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United States Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555

Subject: **Docket No. 50-333**
LICENSEE EVENT REPORT: LER-00-012-01 (DER-00-04262)

Failed Primary Containment Isolation System Relay Resulting in Drywell Sump Isolation Valve Closure (Isolation)

Dear Sir:

Revision 0 of this report was submitted in accordance with 10 CFR 50.73 (a)(2)(iv), "Any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS)".

Revision 1 of this report includes the results of an Equipment Failure Evaluation of component(s) associated with the event.

There are no commitments contained in this report.

Questions concerning this report may be addressed to Mr. John Hoddy at (315) 349-6538.

Very truly yours,

T. A. Sullivan

TAS:JRH:las
Enclosure

cc: USNRC, Region 1
USNRC, Project Directorate
USNRC Resident Inspector
INPO Records Center

IE22

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 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.

LICENSEE EVENT REPORT (LER)

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

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TITLE (4)
Failed Primary Containment Isolation System Relay Resulting in Drywell Sump Isolation Valve Closure (Isolation)

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
									N/A	05000
09	14	00	00	012	01	02	28	01	FACILITY NAME: N/A	DOCKET NUMBER: 05000

OPERATING MODE (9)	N
POWER LEVEL (10)	100

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)
	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)	X	OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)		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. John Hoddy, Sr. Licensing Engineer	315-349-6538

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	JE	RLY	G080	N					

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

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

This report is provided as a supplement to previously submitted LER-00-012. The event is not reportable under current requirements.

At 2333 hours on September 14, 2000, with the plant operating at 100% power, control room annunciator alarms were received indicating ESF isolation of Drywell Equipment Drain Isolation Valve 20MOV-94 and Drywell Floor Drain Isolation Valve 20MOV-82. Investigation determined that the cause of the isolation was failure of relay 16A-K61. Isolation closure of the subject valves does not permit pumping drywell sumps, rendering the Primary Containment Sump Monitoring System inoperable and placing the plant in a 24 hour LCO Action, as required by Technical Specification 3.6.D.5.

At 1038 hours on September 15, 2000, a temporary modification was installed, allowing valves 20MOV-94 and 20MOV-82 to be opened under administrative controls to permit pumping drywell sumps, restoring Primary Containment Sump Monitoring System operability. LCO Action 3.6.D.5 was exited at 1955 hours.

The coil for relay 16A-K61 was subsequently replaced and the temporary modification removed. An Equipment Failure Evaluation (EFE) performed on the failed relay coil determined the cause to be an open circuit due to age related failure.

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

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EVENT DESCRIPTION

At 2333 hours on September 14, 2000, with the plant operating at 100% power, control room annunciator alarms were received indicating an engineered safety feature (ESF) isolation of Drywell Equipment Drain Isolation Motor Operated Valve 20MOV-94 and Drywell Floor Drain Isolation Motor Operated Valve 20MOV-82. Investigation determined that the valves were closed and showed no valid cause for the isolation. The cause of the isolation was determined to be failure of relay 16A-K61 (specifically, an open circuit of the relay coil), which causes a Primary Containment Isolation System (PCIS)[JE] Group II Isolation closure of affected valves.

Isolation closure of valves 20MOV-94 and 20MOV-82 does not allow pumping drywell floor and equipment drain sumps, rendering the primary containment sump monitoring system inoperable. Technical Specification (TS) 3.6.D, [Reactor] Coolant Leakage, requires primary containment sump monitoring system operability any time irradiated fuel is in the reactor vessel and the reactor coolant temperature is above 212 degrees Fahrenheit. Inoperability of this system placed the plant in a 24 hour LCO Action, as required by Technical Specification 3.6.D.5.

At 1038 hours on September 15, 2000, a temporary modification was installed, bypassing relay 16A-K61 contacts for valves 20MOV-94 and 20MOV-82, allowing the valves to be opened under administrative controls to permit pumping drywell sumps. Restoration of sump pumping capability restored primary containment sump monitoring system operability, permitting the periodic determination of Reactor Coolant Leakage rates as required by TS 3.6.D. The drywell equipment and floor drain sumps were initially pumped at 1046 hours and 1150 hours respectively. The periodic monitoring required by TS 3.6.D was recommenced and LCO Action 3.6.D.5 exited at 1955 hours.

Nothing indicative of increased reactor coolant leakage was observed during the time that primary containment sump monitoring was out of service. Leakage rates determined after the system was restored to service confirmed no significant change in leak rate over the period.

CAUSE OF THE EVENT

The cause of the PCIS isolation was an open circuit of the coil for relay 16A-K61, a relay providing PCIS Group II isolation of the subject valves on high drywell pressure and/or low reactor water level. An Equipment Failure Evaluation completed for the failed relay coil determined the cause of the open circuit to be age related deterioration of the relay leading to failure. The relay is normally energized. 16A-K61 is original plant equipment and has been in service for approximately 26 years.

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ANALYSIS OF THE EVENT

This event is not significant from a safety standpoint, since failure of the relay caused an isolation closure of affected valves, as designed. Although isolation of valves 20MOV-94 and 20MOV-82 rendered the primary containment sump monitoring system inoperable, making precise determination of reactor coolant leakage impossible during the period of inoperability, leakage monitoring capabilities were restored within the time allowed by the associated LCO Action. Other indications of unexpected changes in reactor coolant leakage remained available, including drywell temperature and pressure. As previously noted, results obtained upon restoring primary containment sump monitoring system operability showed no significant changes in leakage over the period.

In addition to the drywell sump isolation valves, relay 16A-K61 also provides an isolation signal to shutdown cooling suction valve 10MOV-18. This valve was not affected by the isolation since, at normal plant operating temperature and pressure, the valve is closed with an isolation signal present (reactor pressure greater than 75 pounds per square inch gauge, nominal). If relay 16A-K61 had failed with shutdown cooling in service, 10MOV-18 would have closed, securing shutdown cooling. Alternate means of decay heat removal are available in such a case, as identified in plant procedures, and could have been employed until 10MOV-18 could be reopened in a manner analogous to that used for opening drywell sump isolation valves.

EXTENT OF CONDITION

The specific condition was limited to relay 16A-K61. The relay was of a type (General Electric CR120A) that has previously failed under similar service (LERs 98-014 and 88-003).

The Equipment Failure Evaluation (EFE) performed for the relay 16A-K61 coil identified a typical 10 year service life for relay coils of this type in continuous service. As a result of this evaluation, coils for all critical normally-energized relays of this type were replaced in Refuel Outage 14.

The EFE further identified a Preventive Maintenance (PM) program weakness in that periodic thermography was being used to predict relay failure. Recent industry information indicates that thermography is only indicative of imminent relay failure. As a result, the PM strategy has been revised to replace identified relay coils on a ten-year interval, consistent with coil service life.

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CORRECTIVE ACTIONS

1. A temporary modification was installed, permitting opening the affected drywell sump isolation valves under administrative controls, restoring the primary containment sump monitoring system to operability. **(Complete)**

2. The coil for relay 16A-K61 was replaced. **(Complete)**

3. An Equipment Failure Evaluation (EFE) was performed for the failed relay coil. The following corrective actions resulted from this EFE.

   - Coils for critical normally-energized relays of this type were replaced during Refuel Outage 14. **(Complete)**

   - The Preventive Maintenance strategy for normally-energized relays of this type has been revised from periodic thermographic evaluation to relay coil replacement on a ten-year interval, consistent with expected coil service life. **(Complete)**

SAFETY SYSTEM FUNCTIONAL FAILURE REVIEW

This event does not constitute a safety system functional failure in the context of NEI 99-02, Rev. 0.

FAILED COMPONENTS

Relay Manufacturer:	General Electric
Relay Model Number:	CR120A06002AA
Manufacturer EPIX (NPRDS) Code:	G080

PREVIOUS SIMILAR EVENTS

LERs 98-014 and 88-003 describe similar failures of General Electric (GE) model CR120A relays.