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U.S. Nuclear Regulatory Commission  
ATTN: NRC Document Control Desk  
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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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LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
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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		2001 - 002 - 00					

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.