



Nuclear Group
P O Box 4
Shippingport, PA 15077-0004

Telephone (412) 393-6000

June 10, 1994
ND3MNO:3582

**Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Special Report Revision 1**

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

This **revised** Special Report is being submitted to provide **updated** information concerning the unaccountability of Special Nuclear Material at the Beaver Valley Power Station (BVPS). On February 2, 1994 at 2024 hours, a 1 hour notification was made in accordance with 10 CFR 70.52 via the Emergency Notification System that five (5) moveable incore detectors could not be traced from receipt to their final disposition. **Subsequent to this notification and the submittal of the original Special Report, letter number ND3MNO:3547, dated March 4, 1994, a defective, non-irradiated detector was located in the Unit 1 New Fuel Storage Room while performing an area inventory. The detector was properly labeled and stored but not readily in view. This reduces the number of unaccounted incore detectors to four (4).** Using a conservative assumption, this represents a **revised** total of **0.0164** grams of Uranium 235. This report contains information regarding the investigation that was undertaken in an attempt to locate the unaccounted detectors.

Each Beaver Valley unit utilizes five (5) moveable incore fission chamber detectors to periodically monitor the neutron flux during reactor operations. Purchasing receipt records indicate that a total of fifty-five (55) detectors were purchased and received onsite. **Fifty (50)** detectors were purchased from a Westinghouse Electric subsidiary, Imaging and Sensing Technology, and **five (5)** were purchased from Reuter Stokes. Records indicate that each Westinghouse detector contained 0.0041 grams of Uranium 235, and each Reuter Stokes detector contained 0.0008 grams of Uranium 235. Of the 55 detectors that are known to have been received, **fifty-one (51)** have been positively accounted for as follows:

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- 32 have been shipped offsite for burial as radioactive waste.
- 10 are in service (5 at each unit in the flux drive room).
- 2 are new and are in storage in the Unit 1 New Fuel Room.
- 6 have been removed from service and are in storage at BVPS, and
- 1 **defective, non-irradiated detector is stored in the Unit 1 New Fuel Room.**

The above accounting summary was the result of an audit that was performed to retrospectively verify the receipt, use, and disposition of all incore detectors purchase for use at BVPS. The record review dated back to the initial startup of Unit 1 in 1976. The involved site groups have researched purchasing records, nuclear material accountability records, maintenance work requests, and radioactive material shipping records in an attempt to determine the final disposition of the unaccounted detectors. The station was physically searched, including the shielded temporary irradiated incore detector storage locations in both reactor containment buildings.

After extensive investigation, it was concluded that the four unaccounted detectors were removed from the flux drive room, drummed, and shipped as radioactive waste, but tracking the detectors as Special Nuclear Material was not performed. Using a conservative assumption that the unaccounted detectors were all procured from Westinghouse, a total of **0.0164** grams of Uranium 235 cannot be positively tracked.

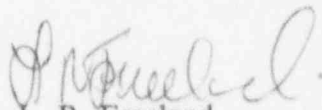
Based on our investigation and knowledge of previous practices, it was also concluded that the accounted detectors were used early in the operating history of Beaver Valley Unit 1 and disposed of as radioactive waste. When inservice detectors were replaced, they were temporarily stored in the flux drive room in the reactor containment building until they were removed and drummed for storage or shipped as radioactive waste. However, review of documentation for radioactive waste shipments prior to 1986 did not specifically identify any shipping containers as containing an incore detector.

The unaccounted Special Nuclear Material in the detectors is not considered to be a hazard to the health and safety of the general public, as the investigation concluded the detectors were most likely removed from service, drummed, and disposed of as radioactive waste in accordance with approved shipping procedures. Also, there is no indication of any theft or willful diversion of the detectors.

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Utility practices in the 1970's and early 1980's, including BVPS, did not treat incore detectors as Special Nuclear Material, as it was not believed the detectors met the regulatory definition, because of the extremely low Uranium 235 content. Since 1986, upgraded procedural requirements have been in place at BVPS to ensure proper control and accountability of incore detectors, and in 1990, the procedures were further refined. The upgraded procedural requirements are adequate to prevent a recurrence of this event. No additional actions are planned, as the unaccounted detectors are believed to have been properly disposed of early in the operating history of Unit 1, when incore detectors were not accounted for as Special Nuclear Material.

Should you have any further questions regarding this matter, please contact D. E. Faller at (412)393-5201.


L. R. Freeland
General Manager
Nuclear Operations

JHK/clp

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cc: Mr. T. T. Martin, Regional Administrator
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

Mr. G. E. Edison, BVPS Licensing Project Manager
United States Nuclear Regulatory Commission
Washington, DC 20555

Larry Rossbach, Nuclear Regulatory Commission,
BVPS Senior Resident Inspector

J. A. Hultz, Ohio Edison
76 S. Main Street
Akron, OH 44308

Mark Burns
Centerior Energy
6200 Oak Tree Blvd.
Independence, OH 44101-4661

INPO Records Center
700 Galleria Parkway
Atlanta, GA 30339-5957

Mr. Robert Barkanic
Department of Environmental Resources
P.O. Box 2063
16th Floor, Fulton Building
Harrisburg, PA 17120

Director, Safety Evaluation & Control
Virginia Electric & Power Co.
P.O. Box 26666
One James River Plaza
Richmond, VA 23261