

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT
EMPLOYEE CONCERNS TASK GROUP
OPERATIONS
CEG

Subcategory: Health Physics

Element: Radioactive Material Control

Employee Concerns: 00-85-005-011
XX-85-101-003
JAM-86-001
MRS-85-003

Report Number: 311.02-SQN

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I. Title: Radioactive Material Control

- A. Concern 00-85-005-011, Radioactive Water Dumped at Watts Bar Nuclear Plant (WBN)
- B. Concern JAM-86-001, Radioactive Material Improperly Stored at Sequoyah (SQN)
- C. Concern XX-85-101-003, Radioactive Water Spilled into an Uncontrolled Drain at SQN
- D. Concern MRS-85-003, Green Tags No Longer Required at Clean Toolroom, SQN

The following report describes the evaluation of the above four concerns. The concerns and the evaluations are described in section II of this report below.

II. Specific Evaluation Methodology

Concern 00-85-005-011 states: "CI stated that TVA dumped radioactive material (water), carried in tanker trucks from Sequoyah, in one of the fields on the other side of Watts Bar project. This occurred about three years ago. . . ."

Concern JAM-86-001 states: "Radiological hygiene problem of contaminated material stored in lockers and cabinets which are not properly labeled. Material stored in auxiliary building."

Concern XX-85-101-003 states: "Sequoyah-1980 there was an unknown quantity of radioactive water spilled into the uncontrolled drain system due to a valve on a water sampling station in the turbine building being left open. Construction Dept Concern. CI has no further information. No followup required."

Concern MRS-85-003 states: "Green tag no longer required at clean tool room."

The evaluation of concern 00-85-005-011 included the review of similar concerns regarding the possible dumping of radioactive water from SQN at WBN in 1980 and 1984. Individuals within the SQN Chemistry, Operations, Radwaste, Public Safety, and Power Stores organizations were contacted. Additional interviews were conducted with Environmental Planning personnel in Chattanooga.

Radioactive waste shipment procedures and data were reviewed. Contracts involving the transport of water from SQN to WBN were also reviewed.

The evaluation of concern JAM-86-001 included verification that the incident occurred by examination of SQN Health Physics (HP) files and interviews with HP personnel. Documentation of the event consisted of correspondence between the concerned party and HP, HP and plant management, and internal HP log entries and survey forms. Action taken by SQN HP to correct the situation was reviewed.

Concern XX-85-101-003 is a previously investigated concern (Reference: Memorandum from K. W. Whitt, Director of NSRS, to H. L. Abercrombie, Site Director, Sequoyah Nuclear Plant, dated February 7, 1986, "NSRS report Number I-85-543-SQN). The evaluation of this concern consisted of determining the validity of the previous investigation and determination of generic applicability.

Concern MRS-85-003 was also previously evaluated (line response, see case file). Additional investigation was conducted to verify the findings and conclusions of the previous investigation. SQN HP was contacted to provide the information necessary to answer and resolve this concern.

III. Findings

Evaluation Results

A. 00-85-005-011

Shipment of radioactive material offsite is controlled through Radwaste Handling and Shipping. Instructions (RHSIs) 2, 2.1, 3, and 4. In addition, bills of lading are prepared by Power Stores on all radioactive waste shipments. The shipment of radioactive waste to locations other than licensed burial sites is prohibited by RHSIs and the "Radioactive Material Shipment Manual." Information regarding the shipment of radioactive waste is submitted to NRC on a semiannual basis.

From 1981 through 1984 alum sludge was transported from SQN to WBN in tanker trucks. The sludge was drained onto the ground and disked into the soil. The alum sludge is generated at the SQN water treatment facility and routed to holding ponds. Periodically, the sludge in these ponds is pumped into tanker trucks and transported to WBN. Private contractors were used to haul the sludge from SQN to WBN. Contracts provided for transport of approximately 540,000 gallons of sludge from 1981 to 1984. Records on the exact amounts and dates are no longer available. This procedure was stopped in 1985 due to changes in State regulations. Prior to 1985, the State of Tennessee permitted the use of alum sludge as a soil conditioner. Verbal concurrence was obtained by the Tennessee Department of Solid Waste Management prior to the operation was started. Both sludge and soil samples were taken and analyzed by TVA at various times during this operation.

The alum sludge generated by the water treatment facility is not radioactively contaminated. The water treatment facility is not connected to any radioactive or potentially radioactive systems at SQN.

B. JAM-86-001

Examination of HP files indicate that on January 30, 1986, HP management was informed via an internal SQN memorandum that an employee was concerned that contaminated material was possibly being stored in unlabeled cabinets and other containers in the Auxiliary Building and that surveys of these cabinets and containers were requested. On February 7, 1986, per HP log entries and form TVA 17096 survey number O-86-308, HP technicians conducted searches and surveys of cabinets, carts, and storage boxes in the Auxiliary Building. No untagged or unlabeled contaminated materials were found; however, one bagged and tagged hose was found in an unlabeled Operations Section storage box, elevation 669'.

On February 25, 1986, an informal memorandum was sent from the HP Section Supervisor to the SQN Superintendent, Operations and Engineering, detailing the concern and HP action taken. This memorandum indicated a problem had been encountered by HP in that they could not gain access to some locked cabinets and boxes due to a lack of identification on them. HP requested that the containers be labeled to allow identification of the person or organization responsible for them. Following receipt of the memorandum dated February 25, the SQN Plant Superintendent, O&E, called a meeting with applicable plant and construction management personnel. In this meeting he directed that all lockers, cabinets, gang-boxes, and other containers should be labeled as requested by HP. The management personnel in attendance agreed to comply with this directive. Implementation of this program has been verified and will allow HP to perform periodic surveys of all locked containers in the Auxiliary Building and other regulated areas of the plant. No additional concerns or complaints have been received by HP regarding this matter.

C. XX-85-101-003 (SQN)

The NSRS investigation revealed that on December 1, 1980, during the feedwater moisture carryover test, Na-24 contaminated water from a sample sink entered the Turbine Building sump and was pumped to the yard holding pond. Cause of the incident was an open sample sink valve due to inadequate procedures requiring the valve to be checked. Na-24 has a short half-life and HP established a regulated zone around the pond until the Na-24 had decayed. No Na-24 contamination was released beyond the confines of the pond and no unnecessary personnel exposures were noted. The moisture carryover test is a "one time" procedure and will not be conducted at SQN again; therefore, this concern is no longer applicable to SQN. Applicability to WBN and BLN, which will require this test, was investigated. Appropriate reports concerning the incident were made by the plant and TVA.

D. MRS-85-003

This concern was subject to a line investigation at SQN on June 27, 1986. This investigation revealed the reason green tags are no longer required at the clean toolroom is that the power block concept, now in use at SQN, has removed the clean toolroom from the restricted area. Before the power block concept it was possible to return tools to the toolroom prior to having them surveyed by HP. To ensure that tools were uncontaminated, the plant required that any tools being returned be accompanied by a green tag indicating an HP survey and clearance had been performed. The power block concept requires survey and green tag clearance at the point of exit from the regulated area; therefore, a green tag is no longer required at the clean toolroom.

The investigation was evaluated by an interview with the SQN HP Unit Supervisor on July 23, 1986, and the findings verified.

Conclusions

A. 00-85-005-011

The concern that radioactively contaminated water from SQN was dumped at WBN was not validated. During the period in question, alum sludge was shipped in tanker trucks from SQN to WBN and dumped in fields around the plant.

B. JAM-86-001

The concern that contaminated material was being stored in unlabeled, unposted cabinets, boxes, or other containers was verified; however, no unbagged or unlabeled material was found. Action by HP to label or otherwise identify containers which may contain contaminated material has been implemented and is adequate to prevent an unnecessary hazard to plant personnel. HP appears to have addressed both present and potential future occurrences of this problem in an adequate manner.

C. XX-85-101-003

The concern that radioactive water was spilled into an uncontrolled drain system due to inadequate procedural control was verified. Upon discovery of the incident due to a high radiation alarm on the turbine sump discharge, it has been determined that Operations and HP took appropriate action to prevent a release to the river and minimize personnel exposure. All required actions and reports were made by the plant following the event. Generic applicability has been assessed (see section V below). This evaluation concurs with the findings of the previous NSRS investigation.

D. MRS-85-003

The power block concept was shown to make green tags unnecessary at the clean toolroom and has resulted in better contamination control overall at SQN. This evaluation concurs with the previous line investigation at SQN. The ~~concern~~ concern was not substantiated.

IV. Root Cause

None

V. Generic Applicability

Concern XX-85-101-003 is applicable to WBN and BLN. Examination of WBN Start-Up Test Procedure, SU 4.6, "Moisture Carryover Determination," indicated that the problems encountered at SQN have been specifically addressed and corrected at WBN. The BLN moisture carryover procedure has not yet been written.

VI. References

1. RHSI 2, Revision 2, "Shipment to U.S. Ecology, Richland, Washington"
2. RHSI 2.1, Revision 0, "D.A.W. Shipment to Chem-Nuclear Barnwell, South Carolina"
3. RHSI 3, Revision 7, "Shipment of Radioactive Waste to Chem-Nuclear Systems, Inc., Barnwell, SC"
4. RHSI 4, Revision 1, "Shipping of Radioactive Articles or Equipment Offsite and to Other Plants, Utilities, or Vendors"
5. TVA, Office of Nuclear Power, "Radioactive Material Shipment Manual" Revision 24
6. Contract/Purchase Requisitions

82P56-187561-2	Roto-Rooter, Sewer Service
83P51-931802	Bryson Environmental Services
83P51-931808	Valley Systems Company
85P51-9644390	H.E.S., Inc.

VI. References (continued)

7. Memorandum from J. W. Shipp to D. B. Cox, March 10, 1981, "Watts Bar Alum Sludge Analysis"
8. Form TVA 45, SWH to JGM, May 5, 1982, "Chemical Analysis of SQN Alum Sludge"
9. "Preliminary Draft Report, Potential Sanitary Landfill Sites for Loudon County, Tennessee," Division of Environmental Planning, TVA, December 1978
10. "Final Geologic Evaluation of Proposed Alum Sludge Landfill Site," State of Tennessee, Department of Public Health, Division of Solid Waste Management, May 11, 1981
11. Semiannual Radioactive Effluent Release Reports 1980-1986
12. Informal memorandum, R. W. Fortenberry to D. E. Crawley, dated January 30, 1986, "Employee Concern"
13. Radiological Survey, Form TVA 17096, Survey Number O-86-308, dated February 7, 1986
14. Informal memorandum, D. E. Crawley to L. M. Nobles, dated February 25, 1986, "Unlabeled Cabinets in Auxiliary Building"
15. NSRS Report Number I-85-543-SQN, "Radioactive Spill into Uncontrolled Drain System," dated February 7, 1986.
16. Watts Bar Nuclear Plant, Start-up and Test Procedure, SU 4.6, "Moisture Carryover Determination"

VIII. Immediate or Long-Term Corrective Action

None