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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND 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

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Cook Nuclear Plant Unit 1	05000-315	1 of 3

TITLE (4)

General Electric HFA Relays Installed in Emergency Diesel Generators May Not Meet Seismic Qualification

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
											Cook Unit 2	05000-316
01	06	1999	1999	--	001	--	00	02	10	1999	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	00	20.2201 (b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	X 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)	X 50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Mr. Brent D. Pogue, Licensing	(616) 465-5901 x2604

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)	MONTH	DAY	YEAR
X	YES (If Yes, complete EXPECTED SUBMISSION DATE).	NO		04	05	1999

Abstract (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 11, 1999, Units 1 and 2 Emergency Diesel Generators (EDGs) were declared inoperable at 1828 hours and an ENS notification was made at 2026 hours in accordance with 10CFR50.72(b)(2)(i) and 10CFR50.72(b)(2)(iii)(A). The EDGs were declared inoperable due to a concern identified by plant personnel that the General Electric HFA safety related relays installed in the EDG circuits may not be configured in accordance with vendor recommended requirements for relay contact adjustment and servicing instructions, and therefore, may not meet seismic qualification requirements. The relay issue had been identified in a Condition Report on January 6, 1999, however due to process problems, actions were not initiated to determine the safety significance of the condition until January 11, 1999. As both units are currently in Mode 5, all safe shutdown circuits were reviewed and operability determinations performed for both units. It was determined that only the EDGs were affected in such a way that spurious operation of the HFA relay from a seismic event could prevent the EDGs from performing their safety related function.

Preliminary evaluation indicates that operating experience information provided to the industry regarding the HFA relays was incorrectly dispositioned in 1985. This resulted in the failure to provide instructions for conversion of contact position, adjustment of the contacts, and verification of the contacts once converted. Engineering has reviewed the elementary drawings for the control circuits of all safe shutdown equipment and determined that 9 relays associated with the EDGs have contact configurations that are not one of the GE seismically qualified variations for the HFA relay. Corrective actions have been developed and are currently being initiated.

The root cause investigation of this event is ongoing, as is the evaluation of safety significance. Supplemental information regarding additional corrective actions, preventive actions, and safety significance, will be provided in an update to this LER by April 5, 1999.

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

Conditions Prior to Event
Unit 1 was in Mode 5, Cold Shutdown
Unit 2 was in Mode 5, Cold Shutdown

Description of Event
In late December 1998, engineering personnel began a review related to General Electric (GE) HFA relay contact configuration while reviewing a documentation package related to a plant restart issue. As a result of the review, on January 6, 1999, a concern was identified that the GE HFA safety related relays installed in plant system circuits may not be properly configured in accordance with vendor instructions for relay contact adjustment and servicing instructions, and therefore, may not meet seismic qualification.

The GE HFA relays are procured with all contacts in the "normally open" position, which are converted to "normally closed" as required by the circuit in which they are installed. When converting a "normally open" contact to a "normally closed" contact, past and existing plant practices did not verify that all critical relay adjustments are within the vendor specified tolerances, nor were the altered contact arrangements verified to be one of the GE seismically approved configurations. These verifications are necessary to ensure that the seismic qualification has been maintained.

A Condition Report (CR) was written documenting the concern with the HFA relays and submitted to the Shift Technical Advisor (STA) on January 6, 1999. An operability determination could not be made on the impact of this condition on plant equipment, as there was insufficient information available on what circuits were affected. Further investigation was performed, which resulted in the identification that HFA relays were installed in various safe shutdown control circuits, including all four Emergency Diesel Generators (EDGs.

Once all safe shutdown circuits were reviewed for both units, it was determined that only the EDGs were affected in such a way that spurious operation of the HFA relay would prevent the EDGs from performing their safety related function in Mode 5. The EDGs were declared inoperable at 1828 hours on January 11, 1999.

Cause of Event
Preliminary evaluation indicates that operating experience information provided to the industry regarding the HFA relays was incorrectly dispositioned in 1985. This resulted in the failure to provide instructions for conversion of contact position, adjustment of the contacts, and verification of the contacts once converted. Additionally, engineering has reviewed the elementary drawings for the control circuits of all safe shutdown equipment and determined that 9 relays associated with the EDGs have contact configurations that are not one of the GE seismically qualified variations for the HFA relay.

Problems with the timely processing of CRs and the collection of information needed to perform operability determinations became apparent when the Shift Supervisor declared all 4 EDGs inoperable due to the inability to determine what effect the HFA relay concern had on the EDGs.

The condition reporting process was overburdened by large numbers of CRs generated, all of which required review by the STA, who is also expected to generate the operability determination when required. This resulted in a backlog of both unreviewed CRs and CRs waiting on the information necessary to perform the operability determinations.

The root cause investigation for this event has not been completed. Supplemental information regarding additional corrective actions and preventive actions will be provided in an update to this LER by April 5, 1999.

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

Analysis of Event

This event was reported via the ENS on January 11, 1999 at 2026 hours under 10CFR50.72(b)(2)(i), as a condition which if had been found while the plant was operating would have resulted in the plant being seriously degraded, and is also being reported under 10CFR50.72(b)(2)(iii)(A) to have the potential to alone prevent fulfillment of the safety function of systems that are needed to maintain the reactor in a safe shutdown condition. This LER is being submitted in accordance with 10CFR50.73(a)(2)(ii) and 10CFR50.73(a)(2)(v)(A).

The GE HFA relays are used in numerous safe shutdown equipment control circuits. For all safe shutdown equipment required in Mode 5 that utilize the affected GE HFA relays, the control circuits have been reviewed for impact based on the identified condition. As a result of this review, only the EDGs have been identified as being adversely impacted such that they have been declared inoperable. The impact of these relays in other safe shutdown equipment control circuits has revealed that the equipment, in certain cases, is affected, but the effect does not jeopardize the safety function of the equipment. Additional evaluations are required for the effect on equipment in other plant operating modes.

The safety significance of this event is under evaluation. Final determination regarding the safety significance and past operability will be provided in an update to this LER by April 5, 1999.

Corrective Actions

A multi-discipline project team was formed to address the condition of the GE HFA relays and direct activities to restore the EDGs to an operable condition. All safe shutdown equipment control circuits were reviewed to determine in which circuits the HFA relays are installed. A relay inspection procedure was developed to verify, and adjust as necessary, those HFA relays that are not within the vendor recommended specifications. This procedure also incorporates vendor recommended guidance for relay adjustment in any subsequent maintenance activities on the HFA relays. Upon completion of the relay inspection, relays that are determined to be non-compliant will be evaluated for seismic performance.

Nine relays associated with the EDGs were found installed in configurations that do not match GE procurement configurations, therefore, the seismic adequacy of these configurations is considered to be indeterminate. These relays require a design change to restore each of the relays to their qualified contact configuration. The design change will be implemented prior to the EDGs being declared operable. A post maintenance testing procedure has been developed to test and verify operability of these relays.

To address the issue regarding the lack of a timely response to determine operability, a single point, multi-discipline team to review incoming condition reports has been implemented. The team, which includes a Senior Reactor Operator, interfaces directly with their counterparts within their respective organizations to increase condition report review efficiency and improve timely response until programmatic improvements are implemented.

A revision to the operability determination procedure has been implemented that directs the engineering organization to perform operability determinations, when required, and provide them to the Operations Shift Supervisor for approval.

The root cause investigation for this event has not been completed. Additional corrective actions, including preventive actions, may be developed based on the results of the root cause investigation. Supplemental information regarding additional corrective actions and preventive actions will be provided in an update to this LER by April 5, 1999.

Previous Similar Events

315/97-024-04