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

Serial: HNP-01-097
10CFR50.73

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 2001-002-00

Sir or Madam:

In accordance with 10CFR50.73, the enclosed Licensee Event Report is submitted. This report describes an unanalyzed condition due to inadequate fuse coordination.

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)

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NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION (MM-YYYY) LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)	Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T -6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555 -0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.
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FACILITY NAME (1) Harris Nuclear Plant	DOCKET NUMBER (2) 05000400	PAGE (3) 1 OF 3
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TITLE (4) Unanalyzed Condition Due To Inadequate Fuse Coordination

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENT IAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
4	18	01	2001	02	00	06	15	2001		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR '': (Check all that apply) (11)								
POWER LEVEL (10)	100		20.2201(b)	20.2203(a)(3)(i)	50.73(a)(2)(i)(C)	50.73(a)(2)(vii)				
			20.2201(d)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(A)				
			20.2203(a)(1)	20.2203(a)(4)	x 50.73(a)(2)(ii)(B)	50.73(a)(2)(viii)(B)				
			20.2203(a)(2)(i)	50.36(c)(1)(i)(A)	50.73(a)(2)(iii)	50.73(a)(2)(ix)(A)				
			20.2203(a)(2)(ii)	50.36(c)(1)(ii)(A)	50.73(a)(2)(iv)(A)	50.73(a)(2)(x)				
			20.2203(a)(2)(iii)	50.36(c)(2)	50.73(a)(2)(v)(A)	73.71(a)(4)				
			20.2203(a)(2)(iv)	50.46(a)(3)(ii)	50.73(a)(2)(v)(B)	73.71(a)(5)				
			20.2203(a)(2)(v)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(C)	OTHER				
	20.2203(a)(2)(vi)	50.73(a)(2)(i)(B)	50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A Part 21						

LICENSEE CONTACT FOR THIS LER (12)	
NAME Mark Ellington, Project Analyst - Licensing	TELEPHONE NUMBER (Include Area Code) (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 SUBMISSION DATE (15)		
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO			

On April 18, 2001, with the Harris Nuclear Plant (HNP) in Mode 1 at 100% power, HNP engineering personnel determined that fuses intended to maintain safe shutdown train separation, in the event of a fire in the "A" Switchgear Room, are not capable of performing their intended function due to a design error. A fire in one fire area could result in the inability to isolate a Pressurizer Power Operated Relief Valve (PORV) and associated block valve. These fuses were intended to protect against this condition by isolating the PORV Block Valve control circuit on an electrical short due to a fire. The fuses provide power to the plant computer for PORV Block Valve position indication. The power to reposition the PORV Block Valves and the position indication on the PORV Block Valve control switch is not powered by these fuses.

Cause of this event: Inadequate analysis during design of the applicable circuit.
Corrective actions: 1) The applicable fuses were pulled as a temporary compensatory measure to provide safe shutdown train separation. 2) The design analysis has been corrected. 3) HNP has implemented a design change to install the correct fuses.

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TEXT CONTINUATION

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Harris Nuclear Plant, Unit 1	05000400	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
		2001 - 002 - 00			

I. DESCRIPTION OF EVENT

On April 18, 2001, with the Harris Nuclear Plant (HNP) in Mode 1 at 100% power, HNP engineering personnel determined that fuses intended to maintain safe shutdown train separation, in the event of a fire in the "A" Switchgear Room, are not capable of performing their intended function due to a design error. A fire in one fire area could result in the inability to isolate a Pressurizer Power Operated Relief Valve (PORV) and associated block valve. These fuses were intended to protect against this condition by isolating the PORV Block Valve control circuit on an electrical short due to a fire. The fuses provide power to the plant computer for PORV Block Valve position indication. The power to reposition the PORV Block Valves and the position indication on the PORV Block Valve control switch is not powered by these fuses.

During the resolution of a Safe Shutdown in Case of Fire Self Assessment Items of Assessment ENG 99-022, HNP determined that fuses installed to maintain the ability to remotely close two of the three Pressurizer PORV Block Valves (1RC-115 and 1RC-117) in the event of an "A" Switchgear Room Fire, are not capable of performing their design function because the fuses were not properly sized for adequate fuse coordination. As a result of the improper fuse sizing, it is possible that the upstream control circuitry fuses would interrupt current first under an electrical fault condition. This would prevent remote closing of the PORV Block Valves, which for the two valves identified above, is a credited function in the Safe Shutdown Analysis for the "A" Switchgear Room fire scenario. The fuses in question are FU88/160 and FU89/161 located in the "B" Auxiliary Transfer Panel.

The purpose of fuse FU88/160 (1 amp) is to coordinate with fuses FU1/160 (2 amps) and FU2/160 (2 amps) such that a short circuit of the computer input cable 10160P does not effect operation of a PORV Block Valve. This cable short concern was addressed under Field Change Request (FCR) FCR-I-2071 in 1985.

Likewise, the purpose of fuse FU89/161 (1 amp) is to coordinate with fuses FU1/161 (2 amps) and FU2/161 (2 amps) such that a short circuit of the computer input cable 10161J does not effect operation of the PORV Block Valve. This cable short concern was also addressed under FCR-I-2071 in 1985.

FCR-I-2071 provided the installation details to install the 1 amp fuses, one in each of the PORV Block Valve control circuits. An error occurred during the development/design analysis of FCR-I-2071. The FCR clearly specifies the use of a Bussman-Fusetron Dual Element FRN-R1, 1 amp, 250-volt fuse. The Time Current Characteristics (TCC) curve for this model fuse, does not coordinate with the upstream control circuitry fuses. Given the lack of a detailed design record, the skill set of the individual who performed the task and the lack of procedural guidance available, the conclusion is that inadequate design analysis was performed during the development of FCR-I-2071, resulting in the selection of a fuse which did not possess the proper critical time current characteristics needed for this particular application.

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II. CAUSE OF THE EVENT

Inadequate analysis during design of the applicable circuit.

III. SAFETY SIGNIFICANCE

In order to have an actual safety consequence, the plant would have had to sustained a fire in the "A" Switchgear Room resulting in the shorting of either Cable 10160P or 10161J in such a manner as to cause the blowing of a PORV Block Valve control power fuse. Prior to April 18, 2001 this type of fire had not occurred. Since April 18, 2001 the PORV Block Valve circuit has had the improperly sized fuses removed or the system modified, thus eliminating the coordination deficiency. These fuses have been resized and reinstalled under the controls of the plant modification process.

The potential safety consequences have been assessed as having the potential to adversely affect the core damage frequency. In order to be an adverse affect, there would have to be a fire in the "A" Switchgear Room resulting in very specific damage. The fire would have to result in multiple concurrent cable shorts to the Pressurizer PORV(s) control circuits, resulting in the Pressurizer PORV(s) to open. In addition, the fire would have to cause a dead short in the corresponding Pressurizer PORV Block Valve(s) control cable resulting in a blown control power fuse, thus disabling the ability to remotely close the Pressurizer PORV Block Valve(s). HNP was designed and built with specific fire prevention features such as separation, barriers, detection, limited combustible loading, etc. The plant is operated under strict procedure and program controls aimed at preventing fire and mitigating the damages of any actual fire. This condition is being reported per the requirements of 10 CFR 50.73(a)(2)(ii)(b) as an unanalyzed condition that significantly affects plant safety.

IV. CORRECTIVE ACTIONS

- 1) The applicable fuses were pulled as a temporary compensatory measure to provide safe shutdown train separation.
- 2) The design analysis has been corrected.
- 3) HNP has implemented a design change to install the correct fuses.

V. SIMILAR EVENTS

There has been no history of fuse coordination problems at HNP. HNP instituted a fuse program in 1987 due to problems with fuse coordination at different plants and other fuse concerns not related to this issue. This condition was created in 1985 prior to implementation of the fuse program.