



Commonwealth Edison
LaSalle County Nuclear Station
2601 N. 21st. Rd.
Marseilles, Illinois 61341
Telephone 815/357-6761

May 07, 1993

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Dear Sir:

Licensee Event Report #91-010-01, Docket #050-373 is being submitted to your office in accordance with 10CFR50.73(a)(2)(iv).

G. F. Spedl
Station Manager
LaSalle County Station

GFS/JDS/grv

Enclosure

xc: Nuclear Licensing Administrator
NRC Resident Inspector
NRC Region III Administrator
INPO - Records Center
IDNS Resident Inspector

140032

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) LaSalle County Station Unit 1 Docket Number (2) 015000373 Page (3) 1 of 04

Title (4)

Spurious Auto Start Of Control Room Ventilation Emergency Makeup Train Due To High Radiation Spike

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)
07	19	91	91	010	01	08	19	91		01500001

OPERATING MODE (9) 1

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

20.402(b)	20.405(c)	X	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)
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: Joseph Sparacino, Technical Staff Engineer, Extension 2779

TELEPHONE NUMBER: AREA CODE 815, 357-6761

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD
B	P	R		Y					

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15)

[Yes (If yes, complete EXPECTED SUBMISSION DATE)] X [NO]

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

On July 19, 1991 at approximately 0520 hours with Unit 1 in Operational Condition 1 (Run) at 100 percent power, the "A" Control Room Ventilation Emergency Make-Up (VC) [VI] Fan OVC03CA auto started on a spurious trip of the control room air intake Process Radiation (PR) [IL] Monitor 1D18-K751B.

On August 5, 1991 at approximately 0742 hours with Unit 1 in Operational Condition 1 (Run) at 98 percent power, the "A" Control Room Ventilation Emergency Make-Up (VC) [VI] Fan OVC03CA auto started on a spurious trip of the Control Room air intake Process Radiation (PR) [IL] Monitor 1D18-K751B.

The apparent cause of the first event was random spikes from the power supply board of the Radiation Monitor 1D18-K751B. The observations of the power supply signal indicated that random spikes were taking place and that this could be a cause of the high radiation spikes.

The apparent cause of the second event was determined to be from normal variations in background radiation readings.

The safety consequences of both of these events were minimal because the system worked as designed according to the high radiation indication. Also the fact that only one out of the four detectors registered high radiation readings, indicated that the initiation was not due to radiation.

To correct the problem of the first event the power supply board was replaced and the rad monitor electronic signals were observed again. The action of replacing the power supply board appears not to have worked because the event reoccurred on August 5, 1991. The work had been completed three days prior to this most recent occurrence. The corrective action for the High Radiation Spike is to modify the Radiation Monitor Circuit. The modified circuit gives the monitor a smoother wave form and a more stable response.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				Page (3)		
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LaSalle County Station Unit 1	0 5 0 0 0 3 7 3	9 1	- 0 1 0	- 0 1	0 2	OF	0 4	

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

A. CONDITION PRIOR TO EVENT

Unit(s): 1 Event Date: 07/19/91 Event Time: 0520 Hours
 Reactor Mode(s): 1 Mode(s) Name: Run Power Level(s): 100%

B. DESCRIPTION OF EVENT

On July 19, 1991 at approximately 0520 hours with Unit 1 in Operational Condition 1 (Run) at 100 percent power, the "A" Control Room Ventilation Emergency Make-Up (VC) [VI] Fan OVC03CA auto started on a spurious trip of the Control Room air intake Process Radiation (PR) [IL] Monitor 1D18-K751B. The radiation monitor readings were .3 mrem/hour before the spike and .4 mrem/hour after the spike had occurred. The trip setpoint is 3 mrem/hour and only one detector out of four is needed to cause this actuation. Control Room HVAC System (VC) [VI] and Auxiliary Electric Equipment Room Ventilation (VE) [VI] remained in standby during this event.

On August 5, 1991 at approximately 0742 hours with Unit 1 in Operational Condition 1 (Run) at 98 percent power, the "A" Control Room Ventilation Emergency Make-Up (VC) [VI] Fan OVC03CA auto started on a spurious trip of the Control Room air intake Process Radiation (PR) [IL] Monitor 1D18-K751B. The high radiation signal immediately returned to normal and was manually reset. The Emergency Safety Feature (ESF) signal was reset and the VC Emergency Make-Up Fan was placed in Pull-To-Lock pending further investigation. A seven day timeclock was entered due to the VC Emergency Make-Up Fan being in the Pull-To-Lock position. The other three Radiation Monitors indicated normally throughout the event.

C. APPARENT CAUSE OF EVENT

The apparent cause of the first event was random spikes from the power supply board of the Radiation Monitor 1D18-K751B. This was discovered by, first installing a Temporary System Change (TSC-1-1194-91) to defeat the trip signal from this Radiation Monitor, and second to observe the electronic signals of the radiation monitor for a period of time. The observations of the power supply signal indicated that random spikes were taking place and that this could be a cause of the high radiation spikes. No other unusual observations were made from the radiation monitor electronic signals. There was also no other evolutions that were taking place at the time of this incident.

The apparent cause of the second event was due to a spurious high radiation spike from the 1D18-K751B radiation monitor. The high radiation spike was due to normal variations in background radiation.

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LaSalle County Station Unit 1		0	5	0	0	0	3	7	3	9	1	-	0	1	0	-	0	1	0	3	OF	0	4
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C. APPARENT CAUSE OF EVENT (CONTINUED)

In all of the previous events listed below, the exact cause of the event is unknown. A possible cause that is common to a few of the Licensee Event Reports is a spurious electronic noise within the radiation monitor, but in most of the cases the only corrective actions performed were to troubleshoot the problem and then recalibrate the instrument. After one of the previous events (373/86-021) took place, the Radiation Monitor was replaced and recalibrated. This showed to have had no effect since the event repeated itself four days after the work was complete. None of the previous events seem to only happen on one of the detectors. In fact all four of the Radiation Monitors have caused an initiation at some time. From the previous event reports, it appears that the initiations are random in time and on which radiation monitor it occurs.

Nuclear Plant Reliability Data Systems (NPRDS) was reviewed and there is not an industry problem with this Process Radiation Monitor or the General Atomics Company.

D. SAFETY ANALYSIS OF EVENT

The safety consequences of both of these events were minimal because the system worked as designed according to the high radiation indication. Also the fact that only one out of the four detectors registered high radiation readings, indicated that the initiation was not due to radiation.

E. CORRECTIVE ACTIONS

To correct the problem of the first event the power supply board was replaced and the radiation monitor electronic signals were observed again. The power supply signal showed no signs of erratic behavior and the Temporary System Change was removed and the detector was considered operable. The action of replacing the power supply board appears not to have worked because the event reoccurred on August 5, 1991. The work had been completed three days prior to this most recent occurrence. The work request was reopened and troubleshooting will resume. The supplement to the LER will be tracked by Action Item Record 373-180-91-08201.

To correct this second problem, a Root Cause Investigative Team was formed. To assist with the solution to this problem, a Senior Design Engineer from the manufacturer was on site during the week of October 5, 1992. At that time a proposal was made to modify the electronics of the radiation monitors and detectors. This modification took place between March 10 and March 17, 1993, on all eight of the Control Room Ventilation Radiation Monitor Assemblies, (both A and B trains). The change to the radiation monitors consisted of replacing four of the existing capacitors with new capacitors of a different capacitance. There were several improvements resulting from the capacitance change. The most important was the change in which the monitor reads the signals from the radiation detector. The response time of the monitor was increased thus allowing the circuit to monitor a smoother waveform. This should prevent the spurious spikes from occurring because the monitor will not allow the quick instantaneous spike to occur. Another capacitance change was done to the circuit which prevents an initiation signal from being sent to the monitor while it is in the check source mode. The dead time is the time delay that prevents an initiation signal from being sent out after the monitor is taken out of the check source mode.

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E. CORRECTIVE ACTIONS CONTINUED

The dead time had been increased because of the previous change. Because the reponse time for the monitor has been increased, it means that it will also take longer for the levels to decrease after the monitor has been taken out of the check source mode. The last change that was made to the monitor was to increase the malfunction trip delay time. This is the time in which the monitor must see some sort of background radiation level. If no background radiation can be detected within that time frame, then the monitor will extinguish its (green) operate light to warn the user that maybe something is wrong.

Actual changes to the radiation detectors themselves have not taken place as of yet but will be accomplished as soon as the weather permits. This is due to the fact that the detectors are located on top of the Auxiliary Building Roof inside of sealed boxes. The detectors are very susceptible to moisture. These changes will include a new Geiger Mueller (G-M) Tube and bracket, and two resistors will be replaced because of the new G-M tube.

The performance of the radiation monitors has already shown improvements.

Also, a Modification (M01-0-88-003) is planned which will change the logic of the actuation to initiate on high radiation signals of two out of four Process Radiation Monitors instead of just one out of four.

F. PREVIOUS EVENTS

LER Number	Title
373/91-008-00	Spurious Auto Start Of Control Room Ventilation Emergency Makeup Train
373/88-016-00	Auto Start Of Control Room Ventilation EMU Train Due To Spurious Spike Of The Intake Rad Monitor
373/87-034-00	Auto Start Of "A" VC EMU On Spurious Rad Spike
373/86-025-00	Spurious Trip Of Control Room Ventilation Hi Radiation Monitor
373/86-021-00	Control Room Ventilation Actuation Due To Spurious Rad Monitor Trip

G. COMPONENT FAILURE DATA

There was no component failures.