

Exelon Generation Company, LLC  
Quad Cities Nuclear Power Station  
22710 206<sup>th</sup> Avenue North  
Cordova, IL 61242-9740

www.exeloncorp.com

November 27, 2001

SVP-01-113

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Quad Cities Nuclear Power Station, Unit 2  
Facility Operating License No. DPR-30  
NRC Docket No. 50-265

Subject: Revision 01 of Licensee Event Report 265/00-003, "Movement of Fuel with Fewer Intermediate Range Neutron Monitors Operable than Required by Technical Specifications"

Enclosed is Licensee Event Report (LER) 265/00-003, "Movement of Fuel with Fewer Intermediate Range Neutron Monitors Operable than Required by Technical Specifications," Revision 01, for Quad Cities Nuclear Power Station.

A minor error was identified in the report concerning the number of operable Intermediate Range Neutron Monitors during the event. The LER has been corrected. The error did not affect the root cause of the event or the corrective actions that were implemented. Additional revisions were made to update the status of corrective actions and to correct a minor typographical error.

No actions are being committed to in this submittal. Any actions described in the submittal represent intended or planned actions by Exelon Generation Company (EGC), LLC. They are described for the NRC's information and are not regulatory commitments.

Should you have any questions concerning this report, please contact Mr. W. J. Beck at (309) 227-2800.

Respectfully,



Timothy J. Tulon  
Site Vice President  
Quad Cities Nuclear Power Station

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

IE22

Rec'd  
01/17/02

## LICENSEE EVENT REPORT (LER)

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. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NOEB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.

FACILITY NAME (1): Quad Cities Nuclear Power  
Station, Unit 2DOCKET NUMBER (2)  
05000265PAGE (3)  
1 of 5TITLE (4) Movement of Fuel with Fewer Intermediate Range Neutron Monitors Operable than  
Required by Technical Specifications

| EVENT DATE (5) |     |      | LER NUMBER (6) |                      |           | REPORT DATE (7) |     |      | OTHER FACILITIES INVOLVED (8) |               |
|----------------|-----|------|----------------|----------------------|-----------|-----------------|-----|------|-------------------------------|---------------|
| MO             | DAY | YEAR | YEAR           | SEQUENTIAL<br>NUMBER | REV<br>NO | MO              | DAY | YEAR | FACILITY NAME                 | DOCKET NUMBER |
| 02             | 01  | 00   | 00             | - 003                | - 01      | 11              | 27  | 01   | N/A                           | N/A           |
|                |     |      |                |                      |           |                 |     |      | N/A                           | N/A           |

OPERATING  
MODE (9)

5

POWER  
LEVEL (10)

0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)

|   |   |   |  |
|---|---|---|--|
| <input type="checkbox"/> 20.2201(b)         | <input type="checkbox"/> 20.2203(a)(3)(ii)            | <input type="checkbox"/> 50.73(a)(2)(ii)(B)   | <input type="checkbox"/> 50.73(a)(2)(ix)(A)      |
| <input type="checkbox"/> 20.2201(d)         | <input type="checkbox"/> 20.2203(a)(4)                | <input type="checkbox"/> 50.73(a)(2)(iii)     | <input type="checkbox"/> 50.73(a)(2)(x)          |
| <input type="checkbox"/> 20.2203(a)(1)      | <input type="checkbox"/> 50.36(c)(1)(i)(A)            | <input type="checkbox"/> 50.73(a)(2)(iv)(A)   | <input type="checkbox"/> 73.71(a)(4)             |
| <input type="checkbox"/> 20.2203(a)(2)(i)   | <input type="checkbox"/> 50.36(c)(1)(ii)(A)           | <input type="checkbox"/> 50.73(a)(2)(v)(A)    | <input type="checkbox"/> 73.71(a)(5)             |
| <input type="checkbox"/> 20.2203(a)(2)(ii)  | <input type="checkbox"/> 50.36(c)(2)                  | <input type="checkbox"/> 50.73(a)(2)(v)(B)    | <input type="checkbox"/> OTHER                   |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.46(a)(3)(ii)              | <input type="checkbox"/> 50.73(a)(2)(v)(C)    | Specify in Abstract below or in<br>NRC Form 366A |
| <input type="checkbox"/> 20.2203(a)(2)(iv)  | <input type="checkbox"/> 50.73(a)(2)(i)(A)            | <input type="checkbox"/> 50.73(a)(2)(v)(D)    |  |
| <input type="checkbox"/> 20.2203(a)(2)(v)   | <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(vii)     |  |
| <input type="checkbox"/> 20.2203(a)(2)(vi)  | <input type="checkbox"/> 50.73(a)(2)(i)(C)            | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |  |
| <input type="checkbox"/> 20.2203(a)(3)(i)   | <input type="checkbox"/> 50.73(a)(2)(ii)(A)           | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |  |

## LICENSEE CONTACT FOR THIS LER (12)

|  |                                      |
|--|--------------------------------------|
| NAME                                     | TELEPHONE NUMBER (Include Area Code) |
| Wally Beck, Regulatory Assurance Manager | (309) 227-2800                       |

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

| CAUSE | SYSTEM | COMPONENT | MANU-<br>FACTURER | REPORTABLE<br>TO EPIX | CAUSE | SYSTEM | COMPONENT | MANU-<br>FACTURER | REPORTABLE<br>TO EPIX |
|-------|--------|-----------|-------------------|-----------------------|-------|--------|-----------|-------------------|-----------------------|
|       |        |           |                   |                       |       |        |           |                   |                       |
|       |        |           |                   |                       |       |        |           |                   |                       |
|       |        |           |                   |                       |       |        |           |                   |                       |

## SUPPLEMENTAL REPORT EXPECTED (14)

|  |   |    |                                     |       |     |      |
|--|---|----|-------------------------------------|-------|-----|------|
| YES<br>(If yes, complete EXPECTED SUBMISSION DATE) | X | NO | EXPECTED<br>SUBMISSION<br>DATE (15) | MONTH | DAY | YEAR |
|  |   |    |                                     |       |     |      |

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

Between February 1, 2000, and February 5, 2000, the Unit 2 Reactor Protection System (RPS) Trip System B had only two operable Intermediate Range Neutron Monitoring (IRM) channels. Technical Specification 3.1.A-1 requires a minimum of three operable IRM channels for each RPS Trip System when in Refueling. This event was caused by inadequate communication between the Instrument Maintenance Department and the Operating Shift concerning the status of IRM 17 and by inadequate work instructions. Upon discovery, the IRM was declared inoperable and Technical Specification 3.1.A, Action 1, was entered. A Channel B 1/2 Scram was inserted to meet Technical Specification requirements.

The safety significance of this event was minimal. All required Source Range Monitors (SRMs) were operable, all control rods were fully inserted in the core, and the rod motion control switch was out of service in the control room. Also, there were sufficient IRMs operable on each RPS channel to provide an RPS trip if required.

Personnel were counseled and training was held concerning this event. Also, procedures have been enhanced to change the method for taking the IRMs out of service and the model work request has been revised to provide guidance concerning communications.

## LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1)                         | DOCKET NUMBER (2) | LER NUMBER (6) |                   |                 | PAGE (3) |
|---|-------------------|----------------|-------------------|-----------------|----------|
|   |                   | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |
| Quad Cities Nuclear Power Station, Unit 2 | 05000265          | 00             | - 003             | - 01            | 2 of 5   |

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

## PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor, 2511 Megawatts Thermal Rated Core Power

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

## EVENT IDENTIFICATION

Movement of Fuel with Fewer Intermediate Range Neutron Monitors Operable than Required by Technical Specifications

## A. CONDITION PRIOR TO EVENT

Unit: 2                                      Event Date: February 1, 2000                      Event Time: 1745 hours  
Reactor Mode: 5                              Mode Name: Refueling                      Power Level: 0%

Refueling (5) - Mode switch in the Shutdown or Refueling position with average reactor coolant temperature  $\leq$  140 degrees F and fuel in the reactor vessel with one or more vessel head closure bolts less than fully tensioned or with the head removed.

## B. DESCRIPTION OF EVENT

On February 5, 2000, it was identified that Intermediate Range Neutron Monitor (IRM) [IG] 17 had been erroneously declared operable on February 1, 2000. This resulted in a violation of Technical Specification 3.1.A-1, which requires a minimum of three operable IRM channels for each Reactor Protective System (RPS) [JC] Trip System in plant operating Mode 5 (Refueling). RPS Trip System B had too few operable IRM channels because IRM 16 was also inoperable between February 1 and February 5, which left only IRM channels 15 and 18 as operable channels on the B Trip System.

On February 5, 2000, contractor personnel informed the Control Room that the IRM 17 detector [DET] had been previously disconnected. The Unit 2 Supervisor contacted the Instrument Maintenance (IM) Department to verify that the IRM 17 detector had been disconnected. Once it was verified at 0910 hours on February 5, 2000, that the IRM 17 detector was disconnected, IRM 17 was declared inoperable and Technical Specification 3.1.A, Action 1, was entered. A Channel B 1/2 Scram was inserted to meet Technical Specification requirements. A Problem Identification Form was initiated to document the event.

The investigation of this event identified that power to the IRM 17 detector had been secured on February 1, 2000, when an IM Technician disconnected the high voltage connector J7 at the chassis in accordance with a revision to work package WR 990138486-02. The J7 connector had been disconnected to allow the detector to be disconnected locally under the reactor vessel in support of control rod drive [AA] unit work. The removal of the J7 connector was documented in WR 990138486-02. However, the communications between the IM Technician and the Operating Shift prior to starting work was not adequate for the Operating Shift to understand that, in addition to the IRM drive unit being inoperable, the detector would also be inoperable. It also could not be determined that the Operating Shift was ever informed that the detector had been disconnected locally.

## LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1)                         | DOCKET NUMBER (2) | LER NUMBER (6) |                   |                 | PAGE (3) |
|---|-------------------|----------------|-------------------|-----------------|----------|
|   |                   | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |
| Quad Cities Nuclear Power Station, Unit 2 | 05000265          | 00             | - 003             | - 01            | 3 of 5   |

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

Prior to February 1, 2000, the Operating Shift had been challenged with several IRM problems since the beginning of the Q2R15 Refueling Outage on January 21, 2000. One of these problems had been IRM 17, which was declared inoperable at 1925 hours on January 25, 2000, for failing to indicate full in.

On February 1, 2000, IRM 16 also became inoperable due to erratic operation. The decision was made to return IRM 17 to operable status for RPS and satisfying Rod Block by entry into a 7 day Limiting Condition for Operation (LCO) per Technical Specification 3.2.E-1. To declare IRM 17 operable for RPS the Operating Shift asked the IM Department if the detector had been verified fully inserted. The Instrument Maintenance Superintendent reported that it was fully inserted. The Shift also verified that QCIS 0700-09, "Prior To Startup Neutron Monitoring Functional Test," had been performed within the required time interval. The Shift also performed a Channel Check to verify that IRM 17 reading was consistent with other operational IRMs. Based on these reviews, the Shift declared IRM 17 operational at 1745 hours on February 1, 2000. However, as previously stated, the detector had been disconnected.

The Channel Check did not identify any difference in indication between IRM 17 and other operational IRMs. Under these plant conditions neutron levels are low and the IRM is only indicating circuit noise. Therefore, all of the IRMs indicated the same level.

A separate work package (WR 990139516-03) to replace the IRM 17 detector was completed on February 7, 2000, and the detector portion of IRM 17 was returned to operation. IRM 17 was declared operable for RPS in accordance with Technical Specification 3.1.A.

**C. CAUSE OF EVENT**

The root causes for having too few operable IRMs in RPS Trip System B due to erroneously declaring IRM 17 operable are:

- Inadequate communications between work groups and the Operating Shift. Communications between the Instrument Maintenance (IM) Technician and Operating Shift Unit Supervisor did not convey to the Operating Shift that the actual detector would be made inoperable when the IRM 17 detector high voltage chassis J7 connector was disconnected on February 1, 2000.
- Work not performed in accordance with the work package authorized by the Operating Shift. On February 1, 2000, the IRM 17 detector was disconnected locally under the reactor vessel, but the action was not documented in the authorized work package (WR 990138486-02). The work package step addressing disconnecting the IRM detector locally states, "Request IM Department to disconnect / remove the SRM/IRM detector." This step was marked "not performed," because the detector was disconnected by a contractor (after the IMs disconnected J7 at the chassis). The WR did not contain any other steps relative to disconnecting or reconnecting the detector locally.
- Inadequate work instructions. WR 990138486-02, "Drive IRM 17 - Detector Will Not drive To Full In Indication," did not contain an impact statement or instructions to inform the Operating Shift that the detector would be made inoperable during the course of the package.

## LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1)                            | DOCKET NUMBER (2) | LER NUMBER (6) |                      |                    | PAGE (3) |
|--|-------------------|----------------|----------------------|--------------------|----------|
| Quad Cities Nuclear Power<br>Station, Unit 2 | 05000265          | YEAR           | SEQUENTIAL<br>NUMBER | REVISION<br>NUMBER | 4 of 5   |
|  |                   | 00             | - 003 -              | 01                 |          |

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

**D. SAFETY ANALYSIS**

During the fuel shuffle, all required Source Range Monitors (SRMs) were operable and monitoring neutron flux. The SRMs are used to generate rod blocks at very low flux levels. At this time, the IRMs were essentially downscale low and not indicating any appreciable neutron flux. All control rods were fully inserted in the core and the rod motion control switch was out of service in the control room. Thus, maximum reactivity insertion from control rods was in place during the fuel moves, and there was no risk of inadvertent rod withdrawal either from maintenance activity or administratively from the control room.

Calculations performed prior to the shuffle verify acceptable shutdown margin even with the most reactive control rod withdrawn. As stated above, no control rods were withdrawn, and during the fuel shuffle there was no bundle mispositioning. Thus, at no time was reactivity control lost.

Note that even with the two IRMs in RPS trip system B inoperable, the RPS and rod block functions of the IRMs are degraded, but not lost. If either of the other two IRMs in RPS trip system B detected high flux, and any of the three IRMs that were operable in RPS trip system A had also detected high flux, an RPS scram would have been generated.

Therefore, the safety significance of this event was minimal.

**E. CORRECTIVE ACTIONS****Corrective Actions Completed:**

The IM Technician was counseled on expectations for clear communications with the Operating Shift when changing the operable status of equipment.

The IM Specialist was counseled on expectations for including impact notification to the Operating Shift when making changes to work packages that result in changing the operable status of equipment.

This event was presented at a crew briefing for the IM Department with emphasis on expectations for clear communications with the Operating Shift when changing the operable status of equipment.

This event was presented at a crew briefing for the Operations Department with emphasis on the communications breakdown that resulted in the Operating Shift not being aware that IRM 17 and IRM 13 detectors were made inoperable by IMD disconnecting the J7 high voltage connector at the chassis.

QIP 0700-03 (IRM) and QIP 0700-02 (SRM) were revised to require removal of the high voltage circuit card in the chassis instead of disconnecting J7. Removal of the high voltage circuit card gives a light indication to the Control Room that the detector is inoperable. Disconnecting J7 causes the detector to be inoperable, but does not give the light indication.

This event was presented at a crew briefing for the appropriate contracted personnel that will be performing work on nuclear instrumentation (including drives). Emphasis was placed on: (1) Required communications with the Operating Shift when performing work that could affect the operable status of equipment. Communications with the Outage Control Center and other work groups does not substitute for communications with

## LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1)                            | DOCKET NUMBER (2) | LER NUMBER (6) |                      |                    | PAGE (3) |
|--|-------------------|----------------|----------------------|--------------------|----------|
| Quad Cities Nuclear Power<br>Station, Unit 2 | 05000265          | YEAR           | SEQUENTIAL<br>NUMBER | REVISION<br>NUMBER | 5 of 5   |
|  |                   | 00             | - 003 -              | 01                 |          |

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

the Operating Shift, (2) Work package steps that perform work on in-plant equipment can not be performed unless the work package has Shift authorization approval (signature) to start work, and (3) Work performed must be covered by and documented in the Shift authorized work package that is being worked.

The Mechanical Maintenance Model Work Request (WR 980110454-01) used to develop IRM and SRM troubleshoot and repair work packages was revised to contain an impact statement to inform Operations that the IRM or SRM drive and detector will be made inoperable during portions of this package. The revision also requires the detector itself (not just the drive) to be placed out of service prior to disconnecting the detector.

**F. PREVIOUS OCCURRENCES**

Searches of previous Quad Cities Licensee Event Reports and Operating Experience for the past two years (February 1, 1998 through February 16, 2000) did not identify any events involving less than the required number of nuclear instruments due to incorrectly declaring detectors operable.

**G. COMPONENT FAILURE DATA**

There were no component failures associated with this event.