

TENNESSEE VALLEY AUTHORITY

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JUN 01 1990

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

Gentlemen:

In the Matter of)	Docket Nos.	50-259
Tennessee Valley Authority)		50-260
			50-296

REPLY TO NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY
(EA 89-239)

This letter provides TVA's response to the NRC's May 2, 1990 Notice of Violation (NOV) and Proposed Imposition of Civil Penalty involving special nuclear material (SNM) accountability. Pursuant to 10 CFR 2.201, the enclosure to this letter provides TVA's reply to the NOV. As stated in the enclosure, TVA admits the violation as alleged. Payment of the civil penalty in the amount of \$18,750 is being sent by electronic fund transfer to the Director, Office of Enforcement.

TVA takes the issues raised by this violation very seriously and recognizes the importance of maintaining an accurate inventory of both fuel and non-fuel SNM at all times. The comprehensive corrective actions taken in response to this event are intended to establish an accurate SNM baseline inventory and to maintain the accuracy of that inventory over the long term. These actions should prevent the recurrence of similar violations in the future.

TVA is also aware of the significance of its failure, noted in the NRC's cover letter to the NOV, to report the discovery of eight incore detectors presumed to have been shipped as radwaste prior to 1987. TVA has revised Office of Nuclear Power Procedure 5.5.2, Special Nuclear Material management, to address a found SNM item. Any SNM item which is found in a different location than what is recorded on the current SNM inventory list will be classified as a Category I event. The standard procedure also requires that Category I events be reported to the NRC Operations Center in accordance with 10 CFR 70.52.

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U. S. Nuclear Regulatory Commission

JUN 01 1990

If you have any questions concerning this submittal, please do not hesitate to telephone me at (615) 751-4776.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark O. Medford

Mark O. Medford, Vice President
Nuclear Technology and Licensing

Enclosures
cc: See page 3

Sworn to and subscribed before me
on this 1st day of June, 1990.

Paulette H. White
Notary Public
My Commission Expires 11-4-92

U.S. Nuclear Regulatory Commission

JUN 01 1990

cc (Enclosures):

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ENCLOSURE

REPLY TO NOTICE OF VIOLATION (EA 89-239)
DOCKETS NOS. 50-259, 50-260, 50-296

Restatement of the Violation

10 CFR 70.51(c) requires, in part, that each licensee who is authorized to possess at any one time special nuclear material (SNM) in a quantity exceeding one effective kilogram shall establish, maintain, and follow written material control and accounting procedures which are sufficient to enable the licensee to account for the SNM in his possession under license.

Licensee Procedure TI-14, Special Nuclear Material Control, Revision 15, step 7.8.5 requires that a physical inventory of all nonfuel SNM will be conducted at least once per year. A partial inventory will be conducted after each receipt, transfer, or shipment. All inventory discrepancies shall be documented by initiating a Condition Adverse to Quality Report. A discrepancy may be the difference in piece counts, serial number, location, etc., between the inventory results, and the history records.

Contrary to the above, the licensee failed to perform adequate physical inventories in 1987 and 1988 in that an inventory conducted in 1989 identified 26 discrepancies not detected in those earlier inventories.

This is a Severity Level IV Violation (Supplement III)
Civil Penalty - \$18,750.

Admission or Denial of the Violation

TVA admits the violation as cited.

Reasons for the Violation

TVA has concluded that there were three primary root causes of the violation: an inaccurate 1986 non-fuel SNM inventory; inadequate training of personnel performing SNM inventories; and a programmatic breakdown of the SNM accountability, including insufficient management involvement in SNM accountability issues.

A. Inaccurate Non-Fuel SNM Inventory

As part of TVA's corrective action in response to the NRC's 1986 enforcement action involving SNM inventory discrepancies at BFN, a baseline inventory of fuel and non-fuel SNM was performed. TVA has now determined that the non-fuel portion of that inventory was inaccurate. The majority of the inaccuracies identified are associated with items that were stored in the Radwaste Evaporator Building. Three major errors were made when inventorying these items. The first error was not removing all drums of radioactive material (SNM and non-SNM) from the storage room; therefore, the nonfuel SNM items reported to NRC in LER BFR0-50-259/89016 had not been identified nor placed on the active inventory list. The second error was not consistently identifying which detector cables had detectors attached and which detector cables did not have detectors

attached. The third error was not opening and inspecting the contents of lead bricks used to store cut-off detectors. The second and third errors discussed above resulted in the double counting of items. Consequently, the non-fuel SNM inventory performed in January 1987 formed an inaccurate baseline. Upon completion of this inventory, the cables and bricks were placed in sealed drums. Subsequent inventories in 1987 and 1988 only ensured that the drum seals were intact.

B. Inadequate Training of Personnel Performing SNM Inventories

A contributing cause of the inadequate baseline inventory discussed above was insufficient training. TVA's review of the training provided to personnel performing non-fuel SNM inventories in the 1986-87 timeframe revealed that models of non-fuel SNM items were not included in the training curriculum. Additionally, the training did not include an explanation of the source of high dose rates which would be encountered while performing the SNM search. The SNM searchers did not realize that the high dose rate experienced during the search came from the cable and not from a detector. Therefore, the SNM searchers presumed that each cable had a detector.

C. Breakdown of SNM Accountability

During the 1986-1987 search and inventory, several organizations provided information to the SNM custodian (SNMC), resulting in inaccurate supporting documentation for the inventory. Furthermore, the physical inventory performed was based on the decision to minimize personnel exposure whereby the searches of the drums stored in the radwaste evaporator building might have been performed hurriedly. Therefore, a physical verification to ensure that each cable had a detector attached was not performed and, in some cases, inadequate supporting documentation was used.

Corrective Steps That Have Been Taken and Results Achieved

A. Immediate and Short-Term Corrective Action

As reported to the NRC in LER BFRO-50-252/89016, on November 4, 1989, RADCON personnel performing housekeeping activities in the Radwaste Evaporator Building discovered three buckets containing seven lead bricks presumed to contain neutron instrumentation detectors and one polybag presumed to contain SNM material. The SNMC was notified of the discovery and subsequently determined that these items were not being carried on the current SNM inventory. As part of the immediate corrective action in response to the discovery of the non-fuel SNM items, searches for additional SNM items were undertaken, resulting in TVA's identification of the 26 inventory discrepancies referenced in the cited violation.

Upon discovery of these inventory discrepancies, TVA promptly began to develop and implement an SNM Program Action Plan consisting of the following: improved training of SNM for personnel involved in control, accountability, and plant searches; physical searches of plant areas where non-fuel SNM items were likely to be located; and a 100 percent

review of the search plan by the BFN Quality Assurance (QA) organization. This QA review ensured that the search was conducted properly, personnel were trained, and documentation of the search was thorough.

B. Long-Term Corrective Actions

TVA's long-term corrective actions are intended to minimize the likelihood of additional SNM inventory discrepancies. These corrective actions are being taken in the areas of training, inventory searches, and accountability enhancements.

A formal training course for personnel performing SNM inventories has been implemented. This training includes detailed models of radiation detectors such as: local power range monitors, neutron sources, intermediate range monitors, source range monitors, transverse incore probes and are included as part of the curriculum to ensure that personnel are able to identify devices which contain non-fuel SNM. Furthermore, the experience and training of the reactor engineering staff involved in SNM control has been assessed, with the result that each person is fully aware of the requirements involved with SNM activities.

In addition to the inventory which was undertaken immediately following the discovery of unaccounted for non-fuel SNM in November, BFN is conducting a physical search of approved SNM storage areas, the protected area, the Administration Building, and Power Stores area of the BFN site for non-fuel SNM. Fuel assemblies located in the spent fuel storage pools and the reactor cavity also have been inventoried. Discrepancies between the actual items located and BFN's SNM inventory have been reported to the NRC. As of May 15, these searches were completed except: a physical inventory of the LPRM liners in the Unit 2 and 3 Spent Fuel Storage Pool, a physical inventory of the area under the Unit 2 reactor pressure vessel head and its mirror insulation located on the refueling floor, and a physical inventory of the new fuel storage vaults for each unit.

TVA does not intend to ship its non-fuel SNM offsite for disposal until the new SNM baseline inventory is complete although a temporary SNM storage area for shipping has been established.

Corrective actions have been implemented to provide an additional level of assurance that the control and accountability of SNM at BFN meet regulatory requirements. Based on its evaluation of this event, TVA has concluded that tracking non-fuel SNM by serial numbers will only perpetuate past SNM inventory inaccuracies. As part of the new baseline inventory, non-fuel SNM will be labeled and/or reassigned a unique identifier. This is intended to minimize carryover of prior errors into the new SNM inventory program.

BFN plant management involvement in SNM accountability issues and the SNM inventory process has been increased. Since the initial event, key site management positions have been filled by TVA personnel in lieu of contractors. Although TVA noted in the Enforcement Conference that the responsible manager for SNM would be the RADCON manager, TVA has reevaluated its position and concluded that SNM custodian

responsibilities will remain with the BFN reactor engineering group. This decision was made to ensure that the corporate organization responsible for SNM accountability and control will only interface with reactor engineering groups at each site. Additionally, the TVA SNM program will be consistent with industry practices.

The Site Quality Assurance organization has completed an overview of the SNM program, the SNM baseline inventory, and SNM procedures. This effort included: a review to determine the adequacy and proper implementation of upper tier requirements and regulatory commitments in plant procedures; an assessment of the SNM inventory to determine if both fuel and non-fuel SNM requirements were met; an assessment to compare SNM records against field inventories; and finally an assessment of the SNM program to evaluate the effectiveness of past corrective actions. The QA organization performed this assessment as an in-process review. The QA organization has determined that those portions of the completed corrective actions and completed action items that have been finished are adequate. However, the QA organization has also determined that it is essential to complete an accurate SNM baseline inventory in order to provide adequate recurrence control for the SNM program at BFN.

Previous SNM commitments and corrective actions were also reviewed for lessons learned and for incorporation into the SNM program. Conclusions reached were that inventories should entail a search of the entire area; personnel involved in inventories should have first-hand experience in recognizing the item and/or packaging; and SNM items should be removed from their containers to ensure accurate piece count.

Corrective Steps Which will be Taken to Avoid Further Violations

As noted above, TVA will complete its new baseline SNM inventory by performing the following activities: a physical inventory of the LPRM liners in the Units 2 and 3 SFSP, a physical inventory for the area under the Unit 2 reactor pressure vessel head and its mirror insulation located on the refueling floor, and a physical inventory of the new fuel storage vaults for each unit.

Date When Full Compliance will be Achieved

Full compliance will be achieved when the SNM inventory is completed prior to Unit 2 start-up.