the best available information and issue our final significance determination within 90 days of the date of this letter. The Significance Determination Process encourages an open dialogue between the NRC staff and the licensee; however, the dialogue should not impact the timeliness of the staff's final determination. Before the NRC makes its final decision on this matter, we are providing you an opportunity to either: (1) present to the NRC your perspectives on the facts and assumptions used by the NRC to arrive at these findings and their significance at a Regulatory Conference, or (2) submit your position on these findings to the NRC in writing. If you request a Regulatory Conference, it should be held within 30 days of the receipt of this letter and we encourage you to submit supporting documentation at least one week prior to the conference to make the conference more efficient and effective. If a Regulatory Conference is held, it will be open for public observation. The NRC will also issue a press release to announce the conference. If you decide to submit only a written response, such a submittal should be sent to the NRC within 30 days of the receipt of this letter. If you

decline to either request a Regulatory Conference or to submit a written response, you relinquish your right to appeal the final significance determination; in that, by not doing either you fail to meet the appeal requirements stated in the Prerequisites and Limitations sections of Attachment 2 of IMC 0609.

The third AV is related to the failure to report a major loss of emergency assessment, offsite response, and offsite communication capability to the NRC, as required by 10 CFR 50.72(b)(3)(xiii), when the EOF was not functional on several occasions during a two year time frame. This AV is being evaluated using the NRC's traditional enforcement process because it impacted NRC's ability to perform its regulatory function and is being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. Additional detail for this AV is provided in the enclosed inspection report.

Before the NRC makes its enforcement decision, we are providing you an opportunity to respond to this AV addressed in this inspection report within 30 days of the date of this letter, or request a Pre-decisional Enforcement Conference (PEC). If a PEC is held, it will be open for public observation.

If you choose to provide a written response, it should be clearly marked as "Response to Apparent Violation in Inspection Report No. 05000400/2012007"; EA-12-132, and should include for the apparent violation: the reason for the apparent violation, or, if contested, the basis for disputing the apparent violation; the corrective steps that have been taken and the results achieved; the corrective steps that will be taken to avoid further violations; and the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on the apparent violations and any other information you believe the NRC should take into consideration before making an enforcement decision. The topics discussed during the conference may include the following: information to determine whether violations occurred, information to determine the significance of the violations, information related to the identification of the violations, and information related to any corrective actions taken or planned to be taken. In presenting your corrective actions, you should be aware that the promptness and comprehensiveness of your actions will be considered in assessing any civil penalty for the apparent violations.

In recognition of the relationship of these three AVs, and to minimize administrative and resource burden, we encourage you to consider requesting a joint Regulatory Conference/PEC to discuss the above matters, or as an alternative, you may include your response to these issues and corrective actions in a single written response.

Please contact Randy Musser at (404) 997-4603 within 10 days of the date of this letter to notify the NRC of your intended response. If we have not heard from you within 10 days, we will continue with our significance determination and enforcement decision. The final resolution of this matter will be conveyed in separate correspondence.

Since the NRC has not made a final determination as to the significance of these issues, no Notice of Violation is being issued at this time. Please be advised that the number and characterization of the apparent violations described in the enclosure may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

Additionally, one NRC identified finding of very low safety significance (Green) was identified during this inspection. This finding was determined to involve a violation of NRC requirements. The NRC is treating this violation as non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy. If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Shearon Harris facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Richard P. Croteau, Director
Division of Reactor Projects

Docket No. 50-400
License No. NPF-63

Enclosure:
NRC Inspection Report 05000400/2012007
w/Attachment: Supplemental Information

cc: (See page 5)

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Richard P. Croteau, Director
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X PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE X NON-SENSITIVE

ADAMS: X Yes ACCESSION NUMBER: ML12198A187 X SUNSI REVIEW COMPLETE X FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRP	RII:DRP	RII:DRP	RII:EICS
SIGNATURE	RA/JSD	RA/JDA	RA/PBL1	RA/JGW1	RA/RXM1	RA/RXC2	RA/SES for CFE
NAME	JDodson	JAustin	PLessard	JWorosilo	RMusser	RCroteau	CEvans
DATE	7/11/2012	7/11/2012	7/12/2012	7/12/2012	7/12/2012	7/13/20012	7/11/2012
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Letter to Christopher L. Burton from Richard P. Croteau dated July 16, 2012.

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INSPECTION REPORT 05000400/2012007; PRELIMINARY WHITE FINDINGS AND POTENTIAL ESCALATED ENFORCEMENT VIOLATION

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	50-400
License No.:	NPF-63
Report No.:	05000400/2012007
Licensee:	Carolina Power and Light Company
Facility:	Shearon Harris Nuclear Power Plant, Unit 1
Location:	5413 Shearon Harris Road New Hill, NC 27562
Dates:	February 6, 2012 through June 20, 2012
Inspectors:	J. Dodson, Senior Project Engineer J. Austin, Senior Resident Inspector P. Lessard, Resident Inspector
Approved by:	Richard P. Croteau, Director Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000400/2012007, February 6, 2012 – February 10, 2012, and February 13, 2012 – June 20, 2012, Shearon Harris Nuclear Power Plant, Unit 1: Identification and Resolution of Problems.

The report covers a period of inspection by resident inspectors and a regional senior project engineer. One Non-Cited Violation and three Apparent Violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects are determined using IMC 0310, "Components within the Cross Cutting Areas". Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Emergency Preparedness

TBD: The inspectors identified multiple examples of an Apparent Violation (AV) of 10 CFR 50.54(q) for the lack of facility oversight and control, coupled with component failures and removal of the Emergency Operations Facility (EOF) ventilation system from service (without adequate compensatory measures) which rendered the EOF non-functional on several occasions. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Harris Nuclear Plant Emergency Plan, Section 3.1, revision 57, and 10 CFR 50.47(b)(8). The licensee restored the EOF ventilation system to a functional status on November 9, 2011, and entered this issue into their corrective action program (CAP) as Nuclear Condition Report (NCR) 504860.

The lack of facility oversight and control, coupled with component failures and removal of the EOF ventilation system from service, which rendered the EOF non-functional on several occasions, was a performance deficiency. The finding was more than minor because it affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the Emergency Response Organization (ERO) Performance attribute was affected during the times when the EOF was not functional and it did not meet 10 CFR 50.47(b)(8) Planning Standard program elements. The finding was assessed for significance in accordance with NRC Manual Chapter 0609, Appendix B Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard Function (RSPS), NO; RSPS Degraded Function, NO; Loss of Planning Standard Function, YES; results in a White finding. The NRC concluded that the significance of the finding is preliminarily low to moderate safety significance (White). The licensee restored the EOF ventilation system to a functional status on November 9, 2011, and entered this issue into their CAP as NCR 504860.

This finding has a cross-cutting aspect in the Corrective Action Program component of the Problem Identification and Resolution area because the licensee did not identify the issues completely, accurately, and in a timely manner commensurate with their safety significance. Specifically, the licensee did not properly classify, prioritize, or evaluate for operability and reportability of the non-functional EOF. [P.1(c)] (Section 4OA2.1)

Green: The inspectors identified a Green Non-Cited Violation (NCV) of 10 CFR 50.54(q) for the licensee's failure to properly install the electrical power feed cables for the EOF in accordance with the national electrical code (NEC) as required by the Harris Emergency Plan, PLP-201, Revision 57, section 3.5.1.D. Specifically, the licensee failed to ensure that an adequate emergency response facility, EOF was available as required by the Harris Nuclear Plant Emergency Plan, Section 3.5, revision 57, and 10 CFR 50.47(b)(8). This issue was in the licensee's CAP as NCR 381658. Upon completion of the corrective actions, the power feed cables and supports met the requirements of NEC Article 230.51 C.

The licensee's failure to properly install the electrical power feed cables for the EOF in accordance with the NEC as required by the Harris Emergency Plan, PLP-201, Revision 57, section 3.5.1.D was a performance deficiency. The finding was more than minor because it affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the Facilities and Equipment attribute was affected during the time when the EOF was degraded due to the power feed cables not being installed in accordance with the NEC, which resulted in not meeting the 10 CFR 50.47(b)(8) Planning Standard program elements. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B, Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to Comply; Loss of Risk Significant Planning Standard Function (RSPS), NO; RSPS Degraded Function, NO; Loss of Planning Standard Function, NO; results in a Green finding. The inspectors determined that this resulted in a low safety significance finding (Green).

The inspectors did not identify a cross-cutting aspect associated with this finding because the performance deficiency occurred twelve years earlier when the power feed cables were initially installed and does not represent current licensee performance. (Section 4OA2.2)

TBD: The inspectors identified an AV of 10 CFR 50.54(q) for the licensee's failure to provide a defensible technical basis for unfiltered air in-leakage, supported by sufficient experimental and empirical data for an input to a calculation used as the basis for TSC functionality. The compensatory measure established on February 16, 2012, was to issue a standing order (12-005) related to habitability and relocation of the TSC. The licensee has submitted an event notification (EN 47655), and entered this issue into their CAP as NCR 516120.

The licensee's failure to provide a defensible technical basis supported by sufficient experimental and empirical data for an input to the Alternate Source Term (AST) calculation, which was the basis for TSC functionality, was a performance deficiency. This failure resulted in the licensee being unable to meet the TSC habitability requirements as specified in the Harris Emergency Plan, PLP-201, Revision 57, section 3.3.1. The finding was more than minor because it affected the Emergency Preparedness Cornerstone objective of

ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the ERO performance attribute was affected during the times when the TSC was not functional, and it did not meet 10 CFR 50.47(b)(8) Planning Standard program elements. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B, Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard Function (RSPS), NO; RSPS Degraded Function, NO; Loss of Planning Standard Function, YES; results in a White finding. The inspectors determined that this resulted in a preliminarily low to moderate safety significance finding (White).

The inspectors did not identify a cross-cutting aspect associated with this finding because the performance deficiency occurred in 2001 and does not represent current licensee performance. (Section 4OA2.3)

Cornerstone: Not applicable

TBD: The inspectors identified an AV of 10 CFR Part 50.72(b)(3)(xiii), for the failure to report the loss of emergency assessment capability in the EOF. Specifically, the EOF was unavailable to perform its intended function for periods greater than seven days on several occasions from August 2009 to November 2011. This issue was entered into the licensee's CAP as NCR 492707.

The failure to report the loss of emergency assessment capability in the EOF as required by 10 CFR Part 50.72(b)(3)(xiii) was a performance deficiency. The finding was more than minor because it impacted the regulatory process which depends on plant activities being properly reported. The inspectors evaluated this finding against NRC IMC 0609 Appendix B, Emergency Preparedness Significance Determination Process Section 7.3. The inspectors determined that traditional enforcement is applicable. The licensee failed to report an occurrence of a major loss of emergency assessment capability. Specifically, the licensee failed to maintain a fully functional EOF when portions of the ventilation system were removed from service without compensatory measures, and the licensee failed to report the occurrence as required. As discussed in the Enforcement Policy, the severity level of a violation involving the failure to make a required report to the NRC will be based upon the significance of and the circumstances surrounding the matter that should have been reported. In this case, and as discussed above, the NRC concluded that the failure to provide the required report is associated with a preliminarily White finding for the failure to maintain a fully functional EOF. In addition, the licensee's failure to report the condition of the EOF from August 2009 to November 2011, as required by 10 CFR 50.72, impeded the NRC's regulatory process. Had the licensee reported the incident as required, NRC review and follow-up inspection likely would have occurred, which may have prompted the licensee to adopt compensatory measures and/or corrective actions, thereby precluding the incidents that followed after August 4, 2009. Based on the above, the NRC determined the severity level of this apparent violation is preliminarily Severity Level III in accordance with the NRC Enforcement Policy. (Section 4OA2.1)

B. Licensee Identified Violations

None

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

.1 Selected Issue Follow-up Inspection: EOF Ventilation System Maintenance and Repairs

a. Inspection Scope

The inspectors selected NCR 358178, EOF HVAC Ducts; NCR 381470, EOF Ventilation System potential over pressurization effects; and NCR 403997, preventative maintenance tasks for the EOF are not adequate, for detailed review. These NCRs explored problems identified with the EOF ventilation system. The inspectors reviewed related data, information, work orders and reports to verify that the licensee identified the full extent of the issue, performed the appropriate evaluations, and specified and prioritized appropriate corrective actions. The inspectors evaluated the information obtained against regulatory requirements and the requirements of the licensee's CAP as delineated in corporate procedures CAP-NGGC-0200, Condition Identification and Screening Process and CAP-NGGC-0205, Condition Evaluation and Corrective Action Process.

b. Observations and Findings

.1 Failure to Maintain an Adequate EOF to Support Emergency Response

Introduction: The inspectors identified multiple examples of an Apparent Violation (AV) of 10 CFR 50.54(q) for the lack of facility oversight and control, coupled with component failures and removal of the EOF ventilation system from service (without adequate compensatory measures) which rendered the EOF non-functional on several occasions. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Harris Nuclear Plant Emergency Plan, Section 3.1, revision 57, and 10 CFR 50.47(b)(8). The licensee restored the EOF ventilation system to a functional status on November 9, 2011, and entered this issue into their CAP as NCR 504860.

Description: The inspectors identified that the EOF ventilation system was non-functional or removed from service on several occasions during a two year time frame, for time periods greater than seven days. There was no documentation of any functional evaluation, compensatory measures or event reports. The following are examples of the ventilation system issues and the related unavailability times:

- The licensee contracted consulting professional engineers to evaluate the EOF ventilation system and habitability. On June 9, 2010, the EOF evaluation report was issued to the licensee. This June 9, 2010, report identified multiple issues related to the EOF ventilation system not meeting original design requirements or the ability to meet the habitability requirements for the 59 person emergency response staffing. Examples of the identified issues are as follows:

- In 2009, the Air Handling Unit (AHU), condensing unit, ventilation system zone dampers and electric zone dampers were replaced resulting in the AHU was moving significantly less supply air than the original specifications which led to elevated temperatures in the EOF.
- A summary of HVAC system and equipment changes showing the differences between the current system and the original system design; calculations for habitability as a function of the existing system at the time of the report which shows a maximum number of occupants at 25 people; and a conclusion that states if occupancy is limited to 25 people and the air flow is increased to 3200 cubic feet per minute (CFM) the system will be able to maintain conditions acceptable in accordance with American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standards and guidelines.

The report contained the specific facts, data, information, quantitative data and references to show the EOF did not meet the habitability requirements as specified in the Harris Emergency Plan (PLP-201). As a result of the report, the licensee generated a field change traveler to accomplish the redesign and renovation of the EOF HVAC system. The system renovations, modifications, and repairs were initiated on December 8, 2010, and the system was returned to service on December 22, 2010. The inability of the EOF normal and emergency ventilation system to meet the design basis normal and radiological habitability requirements for 59 persons, rendered the facility non-functional from the time of discovery, June 9, 2010, until December 22, 2010, when the system was returned to service (196 days).

The licensee performed an assessment which noted that the EOF HVAC system was operating at reduced performance, such that full flow and associated cooling capability was not always available. Based on the results of a GOTHIC EOF heat-up analyses and the validation of the GOTHIC model and heat loads against EOF data, the equipment temperature and relative humidity vendor-recommended limits would not have been exceeded with the reduced performance conditions of the EOF HVAC system. The results of the analyses also indicate that the EOF would remain habitable for personnel with respect to temperature and humidity conditions. The inspectors disagreed with this assumption, asserting that habitability and functionality cannot be dependent on favorable atmospheric conditions and the inability of the EOF normal and emergency ventilation system to meet the design basis normal and radiological habitability requirements rendered the facility non-functional.

- On January 5, 2010, during an EOF HVAC air flow test by contractors, problems were identified with the EOF ventilation system related to burned up duct heaters. The contractors also noted the need for new air dampers, replacement of flex duct from the plenum, and new controller and thermostats for the ventilation system dampers. The inability to maintain the relative humidity upstream of the HEPA and charcoal filters in the EOF emergency ventilation system, ventilation system dampers and ducts to meet the design basis normal and radiological habitability requirements rendered the facility non-functional from the time of discovery on January 5, 2010, until tested satisfactory on January 13, 2010, (8 days).

The licensee performed an analysis which covered the time period when the #1 and #2 heaters were non-functional. With respect to both staff and equipment limitations, the licensee's analysis stated that during the time period of duct heater unavailability, the potential decrease in EOF room temperatures would not have caused the EOF to be non-functional. This analysis was based on the actual ambient temperatures during the time in question. The inspectors disagreed with this assumption, asserting that EOF habitability and functionality cannot be dependent on favorable atmospheric conditions. Additionally, the need for new air dampers in the EOF, replacement of flex duct from the plenum, and new controller and thermostats for the ventilation system dampers was not addressed by the licensee's assessment. The inability to maintain the relative humidity upstream of the HEPA and charcoal filters in the EOF emergency ventilation system, ventilation system dampers and ducts to maintain the design basis normal and radiological habitability rendered the facility non-functional.

- On August 4, 2009, a problem was identified in NCR 358178 that all supply ducting for the EOF was fabricated incorrectly resulting in reduced air volume by 66 – 75 percent. Close to one hundred percent capacity is necessary to maintain habitability of the EOF. The inability to maintain adequate air flow to the EOF normal and emergency ventilation system to maintain the design basis normal and radiological habitability rendered the facility non-functional from time of discovery (August 4, 2009,) until January 5, 2010, when ducting repairs and system testing were completed satisfactory (154 days).

  The inspectors noted that the licensee has not addressed this issue in its entirety. Temperature aspects of this issue were partially addressed, but sufficient bases for functionality of the EOF was not provided. The inability to maintain adequate air flow to the EOF normal and emergency ventilation system to maintain the design basis normal and radiological habitability rendered the facility non-functional. The EOF habitability and functionality cannot be dependent on favorable atmospheric conditions.

During each of these periods when the work, testing, renovations and repairs of the EOF ventilation system were being accomplished, the EOF was non-functional in accordance with its habitability design and there were no compensatory measures in place. Had compensatory measures been put in place, the EOF response functions may have still been performed if an actual radiological emergency occurred during these periods. The NRC inspectors noted there was no documentation of any functional evaluations and no instructions to notify the Emergency Preparedness Coordinator or Control Room that the EOF ventilation system was being removed from service. Additionally, these multiple occurrences were not reported to the NRC as required by 10 CFR 50.72(b)(3)(xiii).

Analysis: The lack of facility oversight and control, coupled with component failures and removal of the EOF ventilation system from service which rendered the EOF non-functional on several occasions was a performance deficiency. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Harris Nuclear Plant Emergency Plan, Section 3.1, revision 57, and 10 CFR 50.47(b)(8).

The finding was more than minor because it affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The ERO performance attribute was affected during the times when the EOF was not functional in that it did not meet the 10 CFR 50.47(b)(8) Planning Standard program elements. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard (RSPS) Function, No; RSPS Degraded Function, No; Loss of Planning Standard Function, Yes; results in a White finding. The NRC concluded that the significance of the finding is preliminarily low to moderate safety significance (White).

This finding has a cross-cutting aspect in the Corrective Action Program component of the Problem Identification and Resolution area because the licensee did not identify the issues completely, accurately, and in a timely manner commensurate with their safety significance. Specifically, the licensee did not properly classify, prioritize, or evaluate for functionality and reportability of the non-functional EOF. [P.1(c)]

Enforcement: 10 CFR 50.54(q) requires, in part, that a licensee authorized to operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards of 10 CFR 50.47(b). 10 CFR 50.47(b)(8) requires that adequate emergency facilities and equipment to support the emergency response are provided and maintained. The Harris Nuclear Plant Emergency Plan, Section 3.1, revision 57 states in part that adequate emergency facilities, communications, and equipment to support emergency response are provided and maintained.

Contrary to the above, on several occasions between August 4, 2009, and November 9, 2011, the licensee failed to maintain adequate emergency facilities and equipment to support emergency response. The EOF normal and emergency ventilation system was removed from service or non-functional for periods greater than seven days. The licensee restored the EOF ventilation system to a functional status on November 9, 2011, and entered this issue into their CAP as NCR 504860. Because this finding is preliminarily low to moderate safety significance (White), this finding is identified as AV 05000400/2012007-01, Failure to Maintain an Adequate EOF to Support Emergency Response.

.2 Failure to Notify the NRC of the EOF Loss of Emergency Assessment Capability

Introduction: The inspectors identified an apparent violation of 10 CFR Part 50.72(b)(3)(xiii), for the failure to report the loss of emergency assessment capability in the EOF. Specifically, the EOF was unavailable to perform its intended function for periods greater than seven days on several occasions from August 2009, to November 2011. This issue was entered into the licensee's CAP as NCR 492707.

Description: On several occasions between August 4, 2009, and November 9, 2011, the licensee failed to report that the EOF was unavailable to perform its intended function,

which was a major loss of emergency assessment capability, for periods greater than seven days. Specifically, the licensee failed to maintain a fully functional emergency response facility due to not meeting habitability requirements with the ventilation system undergoing repairs, testing and maintenance. In addition, no compensatory measures were established. When this was identified to the licensee by the NRC, the licensee entered this into the CAP as NCR 492707 and 504860.

Analysis: The failure to report the loss of emergency assessment capability in the EOF as required by 10 CFR Part 50.72(b)(3)(xiii) was a performance deficiency. Specifically, the EOF was not functional to perform its intended function for periods greater than seven days without compensatory measures on multiple occasions from August 2009, to November 2011. The ERO performance attribute was affected during the times when the EOF was not functional in that it did not meet the 10 CFR 50.47(b)(8) Planning Standard program elements. The finding was more that minor because it impacted the regulatory process which depends on plant activities being properly reported. The inspectors evaluated this finding using NRC IMC 0609 Appendix B, Emergency Preparedness Significance Determination Process Section 7.3. The inspectors determined that traditional enforcement was applicable. The licensee failed to report an occurrence of a major loss of emergency assessment capability. Specifically, the licensee failed to maintain a fully functional EOF when portions of the ventilation system were removed from service without compensatory measures, and the licensee failed to report the occurrence as required. As discussed in the Enforcement Policy, the severity level of a violation involving the failure to make a required report to the NRC will be based upon the significance of and the circumstances surrounding the matter that should have been reported. In this case, and as discussed above, the NRC concluded that the failure to provide the required report is associated with a preliminarily White finding for the failure to maintain a fully functional EOF. Per IMC 0609 Appendix B, if the EOF is not functional for a period of longer than 7 days from the time of discovery, to the extent that any key ERO member could not perform his/her assigned E-plan functions, in the absence of compensatory measures it represents a loss of planning standard which is characterized as a White finding. In addition, the licensee's failure to report the condition of the EOF from August 2009, to November 2011, as required by 10 CFR 50.72, impeded the NRC's regulatory process. Had the licensee reported the incident as required, NRC review and follow-up inspection likely would have occurred, which may have prompted the licensee to adopt compensatory measures and/or corrective actions, thereby precluding the incidents that followed after August 4, 2009. Based on the above, the NRC determined the severity level of this apparent violation is preliminarily Severity Level III in accordance with the NRC Enforcement Policy.

Enforcement: 10 CFR Part 50.72(b)(3)(xiii), states in part, that the licensee shall notify the NRC as soon as practical and in all cases within 8 hours of the occurrence, any event that results in a major loss of emergency assessment capability (loss of facility function due to habitability).

Contrary to the above, on several occasions between August 4, 2009, and November 9, 2011, the licensee failed to report these occurrences of a major loss of emergency assessment capability. Specifically, the licensee failed to maintain a fully functional emergency response facility (EOF) due to not meeting habitability requirements with the

ventilation system undergoing repairs, testing and maintenance. When identified to the licensee by the NRC, the licensee entered this into the CAP as NCR 492707 and 504860. This issue is identified as AV 05000400/2012007-02, Failure to Notify the NRC of the EOF Loss of Emergency Assessment Capability.

.2 Selected Issue Follow-up Inspection: EOF Electrical System Maintenance and Repairs

a. Inspection Scope

The inspectors selected NCR 381658, Installation Issues for Cables at the Harris Energy and Environmental (E&E) Center A-101 Panel. This NCR reviewed the problems associated with the power supply to the Harris E&E Center which houses the EOF. The inspectors reviewed related data, information, work orders and reports to verify that the licensee identified the full extent of the issue, performed the appropriate evaluations, and specified and prioritized appropriate corrective actions. The inspectors evaluated the information obtained against regulatory requirements.

b. Observations and Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50.54(q) for the licensee's failure to properly install the electrical power feed cables for the EOF in accordance with the national electrical code (NEC) as required by the Harris Emergency Plan, PLP-201, Revision 57, section 3.5.1.D. Specifically, the licensee failed to ensure that an adequate emergency response facility, EOF was available as required by the Harris Nuclear Plant Emergency Plan, Section 3.1, revision 57, and 10 CFR 50.47(b)(8). This issue was in the licensee's CAP as NCR 381658.

Description: On February 16, 2010, the licensee generated NCR 381658 which identified that the main feeder cables from the 480 volt secondary side of the power transformer to the main feeder for the EOF in panel A-101 were inadequately installed. These cables were routed from the secondary side of the 13.8 KV - 480 V transformer underground to the old transformer vault, spliced in a large junction box and continue to the incoming line cubicle. These cables enter the vault from an underground conduit. This conduit was cut and the cables came out of the conduit with no protective bushings. These cables were further draped on the ground, sometimes in water, into the splice box.

On May 24, 2010, power was removed from the facility to complete initial repairs. Electrical personnel installed the bushings in the conduits and checked terminals for corrosion. Once completed, power was restored. All equipment performed satisfactorily when restored to operation.

The power was again removed from the facility on December 10, 2010, for the final repairs. During this power outage the cables on the secondary side of the 2 main transformers feeding the facility were reworked. One of the transformers powers the Main 480 VAC panel and the second transformer powers the Main 120/208 panel. All of the cables routed along the floor of the cable vault were lifted and supported on uni-strut frames installed by the vendor. All of the cables entering and exiting the cable vault

were supported at these locations. Supports were also installed at the 2 termination boxes in the cable pit associated with the 2 transformers feeding the facility. Supports were also installed between the entry and exits points of the cable and the 2 termination boxes. At the completion of the work, the cables and supports met the requirements of NEC Article 230.51 C. Power was restored to the facility on December 11, 2010.

Inspectors determined that the licensee did not consider the power feed problems and switch gear related impact to the EOF as specified in the Harris Emergency Plan. Specifically, the licensee did not identify the issue completely, accurately, and in a timely manner commensurate with their safety significance. Additionally, the licensee did not properly classify, prioritize, or evaluate for functionality and reportability of the degraded EOF.

Analysis: The licensee's failure to properly install the electrical power feed cables for the EOF in accordance with the national electrical code (NEC) as required by the Harris Emergency Plan, PLP-201, Revision 57, section 3.5.1.D was a performance deficiency. Specifically, the licensee failed to ensure that an adequate emergency response facility, the EOF, was available as required by the Harris Nuclear Plant Emergency Plan, Section 3.5, revision 57, and 10 CFR 50.47(b)(8).

The finding was more than minor because it affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the Facilities and Equipment attribute was affected during the time when the EOF was degraded, it did not meet 10 CFR 50.47(b)(8) Planning Standard program elements. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard Function (RSPS), No; RSPS Degraded Function, No; Loss of Planning Standard Function, No; results in a Green finding. The inspectors determined that this resulted in a low safety significance finding (Green).

The inspectors did not identify a cross-cutting aspect associated with this finding because the performance deficiency occurred twelve years earlier and does not represent current licensee performance.

Enforcement: 10 CFR 50.54(q) requires, in part, that a licensee authorized to operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards of 10 CFR 50.47(b). 10 CFR 50.47(b)(8) requires that adequate emergency facilities and equipment to support the emergency response are provided and maintained. The Harris Nuclear Plant Emergency Plan, PLP-201, Section 3.1, revision 57 states in part that adequate emergency facilities, communications, and equipment to support emergency response are provided and maintained. The Harris Nuclear Plant Emergency Plan, PLP-201, Section 3.5.1.D, revision 57 states in part that the EOF is structurally built in accordance with the Uniform Building Code.

Contrary to the above, from February 16, 2010, to December 10, 2010, the licensee failed to maintain adequate emergency facilities and equipment to support emergency response when the EOF was degraded due to the improper installation of the electrical power feed cables for the EOF which were not in accordance with the uniform building code/national electrical code (NEC) as required by the Harris Emergency Plan, PLP-201, Revision 57, section 3.5.1.D. The licensee restored the power feed cables to the NEC and Harris Emergency Plan requirements on December 10, 2010, and entered this issue their CAP as NCR 381658. Because the licensee entered the issue into their CAP and the finding is of very low safety significance (Green), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC's Enforcement Policy: NCV 05000400/2012007-03, Failure to Properly Install the Electrical Power Feed Cables for the EOF.

.3 Selected Issue Follow-up Inspection: TSC Habitability during a Radiological Emergency

a. Inspection Scope

The inspectors reviewed the alternate source term calculations (CN-CRA-01-25, Revision 2) for the EOF and TSC. The inspectors evaluated the information obtained against regulatory requirements.

b. Observations and Findings

Introduction: The inspectors identified an Apparent Violation (AV) of 10 CFR 50.54(q) for the licensee's failure to provide a defensible technical basis for unfiltered air in-leakage, supported by sufficient experimental and empirical data for an input to a calculation which was the basis for TSC functionality. This failure resulted in the licensee being unable to meet the TSC habitability requirements as specified in the Harris Emergency Plan, PLP-201, Revision 57, section 3.3.1. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Harris Nuclear Plant Emergency Plan, Section 3.1, revision 57, and 10 CFR 50.47(b)(8). The licensee made an event notification (EN 47655) and entered this issue into their CAP as NCR 516120.

Description: On February 9, 2012, inspectors identified that the alternate source term (AST) calculations for radiological habitability in the TSC used a reduced unfiltered air in-leakage value of 60 CFM which was below the original design basis in-leakage value of 100 – 110 CFM. There was no defensible technical basis supported by sufficient experimental and empirical data or basis for the reduction as required by Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," section 2.4. The licensee's AST calculation document stated, "The TSC dose calculation computer case was run using an unfiltered in-leakage of 60 CFM since higher in-leakage rates resulted in doses in excess of 5.0 REM TEDE." The original design basis unfiltered in-leakage provided by the licensee was 100 – 110 CFM which would yield a dose in excess of the 5.0 REM Total Effective Dose Equivalent limit. These calculations were reviewed and accepted by the licensee and used as the basis for emergency response facilities habitability.

The initial opportunity for discovery was August 14, 2001, when the calculations were accepted by the licensee. The next opportunity was during the regulatory review of procedure PEP-240, "Activation and Operation of the Technical Support Center", Revision 13, completed December 21, 2009. Other opportunities for discovery were during the emergency facilities review for the power up rate and the 10 CFR 50.54q evaluations of Revision 54 (August 24, 2009) through Revision 57 (February 9, 2011) of the Harris Emergency Plan, PLP-201.

The inspectors determined that the licensee's failure to meet the radiological habitability requirements as specified in the Harris Emergency Plan, PLP-201, Revision 57, section 3.3.1 for the TSC was a failure to comply with Planning Standard 50.47(b)(8). With this failure to comply with the site Emergency Plan, the licensee did not perform a functional evaluation and did not provide instructions to the Emergency Preparedness Coordinator or Control Room such that during a radiological emergency required compensatory measures and actions for the TSC would be in place.

Following discussions with the inspectors, on February 16, 2012, the licensee issued Standing Instruction 12-005, Alternate TSC Information, which provides compensatory measures to be considered or taken for relocation of the TSC. In addition, the licensee performed an engineering calculation in the form of engineering change EC 86754. This calculation concluded that unfiltered in-leakage into the TSC while in the emergency HVAC mode, should be less than or equal to 60 cfm.

The inspectors' review of this calculation determined that the licensee did not provide adequate information to conclude that the TSC in-leakage would be limited to less than or equal to 60 cfm. Specific areas of concern were as follows:

- assurance that the sanitary waste line loops seals are maintained full
- the methodology (smoke) for quantifying fan shaft leakage
- assurance that the TSC maintains a positive pressure of 0.125 inches of water column relative to all adjacent areas.

Analysis: The licensee's failure to provide a defensible technical basis for unfiltered air in-leakage, supported by sufficient experimental and empirical data for an input to a calculation which was the basis for TSC functionality was a performance deficiency. This failure resulted in the licensee being unable to meet the TSC habitability requirements as specified in the Harris Emergency Plan, PLP-201, Revision 57, section 3.3.1. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Harris Nuclear Plant Emergency Plan, Section 3.1, revision 57, and 10 CFR 50.47(b)(8).

The finding was more than minor because it affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the ERO Performance attribute was affected during the times when the TSC was not functional, and it did not meet 10 CFR 50.47(b)(8) Planning Standard program elements. The finding was assessed for significance in accordance with NRC Manual Chapter 0609, Appendix B Emergency Preparedness Significance Determination Process. Attachment 2 of Appendix B, Failure

to Comply Significance Logic is as follows: Failure to comply; Loss of Risk Significant Planning Standard Function (RSPS), No; RSPS Degraded Function, No; Loss of Planning Standard Function, Yes; results in a White finding. The inspectors determined that this resulted in a preliminarily low to moderate safety significance finding (White).

The inspectors did not identify a cross-cutting aspect associated with this finding because the performance deficiency occurred in 2001, and does not represent current licensee performance.

Enforcement: 10 CFR 50.54(q) requires, in part, that a licensee authorized to operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards of 10 CFR 50.47(b). 10 CFR 50.47(b)(8) requires that adequate emergency facilities and equipment to support the emergency response are provided and maintained. The Harris Nuclear Plant Emergency Plan, PLP-201, Section 3.1, revision 57 states in part that adequate emergency facilities, communications, and equipment to support emergency response are provided and maintained.

Contrary to the above, from August 14, 2001, through February 15, 2012, the licensee failed to maintain adequate emergency facilities and equipment to support emergency response. Specifically, the licensee failed to maintain functionality of the TSC to support emergency response when the TSC could not meet the Harris Nuclear Plant Emergency Plan, PLP-201, Revision 57, section 3.1 exposure habitability requirements. Compensatory measures were established by the licensee on February 16, 2012. The licensee's initial corrective action was to issue a standing order (12-005) related to habitability and relocation of the TSC. The licensee submitted an event notification (EN 47655), and entered this issue into their CAP as NCR 516120. Because this finding is preliminarily low to moderate safety significance (White), this finding is identified as AV 05000400/2012007-04, Failure to Maintain an Adequate TSC to Support Emergency Response.

4OA6 Meetings, including Exit

The inspectors presented the inspection results to Mr. Christopher Burton and other members of licensee management on June 21, 2012.

ATTACHMENT: SUPPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:

C. Burton, Vice President Harris Plant
D. Corlett, Supervisor, Licensing/Regulatory Programs
J. Dufner, Director, Engineering
D. Griffith, Training Manager
E. Kapopoulos, Plant General Manager
L. Morgan, Supervisor, Performance Improvement
F. Womack, Manager, Operations

NRC personnel:

J. Dodson, Senior Project Engineer, DRP, RPB4
J. Worosilo, Project Engineer, DRP, RPB4
J. Austin, Senior Resident Inspector, Harris

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000400/2012007-01	AV	Failure to Maintain an Adequate EOF to Support Emergency Response (Section 4OA2.1.1)
05000400/2012007-02	AV	Failure to Notify the NRC of the EOF Loss of Emergency Assessment Capability. (Section 4OA2.1.2)
05000400/2012007-04	AV	Failure to Maintain an Adequate TSC to Support Emergency Response (Section 4OA2.3)

Opened and Closed

05000400/2012007-03	NCV	Failure to Properly Install the Electrical Power Feed Cables for the EOF. (Section 4OA2.2)

LIST OF DOCUMENTS REVIEWED

Condition Reports
NCR 00317652
NCR 00343207
NCR 00343247
NCR 00358178
NCR 00381470
NCR 00403997
NCR 00411591
NCR 00516120
NCR 00458538
NCR 00460368
NCR 00492707
NCR 00498697
NCR 00504860

Work Orders
00237190 01
00266439
00508383
00504935
00772137 01
01555516 01
01610841 02
01610841 03
01769136 01
01786141 01
01865601 01
01992661 01
01992661 02
01168197

Other Documents

- Analysis of Habitability of the Shearon Harris Nuclear Power Plant Emergency Operations Facility, Ebasco Services Incorporated, September 1983
- Shearon Harris Environmental Center Emergency Operations Facility Temperature and HVAC Study, Atlantec Engineers, June 9, 2010
- PMT 1610841-03, EOF Emergency Ventilation
- FCT 0124, Install 4 new 3 ton ductless split systems with modifications to the duct system to deliver 1100 cfm of ventilation to the EOF occupied spaces, December 8, 2010
- REW 504860
- Calculation, HNP-F-NFSA-0072-Rev2, Determine Offsite, CR, TSC & EOF Doses for Selected FSAR Chapter 15 Accidents

- Calculation, CPL-VII-0009A, Technical Support Center (TSC) / Emergency Operations Facility (EOF) Dose Analysis
- Calculation, CPL-VII-0009B, TSC / EOF Habitability Analysis
- Calculation, CPL-X-0005, Revision 2, Control Room Operator Dose from External Source Shine
- Personal Clearance form, 09-R16-086
- Personal Clearance form, 10-R16-112
- Standing Instruction 12-005, 02/16/2012, Alternate TSC information
- 50.54q Emergency Preparedness Program Evaluation, HNP 343247
- Shearon Harris SER
- Report NAI-1651-001, Revision 0, HNP EOF GOTHIC Model Development
- Report NAI-1651-002, Revision 0, HNP RADTRAN-NAI Model Development and Sensitivities
- Report NAI-1651-002, Revision 1, HNP RADTRAN-NAI Model Development and Sensitivities
- Report NAI-1651-003, Revision 1, Harris Nuclear Plant TSC & EOF Meteorological Data and X/Q Values
- Engineering Change EC86754, Rev. 0.

Procedures

- Emergency Equipment Inventory, EPM-420, Revision 10
- Environmental Qualification Design Basis Document, DBD-1000-V02, Revision 3
- Nonnuclear Safety Air Filtration Testing, EPT-400, Revision 15
- Communication and Facility Performance Tests, EPM-410, Revision 6
- Harris Nuclear Plant Emergency Plan, PLP-201, Revision 57
- Technical Support Center (TSC) Emergency Ventilation System Operation, PEP-241, Revision 0