

LICENSEE EVENT REPORT (LER)

| | | | | | | | | | | | | | | | | |
|--|--------|--|----------------|--------------------|-----------------|------------------|-----------------|-----------|----------------------|---|--|--|--|----------------------|-----|------|
| FACILITY NAME (1) Quad-Cities Nuclear Power Station, Unit 1 | | | | | | | | | | DOCKET NUMBER (2) 0 5 0 0 0 2 5 4 | | | | PAGE (3) 1 OF 0 4 | | |
| TITLE (4) Unit 1 Fuel Pool Monitors Spiked High | | | | | | | | | | | | | | | | |
| 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 NA | | | DOCKET NUMBER(S) 0 5 0 0 0 | | | | |
| 0 3 | 0 7 | 8 5 | 8 5 | 0 0 5 | 0 0 | 0 4 | 0 2 | 8 5 | | | | 0 5 0 0 0 | | | | |
| OPERATING MODE (9) 4 | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11) | | | | | | | | | | | | | | |
| POWER LEVEL (10) 1 0 0 | | 20.402(b) | | | | 20.405(c) | | | | <input checked="" type="checkbox"/> 50.73(a)(2)(iv) | | | 73.71(b) | | | |
| | | 20.405(a)(1)(i) | | | | 50.38(c)(1) | | | | <input type="checkbox"/> 50.73(a)(2)(v) | | | 73.71(e) | | | |
| | | 20.405(a)(1)(ii) | | | | 50.38(c)(2) | | | | <input type="checkbox"/> 50.73(a)(2)(vi) | | | OTHER (Specify in Abstract below and in Text, NRC Form 366A) | | | |
| | | 20.405(a)(1)(iii) | | | | 50.73(a)(2)(i) | | | | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | | | | | | |
| | | 20.405(a)(1)(iv) | | | | 50.73(a)(2)(ii) | | | | <input type="checkbox"/> 50.73(a)(2)(viii)(B) | | | | | | |
| | | 20.405(a)(1)(v) | | | | 50.73(a)(2)(iii) | | | | <input type="checkbox"/> 50.73(a)(2)(ix) | | | | | | |
| LICENSEE CONTACT FOR THIS LER (12) | | | | | | | | | | | | | | | | |
| NAME Craig A. Iben, Technical Staff Engineer | | | | | | | | | | TELEPHONE NUMBER AREA CODE 3 0 9 6 5 4 - 2 2 4 1 | | | | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | | | | | | |
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs | | | | | | |
| X | ILRT | | G 0 8 0 | N | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| SUPPLEMENTAL REPORT EXPECTED (14) | | | | | | | | | | | | EXPECTED SUBMISSION DATE (15) | | MONTH | DAY | YEAR |
| <input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) | | | | | | | | | | | | <input checked="" type="checkbox"/> NO | | | | |

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

On March 6, 1985, Unit One was operating at 100 percent thermal power. The Unit One Reactor Building Ventilation System (VA) was out of service for repairs, and the Standby Gas Treatment System (BH) was operating. At 9:05 a.m. the 1A Fuel Pool Radiation Monitor (IL) failed downscale. The cause of the downscale could not be determined and the monitor was returned to operation. On March 7, 1985, at 12:18 a.m., the 1B Fuel Pool Radiation Monitor spiked high, isolating the Reactor Building Ventilation (VA) and starting the Standby Gas Treatment System (BH). Subsequent to this event, the 1A Fuel Pool Radiation Monitor spiked high 12 times. No abnormal radiation levels were observed by the Radiation Protection personnel, and Technical Specification limits were met at all times.

The probable cause of these failures is surmised to be electrical "noise" interference. A modification was issued to install a 50 microfarad capacitor in parallel with the monitor amplifier feedback resistor to increase the signal response's time constant. This installation was completed on Unit One on March 15, 1985.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

Event Description

On March 6, 1985, Unit One was in the RUN mode operating at 100 percent thermal power. The Unit One Reactor Building Ventilation System (VA) was out of service for repairs, thus, the Standby Gas Treatment System (SBGTS) (BH) was operating.

At 9:05 a.m. the 1A Fuel Pool Radiation Monitor (IL) failed downscale energizing the "FUEL POOL CHANNEL A DOWNSCALE" alarm. Per QOS 1700-01, "Refueling Floor Ventilation Radiation Monitor Inoperable Outage Report", the 1B Fuel Pool Radiation Monitor was verified to be operable immediately.

Technical Specification 3.2.D.1 requires that two Refueling Floor radiation monitors to be operable whenever irradiated fuel or components are present in the Fuel Pool. Technical Specification 3.2.D.2 allows any one of the monitors to be inoperable for a 24 hour period, then if not repaired, the Reactor Building Ventilation must be isolated and SBGTS must be operated.

Instrument Maintenance personnel investigated the downscale failure and no apparent cause of failure could be found. The monitor was returned to operation in less than 24 hours.

During the subsequent eight days, the 1A Fuel Pool Radiation Monitor had 12 incidents of spiking high and the 1B Fuel Pool Monitor had one incident of spiking high. These occurrences are documented chronologically as follows:

| | | |
|----------------|------------|---|
| March 7, 1985 | 12:18 a.m. | 1B monitor spiked high, reset immediately |
| | 12:32 a.m. | 1A monitor spiked high, reset immediately |
| | 12:40 a.m. | 1A monitor spiked high, reset immediately |
| | 12:57 a.m. | Radiation Protection personnel reported that radiation dose rates were normal at the Fuel Pool monitor area. |
| | 1:20 a.m. | 1A monitor spiked high, reset immediately (Instrument Maintenance personnel investigated and replaced the 1A sensor.) |
| March 9, 1985 | 1:25 p.m. | 1A monitor spiked high, reset immediately |
| March 10, 1985 | 8:55 a.m. | 1A monitor spiked high, reset immediately |

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

Event Description (continued)

| | | |
|----------------|-----------|--|
| March 12, 1985 | 4:05 p.m. | 1A monitor spiked high, reset immediately |
| | 6:43 p.m. | 1A monitor spiked high, reset immediately |
| March 13, 1985 | 4:45 p.m. | 1A monitor spiked high, reset immediately |
| | 7 p.m. | 1A monitor spiked high, reset immediately |
| | 7:05 p.m. | 1A monitor spiked high, reset immediately |
| March 14, 1985 | 1:06 a.m. | 1A monitor spiked high, reset immediately |
| | 3:35 a.m. | 1A monitor spiked high, reset immediately |
| | 3:45 a.m. | 1A monitor bypassed to install feedback resistor parallel capacitor. |
| | 7:35 p.m. | 1A monitor out of bypass |
| | 7:50 p.m. | 1B monitor bypassed to install feedback resistor parallel capacitor. |
| March 15, 1985 | 1:35 p.m. | 1B monitor out of bypass |

The Fuel Pool Radiation Monitoring System logic is designed to initiate the SBGTS and isolate the Reactor Building Ventilation System on an upscale signal from any Fuel Pool Monitor; or a downscale signal from both Fuel Pool Monitors of the same unit.

Each aforementioned upscale spiking incident initiated the SBGTS (if not previously operating) and isolated the Reactor Building Ventilation System (if not previously isolated out of service) as designed. No abnormal radiation dose rates were observed by the Radiation Protection personnel and no single Fuel Pool Monitor was inoperable more than the 24 hour limit. Thus, the safety implications of these events were minimal.

This report is being submitted as required by the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(iv).

Cause

The exact cause for the radiation monitor spiking has not been determined. The most probable cause is surmised to be electrical "noise" interference.

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

Cause (continued)

Although the plant instrumentation cables are shielded and are physically routed to avoid high electrical "noise" areas, the 3 to 30 microampere monitor output signal is very susceptible to any electrical "noise".

The Fuel Pool Radiation Monitor sensor and convertor are manufactured by General Electric, Model Number 194X927G-16. The indicator and trip unit are also manufactured by General Electric, Model Number 129B2802G006.

Corrective Action

Since replacing the radiation monitor sensor did not alleviate the spiking problem, Modification M-4-1(2)-85-14 was issued to install a 50 microfarad capacitor in parallel with the monitor amplifier feedback resistor. This effectively dampened the monitor response in order to allow for signal spiking to subside prior to reaching the trip setpoint. This Modification was completed on Unit One on March 15, 1985. The same installation has been considered for Unit Two, pending the determination of the Modification's effectiveness. This installation is to be utilized until a definite cause of spiking is determined by the Instrument Maintenance Department.

Prior to the installation of the capacitor, the Fuel Pool Radiation Monitors in both units had experienced spurious spiking problems on several occasions. The latest occurrence is documented in Deviation Report 4-02-84-071 (LER 84-012).



Commonwealth Edison

Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242
Telephone 309/654-2241

TKT-85-11

April 2, 1985

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Reference: Quad-Cities Nuclear Power Station
Docket Number 50-254, DPR-29, Unit One

Enclosed please find Licensee Event Report (LER) 85-005, Revision 00, for Quad-Cities Nuclear Power Station.

This report is submitted to you in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)-(iv), which requires reporting of any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

T. K. Tamlyn
Services Superintendent

TKT:HQP/bb

Enclosure

cc B. Rybak
A. Madison
INPO Records Center
NRC Region III

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