NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1): Waterford Steam Electric Station Unit 3

DOCKET NUMBER (2): 0 5 0 0 0 3 8 2

PAGE (3): 1 OF 0 6

TITLE (4): Containment Isolation Valve Position Indication Not Enviromentally Qualified Due To Inadequate Engineering Review

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 NAMES	DOCKET NUMBER(S)
0 3	0 3	8 8	8 8	0 0 4	0 0	0 4	0 4	8 8	N/A	0 5 0 0 0
									N/A	0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
D.E. Baker, Event Analysis, Reporting & Response Manager	AREA CODE 5 0 4 — 4 6 4 - 3 1 1 3

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

At 1731 hours on March 3, 1988, Waterford Steam Electric Station Unit 3 was operating at 100% power when it was identified that environmental qualification (EQ) of containment isolation valve ARMISV-0109 valve position indication (VPI) was suspect. A review determined that a required environmental seal (ES) was missing from the VPI conduit, therefore the VPI may not have been in compliance with the NRC Regulatory Guide (RG) 1.97 requirements. RG 1.97 states instrumentation must survive in an accident environment for the length of time its function is required. Without a conduit seal the VPI may have not survived in an accident environment. Although test data gives some evidence that the VPI would survive in a harsh environment, the data is not conclusive. Therefore, the plant operated in a condition prohibited by Technical Specifications since initial startup.

The root cause was cognitive personnel error due to an improper EQ review with respect to RG 1.97. The valve was declared inoperable and the action requirement met. An ES has been installed to allow the valve to be returned to service and similar valves displayed no EQ discrepancies. There are two isolation valves in the affected penetration and ARMISV-0109 deenergizes shut. Therefore, the potential loss of indication of one isolation valve had no effect on safe operation of the plant.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

At 1731 hours on March 3, 1988, Waterford Steam Electric Station Unit 3 was operating at 100% power when Utility Engineering personnel identified that containment penetration isolation valve ARMISV-0109 (EIIS Identifier JM-FSV) failed to meet the valve position indication (VPI) operability requirement of Technical Specification (TS) 3.3.3.6 since initial plant startup. A Component Configuration Documentation Review determined that a required environmentally qualified conduit seal was missing from the VPI conduit and may result in a loss of VPI following an accident; therefore, the valve is not in compliance with the NRC Regulatory Guide (RG) 1.97 "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident". RG 1.97 states "it is essential that required instrumentation be capable of surviving the accident environment in which it is located for the length of time its function is required." In RG 1.97, Primary Containment Isolation Valve Position is Category 1 for the purpose of determining accomplishment of isolation, and Category 1 requires that continuous indication be provided. Since this valve is not required to be operated after an accident, this indication must be provided until it is verified that the valve has performed its safety function.

A review of Valcor Qualification Report QR52600-515 presents evidence of reactor coolant chemical spray leakage onto the contact block containing indicating switches during valve testing. The report states the test valve and indicating switches operated without malfunction throughout the 31 day test period. Although the test data demonstrates the VPIs ability to survive with moisture intrusion it cannot be determined how long the VPI could survive without an environmental seal to protect the conduit. Therefore, it is assumed that the requirements of RG 1.97 were not met and the plant has operated in a condition prohibited by TS.

The valve is a solenoid operated globe valve in the Containment Atmosphere Radiation Monitoring System (EIIS Identifier IK). It is one of two valves which operate to isolate the containment penetration for an Area Radiation Monitor (EIIS Identifier IK-MON) upon a Containment Isolation Actuation Signal (CIAS). The valve ARMISV-0109 is located inside the containment and is therefore subject to a harsh environment during an accident condition. The other isolation valve ARMISV-0110 is located outside the containment in an environment which does not require a conduit seal. Both valves are required to deenergize and close within five seconds following a CIAS. After a CIAS, plant procedures require verification that all isolation valves have shut. A conservative time limit for accomplishment of this check is one hour. Therefore, the VPI should be qualified to survive a minimum of one hour after the onset of an accident in order to meet the applicable requirement of RG 1.97.

In December 1981, Louisiana Power & Light submitted to the NRC a document entitled "Response to NUREG-0588". NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety Related Equipment" provided guidance for licensees to establish and implement their program for environmental qualification of electrical equipment. The "Response to NUREG-0588", prepared for Louisiana Power & Light by its Architect Engineer, presented an in-depth program to review and document the environmental qualification of equipment in a harsh environment which is required to mitigate an accident and/or place the plant in a cold shutdown condition. Included within the scope of this report was all RG 1.97 Category 1 and Category 2 Post Accident Monitoring Instrumentation located in a harsh environment. The Architect Engineer failed to include valve ARMISV-0109 (contractor number 2CA-E604B) in the last revision of "Response to NUREG-0588" submitted in November, 1984. "Response to NUREG-0588" was used as a basis for Louisiana Power & Light's Equipment Qualification (EQ) List.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

In July 1986, the Architect Engineer performed a Component Functional Evaluation at Louisiana Power & Light's request for equipment design basis information. This evaluation identified that valve ARMISV-0109 has a safety function and could be subjected to a harsh environment. A recommendation was made by the contractor to add the valve to the EQ list but RG 1.97 was not addressed. Louisiana Power & Light's Engineers concurred that the valve needed to be added to the EQ list and a walkdown on the valve was performed in December 1986, to evaluate the valve's EQ status. The walkdown revealed the VPI conduit was installed without an environmentally qualified conduit seal. An engineering evaluation of the walkdown data was performed by a contractor and approved by a Utility Engineer. This evaluation correctly determined that the safety function of the valve is to deenergize closed on a CIAS and the valve is not required to be reopened following an accident. It was recognized that no credible electrical failure would prevent the valve from performing this safety function. Therefore, the evaluation determined an environmental conduit seal was not required for the VPI. Although the Environmental Qualification Procedure requires that RG 1.97 be referenced for applicability the evaluator incorrectly determined that RG 1.97 did not apply in this case.

In January 1988, a Contract Engineer reviewing Environmental Qualification Maintenance Input requested that ARMISV-0109 be evaluated with regard to RG 1.97. Equipment Qualification Engineers determined the valve did not meet RG 1.97 requirements and on March 3 the valve was declared inoperable. TS 3.3.3.6 allows containment isolation VPI to be inoperable if the provisions of TS 3.6.3 are complied with. Therefore the action requirements of TS 3.6.3 were entered and ARMISV-0109 was deenergized shut. The action requirements for the isolated area radiation monitor were also complied with.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

The root cause of this EQ discrepancy was cognitive personnel error in that various Architect and Utility Engineering personnel failed to recognize the VPI required EQ and therefore failed to specify an appropriate seal. The EMDRAC Drawing 5817-04395 produced by the valve manufacturer notes the conduit connection should be sealed to prevent entrance of moisture through the conduit and maintain the validity of the IEEE-323 Qualification. IEEE-323 provides guidance for demonstrating that EQ requirements have been met. The Control Wiring Diagram and Cable Conduit List produced by the Architect Engineer did not require an EQ conduit seal and the valve was installed without one. The immediate corrective action upon discovery was to deenergize shut ARMISV-0109 to meet the action requirement of TS 3.6.3. A Temporary Alteration (TA-88-004) was installed to environmentally seal the conduit. This action was completed under Condition Identification 254381 and ARMISV-0109 was declared operable on March 7, 1988. A standard design environmental seal will be installed in the third refueling outage. Other EQ solenoid valves located inside the containment which require sealing were reviewed to ensure environmental conduit seals were installed if necessary. No discrepancies were noted.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Two isolation valves, ARMISV-0109 and ARMISV-0110, deenergize shut to isolate the containment penetration on a CIAS. Valve ARMISV-0110 is external to the containment and in an environment which does not require a conduit seal. Therefore, it would be available to provide continuous indication that the containment penetration has been isolated. Since valve ARMISV-0109 deenergizes shut, no credible electrical failure would prevent it from performing its safety function regardless if position indication was lost. Further, this valve is located in an area in which exposure to direct impingement by high pressure steam is not expected. With the qualification test data demonstrating the VPI's ability to remain operational in the presence of some moisture intrusion during a 31 day test it can be speculated the VPI would survive at least one hour following an accident. Since the operation of the valve was unaffected and indication was likely to have operated for the time required, there was no safety significance to this event.

SIMILAR EVENTS

NONE

PLANT CONTACT

D.E. Baker, Event Analysis, Reporting and Response Manager 504/464-3133

LOUISIANA POWER & LIGHT / WATERFORD 3 SES • P.O. BOX B • KILLONA, LA 70066-0751

MIDDLE SOUTH UTILITIES SYSTEM

Ref: 10CFR50.73(a)(2)(i)

April 4, 1988

W3A88-0029
A4.05
QA

U.S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, D.C. 20555

SUBJECT: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Reporting of Licensee Event Report

Attached is Licensee Event Report Number LER-88-004-00 for Waterford Steam Electric Station Unit 3. This report is submitted pursuant to 10CFR50.73(a)(2)(i).

Very truly yours,

N.S. Carns
Plant Manager - Nuclear

NSC/WMC:rk

Attachment

cc: R.D. Martin, NRC Resident Inspectors Office, INPO Records Center (J.T. Wheelock), E.L. Blake, W.M. Stevenson, D.L. Wigginton

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