Stephen E. Quinn
Vice President

Consolidated Edison Company of New York, Inc.
Indian Point Station
Broadway & Bleakley Avenue
Buchanan, NY 10511
Telephone (914) 734-5340

June 2, 1997

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 97-09-00

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

The attached Licensee Event Report 97-09-00 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

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

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Indian Point Unit No. 2	0 5 0 0 0 2 4 7	1 OF 06

TITLE (4)

ESF Automatic Containment Isolation Valves

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 5	0 2	9 7	9 7	— 0 0 9	— 0 0	0 6	0 2	9 7		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10)	0 0 0		20.402(b)		20.405(c)	XX	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)		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
	AREA CODE
Philip E. Griffith, Sr. Licensing Engineer	9 1 4 7 3 4 - 5 1 9 0

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	XX NO			

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

At 20:35 on May 2, 1997 with the reactor coolant system (RCS) temperature at 260 degrees Fahrenheit and RCS pressure at 378 PSIG during cooldown in preparation for the 1997 refueling outage, a station ventilation radiation monitor R-44 alarm was received at 3.47 E-5 µCi/cc, which resulted in an isolation of the vapor containment (VC) purge supply and exhaust valves and activation of the weld channel pressurization system (WCPS) to the VC purge valves. Although the VC purge supply and exhaust valves and the WCPS to the VC purge valves, are engineered safety feature (ESF) components, their closure was in response to low levels of radioactivity and not a containment isolation signal as a result of an ESF actuation.

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Unexpected closure of the VC purge supply and exhaust valves, which also function as ESF automatic containment isolation valves, and activation of the WCPS to the VC purge valves.

EVENT DATE:

May 2, 1997

REPORT DUE DATE:

June 2, 1997

REFERENCES:

Condition Identification and Tracking System (CITRS) No. 97-E01358, Abnormal Operating Instructions A 12.1.1, High Activity Containment Air Particulate and Radiogas Monitor R-41/42 and A 12.1.2, High Activity Plant Vent Particulate And Radiogas Monitor R-43/44, Annunciator Response Procedure ARP SAF-1 Process Radiation Monitors, System Operations Procedure SOP 5.2.4 Calculation And Recording of Radioactive Gaseous Release and LERs 91-023-00, 92-012-00 and 95-018-00

PAST SIMILAR OCCURRENCE:

LER 91-023-00, LER 92-012-00 and LER 95-018-00

DESCRIPTION OF OCCURRENCE:

On May 2, 1997 at 20:35 with the RCS temperature at 260 degrees Fahrenheit and RCS pressure at 378 PSIG during cooldown in preparation for the 1997 refueling outage, the station ventilation radiation monitor R-44 alarm was received at 3.47E-5 µCi/cc which resulted in an isolation of the VC purge supply and exhaust valves and activation of the WCPS to the VC purge valves. Since the source of activity was known by the operations staff, the following actions were performed to recover from the R-44 actuation:

- R-44 set point was checked by the Reactor Operator
- the R-44 alarm was reset
- the R-44 set point was adjusted to 1.32 E-4 µCi/cc
- the VC purge was re-established
- A four hour non-emergency notification was made under 10 CFR 50.72

ANALYSIS OF OCCURRENCE :

During the shutdown for refueling, containment activity had been in steady state at less than 5.0 E-5 µCi/cc and pressurizer relief tank (PRT) pressure was between 1.0 and 1.5 psig. At 03:08 on May 1, 1997 a main steam safety valve stuck open during valve testing, in preparation for cooldown, causing an automatic initiation of the safety injection (SI) system. During the SI, the operators observed five cycles of the pressurizer power operated relief valve (PORV), which caused the PRT pressure to increase to approximately 10 PSIG. The readings from the VC radiogas monitor R-42 tracked the increase of the PRT pressure, to a value of 2.45 E-4 µCi/cc. The Senior Reactor Operator (SRO) log entry at 05:45 on May 1, 1997 states the following:

- R-42 in alarm, entered A 12.1.1
- A slow upward trend was observed on R-42
- PRT filling operation to reduce PRT pressure in progress

The operators performed a VC pressure relief using Radioactive Release Permit (RRP) 97-309 from approximately 15:05 to 16:00 on May 2, 1997 to reduce the VC activity. The SRO log entry at 16:07 indicated that the attempts made to decrease PRT pressure had been unsuccessful.

Early on the May 1, 1997 19:00 to 07:00 night shift, RRP 97-312 was initiated in preparation for a purge of containment to reduce containment radiogas, which had reached 3.0 E-4 µCi/cc. The plant vent radiation monitor R-44 setpoint was calculated to be 1.32 E-4 µCi/cc and the purge discharge limit was calculated to be 3.38 E-3 Ci/sec. Because the calculated limit exceeded 1.2 E-3 Ci/sec, the Reactor Operator sought authorization from the Operations Manager as required by SOP 5.2.4, step 3.3.11.1. The Operations Manager's

ANALYSIS OF OCCURRENCE (continued) :

approval was obtained and the R-44 high alarm setpoint was adjusted to 1.32 E-4 µCi/cc. At 21:55 on May 1, 1997 the VC purge was initiated and containment radiogas began an immediate decline. Since VC purge rate (approximately 2400 CFM) was lower than the normal SOP 5.2.4 requirement, step 3.3.15 required a recalculation of the R-44 high alarm setpoint. The new calculation resulted in a purge discharge limit of 5.6 E-4 Ci/sec and a R-44 high alarm setpoint of 3.46 E-5 µCi/cc. The R-44 high alarm setpoint was adjusted to 3.46 E-5 µCi/cc and the purge was continued. Between 22:00 on May 1, 1997 and 05:00 on May 2, 1997, the RCS was depressurized from 2235 to 400 psig. Readings from R-42 and R-44 both indicated a continuous reduction in measured activity until approximately 08:00 on May 2, 1997 when a slow increase in VC and purge activity started. At 15:40 nitrogen flow to the pressurizer was initiated to change over from a steam to a nitrogen bubble. Within an hour of beginning the nitrogen addition to the pressurizer, the PRT pressure started to increase followed by increases in both the VC radiogas and VC purge radiogas levels. Between 18:30 and 19:00 on May 2, 1997 seven R-44 WARN alarms annunciated and at 19:00 the R-44 WARN alarm setpoint was raised from 2.50 E-5 to 2.80 E-5 µCi/cc. Between 19:16 and 19:58 four additional WARN alarms annunciated and at 19:58 the WARN alarm did not clear, which blocked any additional WARN alarms from annunciating. At 20:32 the R-44 HIGH alarm annunciated, the VC purge release automatically terminated and WCPS initiated to the VC purge valves. All systems functioned as designed and no operator action was required to complete the automatic actions.

At 20:35 the VC purge was reinitiated under permit 97-312 with a 1.32 E-4 µCi/cc HIGH alafm setpoint.

The VC purge isolation valves also function as containment isolation valves, and the containment isolation system and WCPS are ESFs. These events are reportable under 10 CFR 50.73(a)(2)(iv) because they involve automatic actuations of ESF components. The actuation of the ESF components was not in response to an ESF signal and was not required to mitigate any adverse radiological event.

CAUSE OF OCCURRENCE :

The VC purge supply and exhaust valves closure and activation of the WCPS to the VC purge valves occurred due to the following:

- an improperly installed PRT rupture disk assembly which allowed radiogasses to escape to the VC atmosphere

  The rupture disk assembly was installed during the 1991 refueling outage using a Maintenance Procedure that did not provide adequate direction for the installation of the rupture disk assembly (CITRS report 97-E01587).

- a release permit procedure that does not provide user friendly support to operators performing release calculations

  SOP 5.2.4 has many human factors concerns, for example, the procedure is lengthy which creates problems associated with place keeping, the variables in the calculations have numerous subscripts which cause confusion and the directions for obtaining Radiological Support assistance when required are not clear (SAO 132 report 97-031).

- the high number of WARN alarms received from VC Purge radiation monitor R-44, to the point where the operators allowed the alarm to remain in solid thus preventing additional alarms from annunciating

  The operations personnel indicated that the high number of WARN alarms received were not unusual during VC pressure relief operations, with this being the case the operators can become conditioned to expect the alarms thus reducing the effectiveness of the alarm barrier (SAO 132 report 97-031).

CORRECTIVE ACTIONS:

- The Maintenance procedure used to install the rupture disk assembly has been revised since its 1991 use which installed the subject assembly. A review of the current procedure indicated that the previous procedure inadequacies have been corrected with the current revision and should prevent a recurrence of the improper assembly.
- Both of the PRT rupture disk assemblies have been replaced and reassembled during the current refueling outage.
- The release permit procedure SOP 5.2.4, Calculation and Recording of Radioactive Gaseous Release is scheduled for revision by August 31, 1997 to resolve identified human factors concerns.
- A computerized release permit will be developed and verification and validation performed and incorporated for use by the operations staff to improve the operator's ability to perform release calculations. This project is scheduled for completion by September 30, 1997.
- This event and the expected actions to be taken to prevent further occurrences will be reviewed with all operations crews by June 30, 1997.