



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

John H. Garrity  
Vice President, Watts Bar Nuclear Plant

NOV 15 1991

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

Gentlemen:

In the Matter of the Application of )  
Tennessee Valley Authority )

Docket Nos. 50-390  
50-391  
030-12988

WATTS BAR NUCLEAR PLANT (WBN) - IMPROPER CONTROL OF SPECIAL NUCLEAR  
MATERIAL (SNM)

The subject event was initially reported to NRC Operations Officer Richard J. Jolliffe on October 16, 1991, in accordance with 10 CFR 73.67(g)(3)(iii). The event involved failure to exercise appropriate administrative control over the incore detector cable assemblies, containing approximately 0.1 gram of SNM, during the period from their arrival at WBN on May 20, 1980 until October 16, 1991. This event posed no additional health risks to either plant personnel or the general public and it did not affect plant safety.

Although the event was initially reported under the in-transit requirements of 10 CFR 73.67(g)(3)(iii), TVA's subsequent investigation indicated that these requirements did not apply to the situation which existed. The incore detector cable assemblies were not in-transit since their receipt at WBN was documented. However, even though the initially cited reporting requirement does not apply, TVA is submitting a follow-up report for your information.


Enclosure 1 is TVA's written report of the event. Enclosure 2 is a list of commitments associated with this event.

U.S. Nuclear Regulatory Commission

NOV 15 1991

If you have any questions, please telephone G. L. Pannell at  
(615) 365-1550.

Sincerely,



John H. Garrity

Enclosures

cc (Enclosures):

NRC Resident Inspector  
Watts Bar Nuclear Plant  
P.O. Box 700  
Spring City, Tennessee 37381

Mr. P. S. Tam, Senior Project Manager  
U.S. Nuclear Regulatory Commission  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852

Mr. B. A. Wilson, Project Chief  
U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30323

## ENCLOSURE 1

### WATTS BAR NUCLEAR PLANT (WBN) IMPROPER CONTROL OF SPECIAL NUCLEAR MATERIAL (SNM)

#### SUMMARY

Byproduct Materials License No. 41-17572-01 for WBN requires that SNM onsite be under the administrative control of authorized individuals designated in the license. This report describes several administrative deficiencies that resulted in the incore detector cable assemblies for WBN being uncontrolled during the period from their receipt onsite on May 20, 1980 until October 16, 1991. These assemblies contain very small amounts of SNM. Appropriate control of the assemblies was established immediately after recognition of the condition. Also, corrective actions have been initiated to ensure that other components that could contain SNM are identified and placed under proper controls if they are confirmed to contain SNM. This event did not present any safety implications.

#### DESCRIPTION OF EVENT

On October 16, 1991, while attempting to determine if WBN needed spare incore detector assemblies, a representative of Westinghouse (the nuclear steam supply system [NSSS] vendor for WBN) discovered a receiving report for a shipment of incore detector cable assemblies to WBN in 1980 as part of the original NSSS contract. The Westinghouse representative contacted Reactor Engineering personnel who were responsible for supervising the use of SNM to investigate the status of the 24 assemblies that had apparently been shipped to WBN in 1980. Personnel from Reactor Engineering determined that these assemblies were not listed as part of the WBN SNM inventory. Warehouse stores was contacted and immediately initiated a search to determine the location of these assemblies. The 24 assemblies were located in warehouse stores within an hour. The assemblies were confirmed to contain SNM and to be properly sealed in the original packaging that was used for shipment to WBN. Within approximately 5 hours, the assemblies were inventoried, leak checked, and transferred to a locked storage area under the control of WBN's designated SNM Custodian.

Subsequent investigation determined that the incore detector cable assemblies were delivered from their manufacturer Teleflex (a subcontracted supplier of NSSS components to Westinghouse) directly to WBN in 2 shipments of 12 assemblies each on May 20, 1980 and July 21, 1980. The shipping containers and associated paperwork did not indicate that SNM was included in these shipments. The outside of each shipping container was marked only with the notation: BOX CONTAINS CARBON STEEL FLUX-MAPPING DETECTOR CABLE ASSEMBLY. DO NOT OPEN UNTIL NEEDED FOR INSTALLATION ON FLUX-MAPPING DRIVE SYSTEM. DO NOT REMOVE FROM CONTAINER UNTIL PLACED IN USE. The assemblies were tagged indicating that they contained radioactive material, but this tag was located inside 2 layers of packaging. At the time of receipt, procedural requirements for receiving personnel to perform an independent check to identify a package containing radioactive materials did not exist, nor were there special instructions for receiving the incore detector cable assemblies or any other components containing SNM. In addition, there were no procedural requirements

to notify end-user personnel, such as the SNM Custodian, that material requiring their attention had arrived onsite.

When the 2 shipments of incore detector cable assemblies were delivered onsite, TVA personnel noted that TVA NSSS and Westinghouse release documentation did not accompany the shipments. Westinghouse was requested to provide this release documentation. Westinghouse responded by processing Documentation Deficiency Reports and determining that release documentation was not needed based on Westinghouse quality requirements. After resolution of this issue, TVA accepted the incore detector cable assemblies and placed the assemblies in the WBN Construction Warehouse as direct-charge material (i.e., material identified for a specific end use). The authorized individual designated in the Byproduct Material License was not notified that the incore detector cable assemblies had been received.

#### IDENTIFIED CAUSES

The root cause of this event was determined to be inadequate procurement practices, in that communication of information and direction regarding shipments of the items containing SNM were inadequate. The specific communication deficiencies were:

- The authorized individual designated in the byproduct material license was not notified of the receipt of the incore detector cable assemblies. WBN site procedures did not require such notification.
- The labeling on the outside of the shipping container and the shipping documents did not identify that the incore detector cable assemblies contained SNM. TVA's contract with Westinghouse for NSSS equipment did not specifically require such labeling.
- Receiving personnel were not provided sufficient information to know or specific instructions for determining that the incore detector cable assembly shipments contained SNM. The procedure in use at that time for receiving material onsite did not address receipt inspection of radioactive material.

#### SAFETY IMPLICATIONS

There were no safety implications related to this event since the incore detector cable assemblies posed no additional health risks to either plant personnel or the general public during the time that the assemblies were left uncontrolled. These assemblies contain a minute quantity of highly enriched uranium (i.e., less than a combined total of 0.1 gram of U-235 for the 24 detector assemblies). Also, the assemblies remained in their original packaging throughout the time that they were uncontrolled.

### CORRECTIVE ACTION

Since 1980, TVA has implemented a number of improvements in its administrative procedures and procurement practices as a result of problems with maintaining control and accountability of SNM at Browns Ferry Nuclear Plant (BFN) and Sequoyah Nuclear Plant (SQN). Note that the investigations and reviews which were associated with the problems at BFN and SQN did not identify the subject event because these problems involved failure to account for SNM after administrative control of the SNM had been established. Administrative control of the SNM contained in the incore detector cable assemblies was never established until discovery of the material onsite on October 16, 1991.

Procedural requirements for receipt of radioactive materials at WBN were first imposed in May 1982 when Administrative Instruction (AI)-5.2 ("Receipt Inspection of Materials, Components, and Spare Parts") was issued. Receiving SNM and other radioactive materials onsite is now addressed in Section 2.3 of Site Standard Practice (SSP)-10.02 ("Material Receipt and Inspection"), which superseded AI-5.2. General procurement controls are addressed in SSP-10.01 ("Procurement of Material and Services"). Section 1.1 of Appendix D of that SSP describes the special procurement requirements, including identification labeling and notification requirements to be included on the shipping container and accompanying documentation, for SNM, byproduct, and source material. SSP-5.03 ("Byproduct and Source Material Control") addresses the control of radioactive materials, including SNM, that are authorized for use onsite under WBN's byproduct materials license. SSP-5.04 ("Special Nuclear Material Control") addresses the overall control of SNM. Special procurement requirements for SNM, including the marking of shipping containers and accompanying documentation, are stated in Appendix A of SSP-5.03 and Appendix F of SSP-5.04. TVA considers the above existing procedures to provide adequate recurrence controls to ensure the proper onsite control and accountability of SNM, byproduct, and source material in the future.

A related enhancement to WBN's control of procured materials was the implementation of the Materials Management System (MAMS). MAMS is a computer data base that consolidates the inventory records of procured materials in WBN's warehouse facilities. Direct-charge materials were placed into MAMS during the period of 1990 - 1991 based on a physical walkdown of the warehouses. Before that time, there was no data base available for direct-charge materials.

TVA recognizes that the potential still exists for SNM, byproduct, and source material which was procured under pre-1987 contracts to arrive onsite without appropriate labeling and notification. Therefore, TVA has initiated a series of documentation reviews to identify items potentially containing SNM, byproduct, or source material that may have been shipped to WBN in the past or that could be received in the future without appropriate labeling and notification. If additional uncontrolled SNM, byproduct, or source material is identified as a result of these reviews, it will be reported and proper administrative controls will be reestablished in a manner similar to that followed for the incore detector cable assemblies. Also, any open contracts with known suppliers of SNM, byproduct, or source material that could provide such material in the future without proper labeling and notification will be revised to require this labeling and notification.

ENCLOSURE 2

WATTS BAR NUCLEAR PLANT (WBN)  
IMPROPER CONTROL OF SPECIAL NUCLEAR MATERIAL (SNM)

LIST OF COMMITMENTS

The following is the only commitment intended. It will be completed by March 31, 1992.

- TVA has initiated a series of documentation reviews to identify items potentially containing SNM, byproduct, or source material that may have been shipped to WBN in the past or that could be received in the future without appropriate labeling and notification. If additional uncontrolled SNM, byproduct, or source material is identified as a result of these reviews, it will be reported and proper administrative controls will be reestablished in a manner similar to that followed for the incore detector cable assemblies. Also, any open contracts with known suppliers of SNM, byproduct, or source material that could provide such material in the future without proper labeling and notification will be revised to require this labeling and notification.