50-400

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 22, 1998

Mr. W. R. Robinson, Vice President
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
Post Office Box 165, Mail Code: Zone 1
New Hill, North Carolina 27562-0165

SUBJECT: COMPLETION OF LICENSING ACTION FOR NRC BULLETIN 96-02, "MOVEMENT OF HEAVY LOADS OVER SPENT FUEL, OVER FUEL IN THE REACTOR CORE, OR OVER SAFETY-RELATED EQUIPMENT," DATED APRIL 11, 1996, for SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 (TAC NO. M95593)

Dear Mr. Robinson:

On April 11, 1996, the U.S. Nuclear Regulatory Commission (NRC) issued NRC Bulletin (NRCB) 96-02, "Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment," to all holders of operating licenses. The NRC issued NRCB 96-02 for three principal reasons:

1. Alert addressees to the importance of complying with existing regulatory guidelines associated with the control and handling of heavy loads at nuclear power plants,

2. Request that all addressees review their plans and capabilities for handling heavy loads in accordance with existing regulatory guidelines and within their licensing basis as previously analyzed in the final safety analysis report, and

3. Require addressees to report to the NRC whether and to what extent they have complied with the actions requested in this bulletin.

Also the bulletin requested that Carolina Power & Light (CP&L) determine whether current activities were within the licensing basis and to submit a license amendment request as necessary.

In addition, by a Request for Additional Information, the NRC staff also requested that CP&L prepare and submit an evaluation of the plant's heavy-load activities in the moving of dry storage casks. This evaluation was to determine if a tipping-over hazard exists while dry storage casks are being moved by plant cranes.

In response to NRCB 96-02, you provided letters dated May 13, 1996, February 11, 1997, and March 14, 1997, for Shearon Harris Nuclear Plant. These submittals provided both the information requested and the responses required by NRCB 96-02. NRC staff review of the responses to NRCB 96-02 finds that, overall, the responses are acceptable; therefore, TAC No. M95593 is closed. The staff's summary review of the licensee responses to the bulletin is enclosed.

DF01
A0-1

The NRC will continue to review the issue of heavy loads through an ongoing Task Action Plan for heavy loads. Any additional information required for the completion of the Task Action Plan will be obtained on a plant-specific basis.

If you have any questions regarding this matter, please contact Scott Flanders at (301) 415-1172.

Sincerely,

(Original Signed By)

Scott Flanders, Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure: As stated

cc: See next page

DISTRIBUTION:

~~Docket File~~	P. Ray
PUBLIC	ACRS
PD II-1 Reading File	B. Thomas
J. Zwolinski	
L. Plisco, Region II	
M. Shymlock	
OGC	

See next page
cc: Harris Service List

FILENAME - G:\HARRIS\HAR95593.clo

OFFICE	PM:PDII-1	LA:PDII-1	AD:PDII-1
NAME	SFlanders	EDunnington ETD	PKuo
DATE	4/22/98	4/22/98	4/22/98
COPY	Yes/No	Yes/No	Yes/No

cc:

Mr. William D. Johnson
Vice President and Senior Counsel
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Resident Inspector/Harris NPS
c/o U.S. Nuclear Regulatory Commission
5421 Shearon Harris Road
New Hill, North Carolina 27562-9998

Ms. Karen E. Long
Assistant Attorney General
State of North Carolina
Post Office Box 629
Raleigh, North Carolina 27602

Public Service Commission
State of South Carolina
Post Office Drawer
Columbia, South Carolina 29211

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303

Mr. Mel Fry, Acting Director
Division of Radiation Protection
N.C. Department of Environment,
3825 Barrett Dr.
Raleigh, North Carolina 27609-7721

Ms. D. B. Alexander
Manager
Performance Evaluation and
Regulatory Affairs
Carolina Power & Light Company
412 S. Wilmington Street
Raleigh, North Carolina 27601

Mr. Bo Clark
Plant General Manager - Harris Plant
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
P.O. Box 165
New Hill, North Carolina 27562-0165

Mr. J. W. Donahue
Director of Site Operations
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
Post Office Box 165, MC: Zone 1
New Hill, North Carolina 27562-0165

Mr. Robert P. Gruber
Executive Director
Public Staff NCUC
Post Office Box 29520
Raleigh, North Carolina 27626

Chairman of the North Carolina
Utilities Commission
Post Office Box 29510
Raleigh, North Carolina 27626-0510

Mr. Milton Shymlock
U.S Nuclear Regulatory Comm.
Atlanta Federal Center
61 Forsyth Street, SW, Suite 23185
Atlanta, Georgia 30303

Mr. Stewart Adcock, Chairman
Board of County Commissioners
of Wake County
P. O. Box 550
Raleigh, North Carolina 27602

Health and Natural Resources
Margaret Bryant Pollard, Chairman
Board of County Commissioners
of Chatham County
P. O. Box 87
Pittsboro, North Carolina 27312

Mr. Chris A. VanDenburgh, Manager
Regulatory Affairs
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
P.O. Box 165, Mail Zone 1
New Hill, NC 27562-0165

Mr. Johnny H. Eads, Supervisor
Licensing/Regulatory Programs
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
P. O. Box 165, Mail Zone 1
New Hill, NC 27562-0165

SUMMARY OF THE STAFF'S REVIEW

OF LICENSEE RESPONSES

TO NRC BULLETIN 96-02

Introduction

The following summarizes the results of the staff's review of licensees' responses to NRC Bulletin (NRCB) 96-02, "Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment," dated April 11, 1996, and its associated Requests for Additional Information (RAI). The bulletin reminded licensees of their responsibilities for ensuring that heavy load-handling operations are performed safely. It also requested that licensees review their plans and capabilities for handling heavy loads, and ensure that their load-handling operations are in accordance with existing regulatory guidelines and the plant's licensing basis. Also requested was that licensees identify and present schedules for licensing actions needed to support implementation of their heavy load-handling operations involving spent fuel dry storage casks. The licensees also were to provide schedules for moving dry storage casks. The RAI requested that selected licensees evaluate the hazards associated with an in-plant tip-over of spent fuel dry storage casks that could dislodge the cask lid and spent fuel elements.

This summary closes the staff's review of licensee responses to both the bulletin and the associated RAI. Future issues regarding the handling of heavy loads will be addressed generically under the Heavy Loads and Crane Issues Task Action Plan (TAP) and on a plant-specific basis as needed. Plant-specific reviews needed in the future may require the staff to obtain additional information from individual licensees.

Background

NRCB 96-02 was issued as an urgent generic communication that requested licensees' responses to the following:

(1) For licensees planning to carry out activities involving the handling of heavy loads over spent fuel, fuel in the reactor core, or safety-related equipment within the next 2 years from the date of the bulletin, provide the following: A report within 30 days of the date of the bulletin that addresses the licensee's review of its plans and capabilities to handle heavy loads while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled) in accordance with existing regulatory guidelines. State whether the activities are within the licensing basis and, if necessary, submit a schedule for requesting a license amendment. Additionally, indicate whether changes to Technical Specifications (TSs) are required.

(2) For licensees planning to perform activities involving the handling of heavy loads over spent fuel, over fuel in the reactor core, or over safety-related equipment while the reactor

Enclosure

Report (FSAR), submit a license amendment request 6-9 months in advance of the planned movement of the loads to give the staff sufficient time to perform an appropriate review.

(3) For licensees planning to move dry storage casks over spent fuel, over fuel in the reactor core, or over safety-related equipment while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled) include, in item 2 above, a statement of the capability of performing the actions necessary for a safe plant shutdown in the presence of a radiological source term that may result from a breach of the dry storage cask, damage to the fuel, or damage to safety-related equipment due to a load drop inside the facility.

(4) For licensees planning to perform activities involving the handling of heavy loads over spent fuel, over fuel in the reactor core, or over safety-related equipment while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled), determine whether changes to the TSs will be required to allow the handling of heavy loads (e.g., the dry storage canister shield plug) over fuel assemblies in the spent fuel pool and submit the appropriate information 6-9 months in advance of the planned movement of the loads for NRC review and approval.

Discussion

The levels of detail in the licensees' responses to NRCB 96-02 varied significantly. Although some licensees presented detailed information about their heavy load-handling operations, some licensees (Catawba, Crystal River, Farley, Indian Point 2, Salem, St. Lucie, Summer, Dresden, Fitzpatrick, Hope Creek, LaSalle, Quad Cities, and WNP-2), either omitted information pertinent to the staff's review in their submittal or referenced previous submittals associated with NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants." However, all of the licensees responded to the bulletin.

In response to the bulletin, all the licensees reviewed their plans and capabilities to handle heavy loads and indicated that their plans and capabilities are adequate. Some discussions about licensees' plans and capabilities to move heavy loads addressed the plant mode of operation (at power or during shutdowns), the type of crane used (non-single-failure-proof, single-failure-proof, or upgraded cranes), and the methods and procedures for implementing the guidelines in NUREG-0612, Phase I. All the licensees indicated that their load-handling operations are in accordance with the guidelines in NUREG-0612, Phase I.

The bulletin requested that licensees determine whether their load-handling operations are within the licensing basis of the plant. Some licensees stated that their operations are within the licensing basis; other licensees committed to evaluate their licensing basis. Some licensees identified issues to be addressed with the NRC through licensing actions (amendment requests or 10 CFR 50.59 evaluations), and projected schedules for submitting the actions for NRC review. Following the responses to the bulletin, a few licensing actions have been reviewed and approved by the NRC concerning the bulletin. The issues involve proposed changes to TSs, scope changes to accident analyses, changes in loads and load paths, and updates to UFSAR requirements.

The bulletin also asked licensees to determine if their movement of heavy loads involves potential load drop accidents that were not evaluated previously in the FSAR and, if needed, submit a license amendment request. Most licensees stated that they move only analyzed loads. Some licensees indicated that they performed load drop or consequence analyses or both though the guidance in Generic Letter (GL) 85-11 canceled the need to perform any analyses. Some licensees committed to evaluate the heavy loads identified previously when they responded to NUREG-0612. Despite the analyses performed, all the licensees stated that they satisfy the recommended guidelines in Section 5.1.1 of NUREG-0612.

Licensees moving heavy loads at power and using load drops and consequence analyses indicated that they have adequate capabilities to safely shutdown the plant if a heavy load drop occurs causing a release of radiation or damage to safety-related equipment.

The bulletin also requested that licensees identify plans and schedules for moving spent fuel dry storage casks. Some licensees stated that they planned to move casks in the near future; other licensees indicated that they had not yet considered onsite dry cask storage.

Based on requests in the bulletin, the staff reviewed the licensee responses to identify: (1) plant mode during the handling of heavy loads (at power or during plant shutdowns); (2) type of crane used to lift heavy loads; (3) evaluation of the licensing basis for handling heavy loads, including planned licensing actions associated with heavy loads (i.e., license amendment requests); (4) plans and schedules for moving heavy loads (particularly spent fuel dry storage and transportation casks); and (5) the type of analysis performed (load drop analysis or consequence analysis or both). Although the bulletin did not specifically request this information, the staff believes that this type of information covers the areas of concern about the licensees' heavy load-handling operations. On the basis of its review, the staff noted the following points.

(1) <u>Plant Mode During Load-Handling Operations</u>

Review of the responses to the bulletin revealed that approximately 38 percent of the plants (21 PWRs and 20 BWRs) plan to move heavy loads at power. Some of these plants indicated that they move analyzed heavy loads at power and unanalyzed heavy loads during plant shutdowns. These plants also indicated that heavy load movements over safety-related equipment are minimized to the extent practicable, and their procedures do not allow movements of heavy loads over fuel or over the reactor core in accordance with NUREG-0612. Some PWR licensees (i.e., Callaway, Shearon Harris, and Calvert Cliffs) indicated that their heavy load movements involve casks moved within a separate fuel building. As indicated by the licensees, the movement of casks in PWRs that have a separate fuel building involves little or no cask travel over systems needed for safe shutdown functions. As a result, a dropped cask would not cause significant damage to safe shutdown equipment and, therefore, would have negligible effect on the licensees' ability to shut down the plant safely.

Approximately 39 percent of the plants (28 PWRs and 15 BWRs) indicated that they move heavy loads at plant shutdowns, and about 23 percent of the plants (23 PWRs and 2 BWRs) did not clearly indicate the plant status when heavy loads are moved. A few of

these licensees (e.g., Oyster Creek) that plan to move heavy loads during plant shutdowns also indicated that they plan to perform dry runs at power, before initially loading the cask.

The staff finds that although some licensees have committed to move only analyzed loads at power, they may not adequately consider the adverse safety consequences of a load drop during the movement of heavy loads. Some licensees' analyses consider methods that may be used to preclude a load drop (e.g., enhancements to the load handling system, including upgrades to brakes, instrumentation, and controls, and the use of energy-absorbing structures throughout the load path). However, they may not consider the adequacy of their capabilities needed to mitigate or manage the adverse consequences of a load drop. Some examples of such capabilities are the abilities to shut down the plant safely, continue normal operation, maintain personnel access to various areas in the plant, and mitigate potential accidents that could expose individuals to releases.

The staff is also concerned that some licensees may not adequately address the potential consequences of a load drop during practice runs of cask movements while the reactor is at power. A drop of an empty cask during practice movements could result in similar adverse consequences to the operation of the plant as does the actual movement of a fully loaded spent fuel cask. Therefore, it is the staff's view that activities involving actual heavy load movements or practice runs of moving spent fuel dry storage casks are to be evaluated by the licensee for potential accidents and consequences.

In addition, the staff is concerned with BWR licensees that move heavy loads while the reactor is at power because, in general, the safety-related systems required for safe shutdowns are susceptible to damage from a dropped heavy load. These licensees should exhaust all options of establishing safe load paths to minimize the risk of affecting safe shutdown equipment in the event a heavy load is dropped.

(2) Types of Cranes Used

In the responses to the bulletin, approximately 27 percent of the plants (6 PWRs and 23 BWRs) indicated that they use single-failure-proof cranes to lift heavy loads; 14 percent of the plants (12 PWRs and 3 BWRs) indicated that they have upgraded the reliability of their load-handling system in accordance with NUREG-0612, Section 5.1.6 (see explanation below); and about 8 percent of the plants (5 PWRs and 4 BWRs) indicated that their crane is non-single-failure-proof. However, almost half the plants (49 PWRs and 7 BWRs) did not clearly indicate the type of crane they use.

NUREG-0612, Section 5.1.6, "Single Failure Handling System," provides the alternative of upgrading an existing crane in lieu of complying with certain recommendations of NUREG-0554, "Single Failure Proof Cranes for Nuclear Power Plants," to achieve improved reliability in load-handling systems. Accordingly, several licensees have upgraded their overhead load-handling crane to single-failure-proof status, or they have improved reliability by increasing the factors of safety or by providing redundancy in certain active components of the cranes. A few licensees (i.e., Oyster Creek, Dresden, Yankee Rowe)

have indicated that they are considering upgrading their cranes or installing new cranes to achieve single-failure-proof capability.

Licensee information regarding the types of overhead cranes used at the plants indicates that many plants have either single-failure-proof cranes in accordance with NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants," or cranes upgraded in accordance with guidelines in NUREG-0612 (Section 5.1.6, and Appendix C, "Modification of Existing Cranes)." Although several plants were not clear about the type of crane they possess, none of the plants indicated that they have cranes and lifting systems that were inadequately designed, installed, and tested.

The staff concludes that many licensees previously performed adequate evaluations of their crane design for lifting heavy loads and the evaluations were accepted by the staff. However, the staff is concerned that some facilities could have weaknesses in their load-handling operations. These weaknesses may include insufficient training of personnel involved in the lifting and rigging procedures, procedures lacking in requirements for evaluating loads and ensuring that the design limitations of the hoisting system are not exceeded, insufficient inspection and preventive maintenance of cranes and lifting devices, and inadequate review of loading capacities. The staff's view is that the potential exists for any of these weaknesses to result in a single failure involving heavy loads being dropped and causing adverse consequences. As a result, future staff reviews will be focused on licensees' evaluations of their cranes and lifting devices, and related methods and procedures used for complying with the requirements of NUREG-0612.

(3) Evaluation of Licensing Basis for Handling Heavy Loads

Review of the responses to the bulletin indicated that all of the licensees believe that their heavy load-handling operations are in accordance with the licensing basis of the facility. Approximately 24 percent of the plants (10 BWRs and 16 PWRs) did not address the licensing basis in their responses. The staff is concerned that some plants that believe their load-handling operation is within the plant's licensing basis may, in fact, be outside the licensing basis. For example, the staff's reviews of Oyster Creek's (OC's) load-handling operations determined that OC would have operated beyond its licensing basis. This is because OC was planning to move loads that exceeded the size of the loads previously evaluated in the FSAR. Approximately 10 percent of the licensees indicated that they will review and modify their licensing basis as needed. As indicated in the submittals, licensees' reviews of the licensing basis resulted in one or more of the following:

- identification and analysis of new heavy loads beyond the loads previously addressed in the licensing basis,
- commitments to only move heavy loads that were previously analyzed,
- determinations that heavy load-handling operations deviated from previous commitments and the licensing bases, and

- determinations that change the TSs are needed.

Licensees' reviews of their plans and capabilities to handle and control heavy loads have resulted in some licensees undertaking licensing actions to implement their load-handling operations. The following are examples of planned licensing actions noted in the responses to NRCB 96-02:

Licensee	Planned Licensing Actions
Brunswick:	License amendment request to make the FSAR consistent with actual plant operations (completed).
Fitzpatrick:	Changes to the TSs to allow the movement of spent fuel dry storage casks at power (schedule TBD).
Nine Mile Point:	Design change involving reracking of the spent fuel pool. (Schedule TBD).
North Anna:	Various license amendments regarding heavy load-handling issues (schedule TBD).
Oyster Creek:	TS changes to remove the weight restriction for lifting the dry storage canister (DSC) shield plugs over fuel in the DSC. (completed).
Watts Bar:	Design change for reracking of the spent fuel pool (currently under review).

The staff's review of the information submitted indicates that some licensees' load-handling operations may have been implemented inconsistently with the licensing basis of the facility. Some plants either have inadvertently deviated from their load-handling procedures, implemented procedures that are inconsistent with the licensing basis, or misinterpreted the design features of their load-handling system. The staff also believes that since the issuance of NUREG-0612, many changes have evolved in licensees' plans to handle heavy loads. As a result, several licensees have identified changes in their load-handling operations that were not previously addressed in their licensing basis. Therefore, on an "as needed" basis, the staff will continue to perform audits and inspections in order to evaluate licensees' movement of heavy loads.

(4) Plans for Moving Spent Fuel Dry Storage Casks

Approximately 17 percent of the plants (10 PWRs and 9 BWRs) indicated that they plan to store spent fuel dry storage casks. Most of these plants plan to move casks within 2 years from the date of the bulletin. The remainder of the licensees either did not address the issue or have not yet begun planning for the storage of spent fuel.

(5) Load Drop and Consequence Analysis Performed

Approximately 33 percent of the plants indicated that they have performed load drop and consequence analyses in support of their plans to move heavy loads. The remaining plants did not show that any analysis exists. In the future, the staff will review the load drop and consequence analyses on an as-needed plant-specific basis. The staff has found that several licensees have done load drop and consequence analyses though Generic Letter 85-11 canceled Phase II of NUREG-0612, and dismissed the need for licensees to perform these analyses. The results of the analyses have led some licensees to modify their load-handling operations, including upgrading the crane and associated components of the lifting system, and modifying the load paths.

Conclusion

The staff finds that NRC Bulletin 96-02 achieved its objective of getting licensees to evaluate their load-handling activities to ensure that they are performed safely and in the best interest of protecting the health and safety of the public. The bulletin was very effective in getting licensees to review their plans and capabilities, licensing bases, and regulatory guidelines for carrying out activities involving the movement of heavy loads. Although the licensee responses to the bulletin contained various levels of detail regarding load-handling operations at their plants, sufficient information was available to enable the staff to reach the conclusions noted below.

Although several licensees have increased the reliability of their load-handling systems, the staff will continue to review load-handling operations, on an as-needed basis, to ensure that licensees adequately address their ability to preclude load drop accidents. As determined through earlier NRC reviews, licensees have reliable lifting systems as required by NUREG-0612. However, licensees need to continue to address other activities surrounding the crane operation that could help to minimize weaknesses in their load-handling operations that may contribute to load drop accidents. Such weaknesses could include insufficient training of personnel involved in applying the lifting and rigging procedures, procedures lacking in requirements for evaluating loads and for ensuring that the design limitations of the load-lifting system are not exceeded, insufficient inspection and preventive maintenance of cranes and lifting devices, and inadequate review of loading capacities.

Also, the staff finds that because some licensees plan to move heavy loads at power, they may need to assess their capabilities to both mitigate and manage the adverse consequences of a heavy load drop. Licensees should consider, among other things, possible plant shutdowns during the movement of heavy loads, limiting personnel exposure from required entry into contaminated plant areas following an accident, and recovering from the adverse conditions caused by an accident. Accordingly, the staff is particularly interested in future evaluations of load drops and consequences associated with the load-handling operations of the licensees.

The staff also finds that several licensees have determined, after reviewing their licensing basis, that their load-handling operations may be inconsistent with their licensing basis. Consequently, several licensees have undertaken actions to correct or resolve this condition, including reviewing the FSAR, TS requirements, and procedures governing the conduct of

operations involving the movement of heavy loads. The staff will pursue enforcement actions for matters involving a noncompliance with regulatory requirements as appropriate.

On the basis of the preceding discussion, the staff will continue to review issues regarding the handling of heavy loads on a plant-specific basis as needed. Generic issues regarding this subject will be addressed through an ongoing Task Action Plan (TAP) for Heavy Loads. Any additional information required for the completion of the TAP will be obtained on a plant-specific basis.

Principal Contributor: Brian E. Thomas

50-400
3/23/2000

Distri97.txt

Distribution Sheet

Priority: Normal

From: Stefanie Fountain

Action Recipients:	Copies:	
RidsNrrPMRLaufer	0	OK
RidsNrrDlpmLpdii2	0	OK
R Laufer	1	Paper Copy
NRR/DLPM/LPD2-2	1	Paper Copy

Internal Recipients:		
RidsRgn2MailCenter	0	OK
RidsResDraaOerab	0	OK
RidsResDetErab	0	OK
RidsNrrDssaSplb	0	OK
RidsNrrDripRexb	0	OK
RidsNrrDipmOlhp	0	OK
RidsNrrDipmIolb	0	OK
RidsManager	0	OK
RGN2.FILE 01	1	Paper Copy
RES/DRAA/OERAB	1	Paper Copy
RES/DET/ERAB	1	Paper Copy
NRR/DRIP/REXB	1	Paper Copy
NRR/DIPM/IOLB	1	Paper Copy
FILE CENTER	1	Paper Copy
ACRS	1	Paper Copy

External Recipients:		
NOAC QUEENER,DS	1	Paper Copy
NOAC POORE,W.	1	Paper Copy
internet: smittw@inel.gov	1	Paper Copy
INEEL Marshall	1	Paper Copy

Total Copies: 13

Item: ADAMS Document
Library: ML_ADAMS^HQNTAD01
ID: 003696694:1

APR 0 4 2000

Subject:

ADY

Shearon Harris, Unit 1, Control Room Emergency Filtration System Technical Specificat ion Violation, Licensee Event Report.

Body:
ADAMS DISTRIBUTION NOTIFICATION.

Electronic Recipients can RIGHT CLICK and OPEN the first Attachment to View the Document in ADAMS. The Document may also be viewed by searching for Accession Number ML003696694.

IE22 - 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

Docket: 05000400

CP&L

Carolina Power & Light Company
Harris Nuclear Plant
PO Box 165
New Hill NC 27562

MAR 23 2000

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

Serial: HNP-00-061
10CFR50.73

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 2000-001-00

Sir or Madam:

In accordance with 10CFR50.73, the enclosed Licensee Event Report is submitted. This report describes a Technical Specification violation due to an inoperable Control Room Emergency Filtration System.

Sincerely,

R. J. Duncan II
General Manager
Harris Plant

MSE/mse

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

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Harris Nuclear Plant, Unit 1	05000400	1 OF 2

TITLE (4)
Control Room Emergency Filtration System Technical Specification violation.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
02	22	2000	2000	- 001 -	00	03	23	2000	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check one or more) (11)							
			20.2201(b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)	100		20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Mark Ellington, Senior Analyst - Licensing	(919) 362-2057

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

On February 22, 2000, with the Harris Nuclear Plant (HNP) at 100% reactor power, a duct access panel for the Control Room Emergency Filtration System (CREFS) ventilation boundary was removed to facilitate surveillance testing of the charcoal in the filtration unit. This access panel is located at the common suction line for the two redundant CREFS units, R-2A and R-2B. During the time (approximately five minutes) that the access panel was removed and the test panel installed, the CREFS could not achieve and maintain a positive pressure as required by Technical Specifications (TS) surveillance requirement 4.7.6.d.3. This condition caused both of the CREFS units to become inoperable. Harris Nuclear Plant (HNP) TS do not provide an action when both CREFS are inoperable. Additionally, there is no action, in TS 3.7.6, for an inoperable CREFS ventilation boundary. Thus, opening the CREFS duct work during performance of the surveillance test required entry into TS 3.0.3.

Cause of this event: Inadequate review of plant procedures which affect control room ventilation boundaries.

Corrective actions include: (1) Reviewing plant procedures to ensure that passive barriers which may be opened do not violate CREFS pressure boundary requirements. (2) Install signs on applicable ventilation duct access panels instructing plant personnel to contact the main control room prior to removal of the associated duct access panel.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Harris Nuclear Plant, Unit 1	05000400	2000	-- 001 --	00	2 OF 2

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

I. DESCRIPTION OF EVENT

On February 22, 2000, with the Harris Nuclear Plant (HNP) at 100% reactor power, a duct access panel for the Control Room Emergency Filtration System (CREFS) ventilation boundary was removed to facilitate surveillance testing of the charcoal in the filtration unit. This access panel is located at the common suction line for the two redundant CREFS units, R-2A and R-2B. During the time (approximately five minutes) that the access panel was removed and the test panel installed, the CREFS could not achieve and maintain a positive pressure as required by Technical Specifications (TS) surveillance requirement 4.7.6.d.3. This condition caused both of the CREFS units to become inoperable. Harris Nuclear Plant (HNP) TS do not provide an action when both CREFS are inoperable. Additionally, there is no action, in TS 3.7.6, for an inoperable CREFS ventilation boundary. Thus, opening the CREFS duct work during performance of the surveillance test required entry into TS 3.0.3.

The CREFS consists of two 100 percent capacity redundant fan and filter subsystems. Normally, the CREFS is in a standby alignment. During an accident, the normal outside air intake for the CREFS isolates and both emergency recirculation fans automatically start. Following verification of isolation of control room ventilation, an operator places one of the two emergency filtration units in standby. Next, the operator selects and opens one emergency outside air intake to pressurize the control room to 1/8 inwg. at less than or equal to 315 cfm flow. With the applicable access panel removed, operators would have been unable to pressurize the control room as required.

II. CAUSE OF EVENT

Inadequate review of plant procedures which affect control room ventilation boundaries.

III. SAFETY SIGNIFICANCE

There were no actual safety consequences as a result of this event. The individual performing the test could have replaced the access panel in a timely manner should the need arise. This report is being submitted pursuant to the criteria of 10CFR50.73(a)(2)(i) for Technical Specification Prohibited Operation or Condition.

IV. CORRECTIVE ACTIONS

(1) Reviewing plant procedures to ensure that passive barriers which may be opened do not violate CREFS pressure boundary requirements.

(2) Install signs on applicable ventilation duct access panels instructing plant personnel to contact the main control room prior to removal of the associated duct access panel.

SIMILAR EVENTS

HNP submitted LER 1999-08-00 to document that for during four refueling outages, main control room doors were being blocked open to facilitate testing. The corrective actions for that investigation did not consider breaching of ventilation boundaries other than doors. As a result, this issue was not identified during that investigation.

50-400
1/13/2000

Distribution Sheet

Priority: Normal

From: Stefanie Fountain

Action Recipients:	Copies:	
RidsNrrPMRLaufer	1	OK
RidsNrrDlpmLpdii2	1	OK
R Laufer	1	Not Found
NRR/DLPM/LPD2-2	1	Not Found

Internal Recipients:

RidsRgn 2 MailCenter	1	Not Found
RidsResDraaOerab	1	OK
RidsResDetErab	1	OK
RidsNrrDssaSplb	1	OK
RidsNrrDripRexb	1	OK
RidsNrrDipmIolb	1	OK
RidsManager	1	OK
RGN 2 .FILE 01	1	Not Found
RES/DRAA/OERAB	1	Not Found
RES/DET/ERAB	1	Not Found
NRR/DSSA/SPLB	1	Not Found
NRR/DRIP/REXB	1	Not Found
NRR/DIPM/IOLB	1	Not Found
FILE CENTER	1	Not Found
ACRS	1	Not Found

External Recipients:

NOAC QUEENER,DS	1	Not Found
NOAC POORE,W.	1	Not Found
internet: smittw@inel.gov	1	Not Found
INEEL Marshall	1	Not Found

Total Copies: ~~23~~ 15

Item: ADAMS Document
Library: ML_ADAMS^HQNTAD01
ID: 003676422

Subject:

A04

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1 LICENSEE EVENT REPORT 1999-009-00

Body:
PDR ADOCK 05000400 S

Docket: 05000400, Notes: Application for permit renewal filed.

CP&L

Carolina Power & Light Company
Harris Nuclear Plant
PO Box 165
New Hill NC 27562

JAN 13 2000

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

Serial: HNP-00-004
10CFR50.73

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 1999-009-00

Sir or Madam:

In accordance with 10CFR50.73, the enclosed Licensee Event Report is submitted. This report describes a condition which resulted in a manual reactor trip and auxiliary feedwater system actuation.

Sincerely,

Acting PGM For

B. H. Clark
General Manager
Harris Plant

MSE/mse

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

IE22 1/1

5413 Shearon Harris Road New Hill NC

PDR ADOCK 05000400

00367642 2

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Harris Nuclear Plant, Unit 1	05000400	1 OF 3

TITLE (4)
Reactor Trip and Auxiliary Feedwater Actuation

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
12	14	1999	1999	- 009 -	00	01	13	2000	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check one or more) (11)							
			20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)	100		20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)	X	50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Mark Ellington, Senior Analyst - Licensing	(919) 362-2057

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	SD	P	Siemens-Allis	Y					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

On December 14, 1999 at 0353, the Harris Nuclear Plant (HNP) manually tripped the reactor from 60% power. At 0352 on December 14, 1999 the "A" Condensate Pump tripped due to a ground fault on the associated motor. The trip of the "A" Condensate Pump resulted in subsequent trips of the "A" Condensate Booster Pump and the "A" Main Feedwater Pump. The main turbine load control circuitry sensed the trip of the "A" Main Feedwater Pump and automatically reduced turbine power to approximately 60% (turbine runback). The reactor trip coupled with the loss of the "A" Condensate and Feedwater train resulted in a reduction of steam generator water levels. The main control room staff manually started the three auxiliary feedwater pumps in accordance with the applicable abnormal operating procedure. The steam generator levels continued to lower until the main control room staff manually tripped the reactor at approximately 40% steam generator level prior to reaching the steam generator low-low level automatic trip setpoint of 38.4%. Additionally, following the trip an auxiliary feedwater (AFW) actuation signal was generated due to the low-low steam generator level. However, as stated previously, the auxiliary feedwater pumps had been manually started during the transient therefore, the AFW actuation signal did not start any additional components.

Cause of this event: A ground fault on the "A" Condensate Pump motor caused a loss of the "A" Condensate and Feedwater train that resulted in low steam generator water levels and a subsequent manual reactor trip and AFW actuation.

Corrective actions include: The "A" Condensate Pump motor was replaced on December 16, 1999.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Harris Nuclear Plant, Unit 1	05000400	1999	-- 009	-- 00	2 OF 3

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

I. DESCRIPTION OF EVENT

On December 14, 1999 at 0353, the Harris Nuclear Plant (HNP) manually tripped the reactor from 60% power. At 0352 on December 14, 1999 the "A" Condensate Pump (EIIS SD-P) tripped due to a ground fault on the associated motor. The trip of the "A" Condensate Pump resulted in subsequent trips of the "A" Condensate Booster Pump and the "A" Main Feedwater Pump. The main turbine load control circuitry sensed the trip of the "A" Main Feedwater Pump and automatically reduced turbine power to approximately 60% (turbine runback). The reactor trip coupled with the loss of the "A" Condensate and Feedwater train resulted in a reduction of steam generator water levels. The main control room staff manually started the three auxiliary feedwater pumps in accordance with the applicable abnormal operating procedure. The steam generator levels continued to lower until the main control room staff manually tripped the reactor at approximately 40% steam generator level prior to reaching the steam generator low-low level automatic trip setpoint of 38.4%. Additionally, following the trip an auxiliary feedwater (AFW) actuation signal was generated due to the low-low steam generator level. However, as stated previously, the auxiliary feedwater pumps had been manually started during the transient therefore, the AFW actuation signal did not start any additional components.

After the reactor trip, the main control room staff stabilized plant conditions and recovered inventory in all three steam generators. All safety related systems responded as expected during this event.

The HNP Condensate and Feedwater design includes two redundant trains each with a condensate pump, a condensate booster pump, and a main feedwater pump. The condensate pumps take suction from the main condenser hotwell. The discharge from both condensate pumps combine and flow through the condensate polishers to the suction of both condensate booster pumps. The discharge of the condensate booster pumps flow through a series of feedwater heaters and combine with the discharge of the heater drain pumps to provide a suction to the two main feedwater pumps. The main feedwater pumps discharge flow through two additional feedwater heaters and then is separated into three lines to provide inventory to the three steam generators. HNP condensate and feedwater system design causes a trip of the associated condensate booster pump and main feedwater pump when a condensate pump trips.

At HNP, steam generator levels lower (shrink) during a rapid load reduction such as a turbine runback or reactor trip, The shrink coupled with the loss of the condensate and feedwater train resulted in steam generator levels becoming unacceptably low and caused the main control room staff to manually trip the reactor to avoid challenging the automatic steam generator low-low level reactor trip.

II. CAUSE OF EVENT

A ground fault on the "A" Condensate Pump motor caused a loss of the "A" Condensate and Feedwater train that resulted in low steam generator water levels and a subsequent manual reactor trip and AFW actuation.

III. SAFETY SIGNIFICANCE

There were no actual safety consequences as a result of this event. The plant was manually tripped as required for plant conditions and all safety related systems functioned as required during the transient. This report is being submitted pursuant to the criteria of 10CFR50.73(a)(2)(iv) for the reactor trip and the automatic actuation of AFW (Engineered Safety Feature signal).

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Harris Nuclear Plant, Unit 1	05000400	1999	-- 009	-- 00	3 OF 3

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

IV. CORRECTIVE ACTIONS

The "A" Condensate Pump motor was replaced on December 16, 1999.

V. SIMILAR EVENTS

There have been no previous reactor trips due to a ground fault on a condensate pump motor.