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June 10, 1999

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 99-09-00

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

The attached Licensee Event Report 99-09-00 is hereby submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,

Attachment

C: 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
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US Nuclear Regulatory Commission
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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 6

TITLE (4)

Toxic Gas Monitor setpoint drift caused Technical Specification limit to be exceeded.

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
										05000
5	11	1999	1999	-- 009 --	00	6	10	1999	FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	N
POWER LEVEL (10)	99

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)
John P. Beck, Senior Engineer	(914) 734-5692

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
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

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

On May 11, 1999, with the unit at approximately 99 percent power, an engineering evaluation of the Toxic Gas Monitor setpoints determined that ammonia monitor drift could cause the Technical Specification limits on detectability to be exceeded. Both ammonia monitors (AC-5092 and AC-5095) in the Toxic Gas Monitoring system were declared inoperable. Accordingly, the declaration was based on the conclusion that both channels of ammonia monitors could have failed to detect a concentration of 25 ppm as required by Technical Specification 3.3.H.3.

Subsequently, the ammonia channel set point calculation was revised to document the as-found allowance for the monthly and quarterly set point based on drift such that the Technical Specification limit on detectability of 25 ppm would not be exceeded. A modification was implemented to affect this set point change and the Toxic Gas Monitor ammonia channels were declared operable. The threshold limit value for ammonia is 25 ppm and signifies that a worker can be exposed to this concentration for 40 hours per week without detrimental effect. According to Regulatory Guide 1.78, the toxicity limit for ammonia is 100 ppm. Sufficient time was available for the donning of Self Contained Breathing Apparatus. Therefore, the health and safety of the public were not adversely affected by this event.

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Review of engineering evaluation results for Toxic Gas Monitor set points.

EVENT DATE:

May 11, 1999

REPORT DUE DATE:

June 10, 1999

REFERENCES:

Condition Reporting System (CRS) No. 199903774

PAST SIMILAR OCCURRENCE:

None

DESCRIPTION OF OCCURRENCE:

On May 11, 1999 at approximately 13:20 hours, with the unit at approximately 99 percent power, both ammonia monitors (AC-5092 and AC-5095) in the Toxic Gas Monitoring system were declared inoperable. The alarm set point was 21 ppm. The loop inaccuracy of 8.4 ppm and the drift per quarter were determined to be 18 ppm. Accordingly, the inoperability declaration was based on the conclusion that both channels of ammonia monitors could have failed to detect a concentration of 25 ppm as required by Technical Specification 3.3.H.3.

ANALYSIS OF OCCURRENCE :

The Indian Point Unit 2 Control Room Habitability Study and NRC Regulatory Guide 1.78 provide discussion of assumptions and regulatory positions for evaluating the habitability of a nuclear power plant control room during postulated hazardous chemical releases.

The threshold limit value for ammonia is 25 ppm, and signifies that a worker can be exposed to this concentration for 40 hours per week and have no detrimental effects. The Short Term Exposure Limit (STEL), of 35 ppm, is the concentration a worker can be exposed to for 15 minutes without a detrimental effect.

The toxicity limit for ammonia is 100 ppm. In accordance with the guidance provided in Regulatory Guide 1.78, the toxicity limit is the maximum concentration that can be tolerated for two minutes without incapacitating an average human (i.e., severe coughing, eye burning, or severe skin irritation). Two minutes is considered sufficient time for a trained operator to don self-contained breathing apparatus. The current 25 ppm detectability set point is fully supportive of the 100 ppm eventual Central Control Room ammonia concentration when considering the 2 minute delay for the donning of Self Contained Breathing Apparatus (SCBA).

Technical Specifications require the alarm/trip setpoint for the ammonia toxic gas channel to be set to actuate at a concentration of 25 ppm or less.

These events are reportable under 10 CFR 50.73(a)(2)(ii)(B) for a condition that was outside the design basis of the plant. The basis for reportability was that the Technical Specification 3.3.H.3 requirement for ammonia channel toxic gas monitoring instrumentation was not met.

CAUSE OF OCCURRENCE :

The vendor manual for the Toxic Gas Monitor ammonia sensor does not adequately state the expected instrument set point drift. The manual, for the installed model ammonia transmitter, states the linearity and repeatability each are +/- 2 percent of Full Scale. The manual however does not provide

CAUSE OF OCCURRENCE (Continued):

information on the drift between calibration periods.

When the current toxic gas monitors were installed via modification in 1991, the sensor manufacturer's representatives stated the ammonia sensor drift to be +/- 2 ppm per month for a 0 to 50 ppm range device. The calculated ammonia transmitter loop accuracy resulted in a 3.3 ppm uncertainty. However, with the inclusion of an additional 20 percent margin for conservatism, the degree of uncertainties resulted in a new setpoint of 21 +/- 4 ppm (25 ppm limit). Adjusting the instrument span requires a source of span gas with a known concentration of ammonia. The sensor manufacturer recommends a standard gas concentration of at least 50 percent of full scale. The toxic gas monitors' ammonia channel full scale range is 50 ppm and during calibrations a gas concentration of 48 ppm ammonia is typically used.

On February 18, 1999 the station received information from the ammonia sensor/transmitter manufacturer indicating a decrease in sensitivity of 2.5 to 5.0 ppm per month. Together, this new sensitivity information and the current 90-day calibration interval imply as much as 15 ppm drift per quarter could exist. Review of this information by the System Engineer and Design Engineer inappropriately determined that the calculation for quarterly ammonia span did not apply to the setpoint at which the CCR ventilation swapped to "Incident Mode." This error resulted in the delay to change the ammonia monitor set-point based on drift, which would have precluded any potential exceedance of the Technical Specification limit.

Review of past test data also revealed that the ammonia sensors failed the performance test acceptance criteria several times over the past two years. Accordingly, the system engineer was tasked to investigate the cause of these failures and provide recommendations to repair or replace the current system with one that was more reliable. Previous attempts to increase the reliability of the Toxic Gas Monitors included: 1) the use and implementation of a calibrated Zero air standard for the monthly Zero check and the quarterly span check during gas calibrations; 2) obtaining and comparing Zero calibration data and relative humidity data to determine if a correlation existed to demonstrate a trend for zero drift; 3) review of plant specific data with the manufacturer to support decisions on this issue.

CAUSE OF OCCURRENCE (Continued):

The manufacturer's manual for the installed ammonia sensor states the accuracy is a combination of the linearity and repeatability; each +/-2 percent of full scale. Not satisfied with the results of the calibration test, the Toxic Gas Monitoring System Engineer and a Design Engineer requested further information from the manufacturer regarding sensor drift beyond what was stated in the manufacturer's model-specific literature.

The cause of this event is attributed to personnel error. This is based on failure of the involved parties to recognize and sufficiently understand that the loop accuracy applied to both the standard gas (48 ppm) as well as the setpoint (21 ppm). Inclusion of loop inaccuracy (8.4 ppm) in the current setpoint value (21 ppm) created exceedance of the Technical Specification limit of 25 ppm during the periods between calibrations.

CORRECTIVE ACTIONS:

Immediate Action:

Subsequent to the ammonia toxic gas monitors being declared inoperable, the CCR Ventilation was placed in Internal Recirculation Mode in accordance with Technical Specification 3.3.H.3.

Near Term:

The ammonia channel setpoint calculation was revised to document the as-found allowance for the monthly and quarterly setpoint based on drift such that the Technical Specification limit of 25 ppm would not be exceeded. A modification was implemented to affect this setpoint change and the Toxic Gas Monitor ammonia channels were declared operable. Subsequently, the CCR ventilation system was restored to the "Normal Mode".

Longer Term:

An increase of the current 25 ppm Technical Specification set point to a value of 35 ppm or less will be evaluated. Depending on this evaluation, a request for Technical Specification Amendment and a modification to change the set point could be sought. The evaluation to revise the set point value to 35

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

CORRECTIVE ACTIONS (Continued):

ppm is scheduled for completion by September 1, 1999.

The Test and Performance procedure used for the calibration of the Toxic Gas Monitors will be revised to reflect a change from quarterly to monthly periodicity. This is scheduled for completion by July 1, 1999.