



An Exelon Company

Clinton Power Station  
R. R. 3, Box 228  
Clinton, IL 61727

10 CFR 50.73

U-603701  
November 3, 2004

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555-0001

Clinton Power Station, Unit 1  
Facility Operating License No. NPF-62  
NRC Docket No. 50-461

Subject: Licensee Event Report 2004-006-00

Enclosed is Licensee Event Report (LER) No. 2004-006-00: Small Amount of Special Nuclear Material in Unirradiated Nuclear Instrument Detectors Unaccounted For. This report is being submitted in accordance with the requirements of 10CFR50.73.

Should you have any questions concerning this report, please contact Mr. William Iliff, Regulatory Assurance Manager, at (217)-937-2800.

Respectfully,

R. S. Bement  
Site Vice President  
Clinton Power Station

RSF/blf

Enclosure: Licensee Event Report 2004-006-00

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Clinton Power Station  
Office of Nuclear Facility Safety – IEMA Division of Nuclear Safety

IE22

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

<b>1. FACILITY NAME</b> Clinton Power Station				<b>2. DOCKET NUMBER</b> 05000461				<b>3. PAGE</b> 1 OF 4			
<b>4. TITLE</b> Small Amount of Special Nuclear Material in Unirradiated Nuclear Instrument Detectors Unaccounted For											
<b>5. EVENT DATE</b>			<b>6. LER NUMBER</b>			<b>7. REPORT DATE</b>			<b>8. OTHER FACILITIES INVOLVED</b>		
MO	DAY	YEAR	YEAR	SEQUENT IAL NUMBER	RE V NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
10	07	2004	2004 - 006 - 00			11	03	2004	None	05000	
<b>9. OPERATING MODE</b>			<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>								
1			X	20.2201(b)		20.2203(a)(3)(ii)			50.73(a)(2)(ii)(B)		
				20.2201(d)		20.2203(a)(4)			50.73(a)(2)(iii)		
<b>10. POWER LEVEL</b>			095			20.2203(a)(1)			50.73(a)(2)(iv)(A)		
						20.2203(a)(2)(i)			50.73(a)(2)(v)(A)		
						20.2203(a)(2)(ii)			50.73(a)(2)(v)(B)		
						20.2203(a)(2)(iii)			50.73(a)(2)(v)(C)		
						20.2203(a)(2)(iv)			50.73(a)(2)(v)(D)		
						20.2203(a)(2)(v)			50.73(a)(2)(vi)(A)		
						20.2203(a)(2)(vi)			50.73(a)(2)(vii)(A)		
						20.2203(a)(3)(i)			50.73(a)(2)(vii)(B)		
<b>12. LICENSEE CONTACT FOR THIS LER</b>											
NAME M. A. Vandermyde, Reactor Engineer						TELEPHONE NUMBER (Include Area Code) (217) 937-3331					
<b>13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT</b>											
CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX		
<b>14. SUPPLEMENTAL REPORT EXPECTED</b>											
YES (If yes, complete EXPECTED SUBMISSION DATE)						X NO		<b>15. EXPECTED SUBMISSION DATE</b>		MONTH	DAY
<b>16. ABSTRACT</b> (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)											
<p>In 1991, four unirradiated Nuclear Instruments (NIs) were identified as being damaged. The disposition for the four NIs was to cut the defective detectors from the cables and place the detectors in a Special Nuclear Material (SNM) container. Tamper seals were applied to the container. The remaining cables and connectors were to be disposed of as trash. On 10/7/04, Reactor Engineers opened the container to verify the contents in preparation for disposal and discovered that the container had only one of the four detectors and three unexpected signal cable connectors; thus three unirradiated NI detectors containing SNM were unaccounted for. Storage facilities were searched for the missing detectors; the detectors were not found. A search of station records identified no records of disposition. The detectors were apparently disposed of as uncontaminated connectors in the station trash that was subsequently buried in a local landfill. The apparent cause of this event is attributed to human error in cutting and placing the connectors in the SNM container rather than the detectors. The future practice for disposing of defective unirradiated NI detectors will be to leave the detector, cable and connector intact as a unit, cutting will not be allowed. The detectors contain an extremely small amount of SNM and pose no danger to the public.</p>											

## LICENSEE EVENT REPORT (LER)

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

### PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

Unit: 1    Event Date: 10/7/2004    Event Time: 1430 Central Daylight Time  
Mode: 1 (POWER OPERATION)    Reactor Power: 95 percent

### DESCRIPTION OF EVENT

In 1991, four unirradiated nuclear instruments (NIs), including detectors [DET], cables [CBL], and connectors [CON] were identified as being damaged due to bent connector ends resulting in bad detector signals. The disposition for the four NIs was to cut the detectors from the cables and place the detectors in a small Special Nuclear Material (SNM) container. Tamper seals were applied to the container. The remaining cables and connectors were to be disposed of as trash.

On October 7, 2004, the plant was in Mode 1 with reactor power at 95 percent. The small container of SNM had been moved from its normal storage location to another plant location in preparation for disposal. Reactor Engineers opened the container to verify the contents and discovered that the container had only one of the expected four detectors and three unexpected signal cable connectors; thus three unirradiated nuclear instrument detectors containing SNM were unaccounted for. Condition report 261339 was initiated to address this issue.

The contents of the SNM container were periodically inventoried since 1991 by verifying that the tamper seals were intact in accordance with the site SNM inventory procedure. In July 2004, a periodic SNM inventory was performed in accordance with the Exelon SNM inventory procedure; however, as allowed by the Exelon SNM inventory procedure, the contents of the small SNM container were not inspected since the tamper seals were intact.

A search of storage facilities including other containers of SNM was conducted for the missing detectors; the detectors were not found. The other containers in the storage area were opened and a serial number inventory was performed to account for NI detectors. A search of station records was conducted for records of the disposition of the detectors; no other records of disposition were found. The station concludes that the detectors were mistakenly disposed of as uncontaminated connectors in the station trash that was subsequently buried in a local landfill. A search of landfills was not performed due to the elapsed time of 13 years since disposal of the material, and based on the extremely small amount of SNM that poses no danger to the public and the difficulty of detecting such very low activity material.

The total mass of U235 in the unaccounted for SNM was less than one gram. The actual total mass was determined to be approximately 6 milligrams. The actual U235 activity was 0.012 micro-curies, exceeding 10 times the Part 20 Appendix C activity (0.010 micro-curies). Therefore, this loss of SNM is reportable under the provisions of 10CFR20.2201(a)(1)(ii). The 30-day telephone report required by 10CFR20.2201(a)(1)(ii) was completed via Emergency Notification System Event Number 41130 at 1635 hours (Central Daylight Time) on October 18, 2004. This 30-day written report is being submitted in accordance with the provisions of 10CFR20.2201(b).

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

### CAUSE OF EVENT

This event occurred in 1991. The apparent cause of this event is attributed to human error associated with the NI connectors being cut and placed in the SNM container rather than the detectors.

### SAFETY ANALYSIS

The detectors contain an extremely small amount of SNM and pose no danger to the public. The U235 mass in the unaccounted for SNM was less than one gram (actual mass approximately 6 milligrams). An evaluation of this event concluded that the dose to a member of the public for one calendar year is 0.019 millirem (at 30 centimeters).

### CORRECTIVE ACTION

An accounting of the other NI detectors in the storage area was completed by opening containers and performing a serial number inventory of container contents.

The future practice for disposing of defective unirradiated NI detectors will be to leave the detector, cable and connector intact as a unit, cutting will not be allowed. (CA 261339-04)

### PREVIOUS OCCURRENCES

None

### COMPONENT FAILURE DATA

None

### FOLLOWING INFORMATION IS REQUIRED BY 10CFR20.2201(b)

#### DESCRIPTION OF LICENSED MATERIAL INVOLVED, INCLUDING KIND, QUANTITY, AND CHEMICAL AND PHYSICAL FORM

Three Nuclear Instrument detectors (Boiling Water Reactor) – two Source Range Monitor detectors and one Intermediate Range Monitor detector.

Special Nuclear Material (SNM) U-235 and U-238 encapsulated in stainless steel.

Detectors are approximately 2.5 inches long and about 0.25-inch diameter.

Total amount of U-235: 0.00615 gram

Total amount of U-238: 0.00046 gram

Total activity of U-235: 0.012 micro curie

Total activity of U-238: 0.001 micro curie

Total amount of Solid Uranium Dioxide: 0.00753 gram

**LICENSEE EVENT REPORT (LER)**

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

**DESCRIPTION OF THE CIRCUMSTANCES UNDER WHICH THE LOSS OR THEFT OCCURRED**  
See Description of Event section of this report

**A STATEMENT OF DISPOSITION, OR PROBABLE DISPOSITION, OF THE LICENSED MATERIAL INVOLVED**

The three detectors were probably buried in a local landfill 13 years ago.

**EXPOSURES OF INDIVIDUALS TO RADIATION, CIRCUMSTANCES UNDER WHICH THE EXPOSURES OCCURRED, AND THE POSSIBLE TOTAL EFFECTIVE DOSE EQUIVALENT TO PERSONS IN UNRESTRICTED AREAS**

There is no known exposure to individuals. Radiological Technical Evaluation RTE 2004-25 ED concluded that the dose to a member of the public for one calendar year is 0.019 millirem (at 30 centimeters).

**ACTIONS THAT HAVE BEEN TAKEN, OR WILL BE TAKEN, TO RECOVER THE MATERIAL**  
See Description of Event section of this report

**PROCEDURES OR MEASURES THAT HAVE BEEN, OR WILL BE, ADOPTED TO ENSURE AGAINST A RECURRENCE OF THE LOSS OR THEFT OF LICENSED MATERIAL**  
See Corrective Action section of this report