James S. Baumstark
Vice President
Nuclear Engineering

Consolidated Edison Company of New York, Inc.
Indian Point 2 Station
Broadway & Bleakley Avenue
Buchanan, New York 10511

Internet: baumstarkj@coned.com
Telephone: (914) 734-5354
Cellular: (914) 391-9005
Pager: (917) 457-9698
Fax: (914) 734-5718

July 16, 1999

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 1999-004-01

Document Control Desk
US Nuclear Regulatory Commission
Mail Station PI-137
Washington, DC 20555

The attached Licensee Event Report 1999-004-01 is hereby submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,

Attachment

cc: Mr. Hubert J. Miller
Regional Administrator - Region I
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. Jefferey Harold, Project Manager
Project Directorate I-1
Division of Reactor Projects I/II
US Nuclear Regulatory Commission
Mail Stop 14B-2
Washington, DC 20555

Senior Resident Inspector
US Nuclear Regulatory Commission
PO Box 38
Buchanan, NY 10511

IE20

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)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Indian Point No. 2	05000-247	1 OF 5

TITLE (4)

EQ Deficiency in Acoustic Monitors

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
03	05	1999	1999	-- 004 --	01	07	16	1999		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	N
POWER LEVEL (10)	099

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)	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)		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)
James J. Maylath, Senior Engineer	(914) 734-5356

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
A	AB	FE	T068	N					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X	YES (If yes, complete EXPECTED SUBMISSION DATE).		NO		07	01	2000

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

On March 5, 1999, a potential Equipment Qualification (EQ) deficiency was identified in the Acoustic Monitoring System. The station EQ file for this system did not contain any requirement to use RTV sealant around the hardline cable to accelerometer connection. Based on discussions with other utilities during an EQ self assessment, the need for sealing the hardline connectors was recognized. This was confirmed with the acoustic monitor manufacturer. Upon inspection of the connectors in question, it was verified that the hardline cable to accelerometer connectors did not have RTV sealant applied to them. The other ends of the hardline cables were covered with Raychem tubing which exceeds the sealing capabilities of RTV sealant.

RTV sealant was subsequently applied to two of the three hardline cable to accelerometer connectors. The cable to the third connector was found to be broken. The cable and connectors were replaced, and the connectors at both ends of the cable were properly sealed. The cause of EQ deficiency was determined to be the omission from the manufacturer's test report, which was used to qualify the acoustic monitors, of any reference to applying RTV sealant on the hardline cable to accelerometer connectors. The manufacturer stated that the RTV sealant requirement was in their installation procedure.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Indian Point No. 2	05000-247	1999	-- 004 --	01	2 OF 5

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

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

EQ Deficiency in Acoustic Monitors

EVENT DATE:

March 5, 1999

REVISED REPORT DATE:

July 16, 1999

REFERENCES:

Condition Reporting System (CRS) Nos. 199901685, 199901715, 199901721

PAST SIMILAR OCCURRENCE:

LER 1986-007

DESCRIPTION OF OCCURRENCE:

On March 5, 1999, with the reactor at 99% power, a potential Equipment Qualification (EQ) deficiency was identified in the Acoustic Monitoring System for the pressurizer safety valves. Technical Specifications require operability of this system, which is used for monitoring the position of the pressurizer safety valves. A station EQ self assessment was on going, and qualification requirements for the acoustic monitors were discussed with Indian Point 3. Based on these discussions, the need for sealing the hardline cable to accelerometer connection was recognized and was confirmed by the acoustic monitor manufacturer, Technology for Energy Corp. (TEC), and by EQ personnel at Palo Verde. The Indian Point 2 EQ file, EQ File 17, did not contain any requirement to seal the hardline cable to accelerometer connector. TEC stated that RTV sealant was used on the hardline cable to accelerometer connection during EQ testing documented in TEC Report 517-TR-03, Rev. 2, which was the test report that was used to qualify the acoustic monitors. However, there was no reference to RTV sealant in TEC Report 517-TR-03, Rev. 2 or in the TEC vendor manual. The TEC Installation Procedure No. 160-I-07, "TEC Model 160-2 Transient Shield, Endevco Accelerometers, and Associated Cabling Installation Instructions (Standard)," required RTV sealant to the connectors at both ends of the hardline cables.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Indian Point No. 2	05000-247	1999	-- 004 --	01	3 OF 5

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

DESCRIPTION OF OCCURRENCE (con't.):

Upon receiving confirmation of the requirement for RTV sealant on the hardline cable connectors, the acoustic monitors were declared inoperable, and the appropriate Technical Specification action statement was entered at approximately 0630 hours on March 5, 1999. An inspection of the Acoustic Monitoring System, Tag Nos. FE-3106, FE-3107, and FE-3108, was performed. This inspection verified that the hardline cable to accelerometer connectors did not have RTV sealant applied to them. The other ends of the hardline cables were covered with Raychem tubing which exceeds the sealing capabilities of RTV sealant.

RTV sealant was subsequently applied to two of the three hardline cable to accelerometer connectors (for FE-3106 and FE-3108). When preparing to apply the RTV sealant to the remaining connector (for FE-3107), the cable to this connector was found to be broken. The cable and connectors were replaced, and the connectors at both ends of the cable were properly sealed. The Technical Specification action statement was exited at approximately 1900 hours on March 9, 1999, after all newly applied RTV sealant had cured for 48 hours, as required.

ANALYSIS OF OCCURRENCE:

The Acoustic Monitoring System consists of sensors installed on the pressurizer code safety valves discharge lines that provides position indication, input into the plant computer (SAS and Proteus) and an alarm in the central control room of the line safety valves. The acoustic monitoring system was identified as requiring environmental qualification in accordance with 10 CFR 50.49. With the lack of RTV sealant on the three hardline cable to accelerometer connectors, the acoustic monitoring system may not have been capable of post accident monitoring, and the requirements of 10 CFR 50.49 were not met. This placed the plant in a condition that was outside the design basis of the plant, and reportable under 10 CFR 50.73(a)(2)(ii). Since the initial environmental qualification of the Acoustic Monitoring System in 1984, the system did not experience any harsh environment and was tested satisfactorily in accordance with Technical Specification surveillance requirements.

The operator does not rely on the pressurizer code safety valve acoustic monitors in the emergency operating procedures (EOPs). A harsh containment environment is indicative of a pipe break, and for such an environment, the operator will be following the EOPs. If a pressurizer code safety valve leaks, this leakage goes to the Pressurizer Relief Tank (PRT) without creating a harsh environment. For this scenario, the lack of RTV sealant does not impact the ability of the acoustic monitors to detect the leakage. Each pressurizer code safety valve line also has temperature instrumentation that provides indication, input into the plant computer (SAS and Proteus) and an alarm in the central control room. An increase in line temperature is indicative of pressurizer code safety valve leakage in the line. The Alarm Response Procedure (ARP) for high line temperature does address

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Indian Point No. 2	05000-247	1999	-- 004 --	01	4 OF 5

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

ANALYSIS OF OCCURRENCE (con't.):

pressurizer code safety valve leakage. For the acoustic monitor that had a broken cable, this temperature instrumentation provided an alternate means of detecting pressurizer code safety valve leakage in the line. Other parameters that the operator can use are PRT level, pressure and temperature. Each of these parameters provides an alarm in the central control room, and their ARPs address pressurizer code safety valve leakage. Also, pressurizer code safety valve line temperature and the PRT parameters are used in conjunction with the acoustic monitors for determination of pressurizer code safety valve leakage in the Abnormal Operating Instruction for excessive Reactor Coolant System (RCS) Leakage. For more significant RCS leakage, a reactor trip will be initiated, and the operator will be directed to the EOPs with reliance on parameters, such as pressurizer pressure and level, which meet EQ requirements.

Considering the above conditions when the operator would use the information provided by the acoustic monitors and the availability of the line temperature and the PRT parameters, this event did not have a significant impact on safety or core damage frequency risk.

CAUSE OF OCCURRENCE:

The cause of the lack of RTV sealant on the three hardline cable to accelerometer connectors was the lack of any reference to RTV in TEC Report 517-TR-03, Rev. 2 which was used to qualify the Acoustic Monitoring System. Indian Point 2 EQ files document qualification of EQ devices to their respective test reports. A review of the Indian Point 2 modification procedure, issued in 1984, that provided for the qualification of the acoustic monitors showed no reference to the above mentioned TEC installation procedure. This modification procedure included replacement of charge converters and cables between the converters and sensors. The replacement of the charge converters and cables was done under the supervision of a TEC field representative, and the work should have been done in accordance with TEC procedures. TEC was contacted during the investigation of the lack of RTV on the three hardline cable to accelerometer connectors; however, TEC was unable to find the procedures used for the 1984 replacement of the charge converters and cables in their files. Therefore, since Indian Point 2 qualified the equipment to the test report, and did not have any documentation supporting the RTV requirement, RTV application on the three hardline cable to accelerometer connectors was not done in the past.

The root cause for the lack of documentation for the RTV requirement was the omission of any reference of the RTV requirement in the vendor's qualification report and manual. A contributing factor was that the TEC field representative did not recognize the requirement for the RTV on the three hardline cable to accelerometer connectors. This resulted in the Indian Point 2 EQ file being inadequate. However, since the vendor installation procedure contained the RTV requirement, a

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Indian Point No. 2	05000-247	1999	-- 004 --	01	5 OF 5

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

CAUSE OF OCCURRENCE (con't.):

more comprehensive review and control of vendor information and documentation during the development and implementation of the modification procedure could have precluded this event. The broken cable (for FE-3107) most likely occurred while work was being performed outside the pressurizer shield wall during the 1998 maintenance outage, which concluded in September 1998. This monitor (FE-3107) had been satisfactorily tested during the 1997 refueling outage, and it was within its required refueling surveillance interval when the broken wire was found in March 1999. The duration that the monitor (FE-3107) was required but inoperable may have been seven months.

CORRECTIVE ACTION:

RTV sealant was applied to two of the three hardline cable to accelerometer connectors (for FE-3106 and FE-3108). For the remaining cable (for FE-3107), which was found broken, the cable and connectors were replaced, and the connectors at both ends of the cable were properly sealed. Further inspections of EQ equipment and files were performed. A sample size of 50 of 380 EQ items outside containment were selected. Upon finding some anomalies, such as incomplete RTV application, missing tags, and inconsistent data, the scope of the inspection was expanded to include nearly 200 items. This expanded scope included all items requiring RTV, both inside and outside containment, that were accessible with the plant at power (items not requiring RTV were not inspected). These items consisted of most EQ items associated with the containment fan coolers, as well as the main steam isolation valves and auxiliary feedwater flow, which is where anomalies were found during the initial inspections. The basis for determining RTV requirements was the existing EQ files, which are being further reviewed to assure that there are no additional RTV requirements not presently identified. Upon evaluation of the anomalies discovered, no operational deficiencies were found for any EQ equipment other than the acoustic monitors which are the subject of this report.

Further corrective action includes:

- The review process has been enhanced since the original EQ upgrade of the equipment in 1984 (any discrepancies result in questions to the manufacturer and/or writing a Condition Report).
- A sample of existing EQ files was reviewed for potential sealant deficiencies. No deficiencies were found.
- A monthly on-line functional surveillance test for the acoustic monitors has been developed.
- A written requirement for the application of RTV on the hardline cable to accelerometer connectors will be put into the EQ File for the acoustic monitors by October 31, 1999.
- Inspection of EQ items requiring RTV that were not done due to accessibility will be done no later than the 2000 refueling outage; also, any items identified in the above review of the EQ files as requiring RTV will be inspected and RTV will be applied as required no later than the 2000 refueling outage.