

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-137-SQM

EMPLOYEE CONCERN: SQP-5-003-001
SQP-5-003-002

SUBJECT: PROCEDURES NOT FOLLOWED; SPILL CAUSED BY UNAUTHORIZED
OPERATION OF VALVE BY ELECTRICIAN

DATES OF INVESTIGATION: JANUARY 20 - FEBRUARY 24, 1986

LEAD INVESTIGATOR:

D. J. Hornstra
D. J. HORNSTRA

3/17/86
DATE

INVESTIGATOR:

John L. Croes
J. L. CROES

3/17/86
DATE

REVIEWED BY:

Fredrick J. Slagle
F. J. SLAGLE

3/17/86
DATE

APPROVED BY:

W. D. Stevens
W. D. STEVENS

3/17/86
DATE

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I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of expressed employee concerns received by the Quality Technology Company (QTC)/Employee Response Team (ERT). The concerns of record, as summarized on the Employee Concern Assignment Request Form from QTC and identified as SQP-5-003-001 and SQP-5-003-002, stated:

SQP-5-003-001

Sequoyah - On the evening of 12-9-85, an electrician operated a valve in the unit 2 RHR heat exchanger room without a unit operator present. This caused a spill (unknown amount) of what the CI described as "reactor grade" (highly radioactive) water into the room. The spill was secured by a health physics technician who happened to be in the area. CI stated that it was alleged that a unit operator had told the electrician to go and separate the valve, and that unit operators are not authorized to give such directions. CI could provide no estimate of amount of radioactivity released, and stated that "everyone is being real closed mouthed about this thing." CI has no further information and is anonymous.

SQP-5-003-002

Sequoyah - CI expressed that management/supervision have an attitude of "hurry up and get the job done" in an effort to get the plant on line. CI feels that procedures are not being followed in an effort to accomplish work as quickly as possible, and evidenced this by the radioactive water spill which occurred on 12-9-85, and addressed in this file, concern 001. CI has no further information, and is anonymous.

II. SCOPE

- A. The scope of this investigation was determined from the concern of record to be that of four specific issues requiring investigation:
1. A spill occurred in unit 2 Residual Heat Removal (RHR) Heat Exchanger (HX) room on December 9, 1985. This spill was caused by the operation of a valve by an electrician.
 2. Unit Operators (UO) are not authorized to give directions to electricians to operate valves.

3. This event (issue 1) is evidence that procedures are not being followed.
 4. An attitude of "hurry up and get the job done" exists in order to allow the plant to be returned to operation.
- B. This investigation was conducted by reviewing unit operator daily journals, health physics daily journals, and health physics survey sheets and by interviewing electrical modification, electrical maintenance, health physics, and operations personnel.

III. SUMMARY OF FINDINGS

A. Commitments and Requirements

1. SQN Administrative Instruction AI-30 (Ref. 1) requires that "permission shall be received from the shift engineer or his representative prior to the performance of any maintenance, test, or modification activity on, or that may affect, plant equipment."
2. SQN AI-3 (Ref. 6) requires that an operating permit (TVA 6271) be used whenever equipment is to be operated by persons other than its operator.
3. SQN Modifications WP 11866 for equipment qualification upgrade of limitorque motor-operated valves required that, during any phase of work performed on the WP, permission be received from operations before placing any valve in an open, closed, or intermediate position.

Corresponding maintenance instructions for limitorque operated valves (MI-10.46, Ref. 7) provides a precaution as follows:

Do not operate the valve normally or electrically without the proper operating permit or direct supervision of the appropriate Operations personnel.

B. Findings

1. On the midnight shift, December 9-10, 1985, two Modifications electricians (Individuals A and B) entered the unit 2-B RHR HX room (as recorded on the associated Radiation Work Permit) to functionally test a motor-operated valve (FCV 74-35).
2. Individuals A, B, and C stated that the functional test consisted of manually operating the valve (with handwheel) to check the operation of the limit switches, followed by electrical operation of the valve from the MCR. The test of the limit switches consisted of manually operating the valve at the direction of an engineer in the MCR to obtain closed, intermediate, and opened indications in the MCR. Radio contact was maintained between the electricians at the valve and the engineer in the MCR.

3. On the morning of December 10, 1985, Individuals A and B reported to the engineer in the MCR (Individual C) that they were ready to test FCV 74-35. After receiving permission from the UO, Individual C gave direction to the electricians to open FCV 74-35. (FCV 74-35 is the second valve down stream of the 2B RHR HX, and is the last valve between the 2B RHR HX and the common RHR header returning to the reactor. During this operation, the train A RHR was in operation.)
4. Upon opening the valve, the electricians stated they heard water flowing through the system and reported this to the MCR. They subsequently heard water flowing into the room floor, about 10-12 feet below the platform they were working on, and reported this to the MCR. Upon receiving direction from the unit operator via the engineer (Individual C) in the MCR, the electricians closed FCV 74-35.
5. The electricians left the 2B RHR HX to be checked by Health Physics and were found to be not contaminated by this spill of reactor coolant water.
6. A Health Physics technician (Individual D) was sent to the RHR HX room from the HP laboratory and conducted a survey. At the time he entered the room, both electricians had left the contamination zone. Individual D stated that water was still coming out of the drain valve and spraying on the floor and wall. He stated that, at the direction of an operations individual, either he or someone else closed the drain valve (he could not remember which). Only the two electricians were logged into Radiation Work Permit 02-2-85636 Timesheet 0021 (Ref. 2). They stated they did not operate the drain valve.
7. As documented in the unit operators log (Ref. 3):

During functional EQ test of 74-35 flow was heard when valve was hand-cranked open. FCV 74-28 was found to have leaked through spilling water into 2B RHR HX room via 74-543. FVC-74-35 was closed immediately upon indication of flaw and functional test was terminated.
8. The presence of an AOU may have decreased the amount of water spilled on the floor (by closing valve 74-35 immediately when water was heard on the floor and not waiting for directions from the MCR). Individuals E and F stated that, if present, an AOU may have known that the drain valve was open, or may have checked it closed if he was aware of the leakage history of FCV 74-28. However, even with an AOU present, the event may still have occurred.
9. Operations management (Individual F) stated that he had been unaware of the practice of performing this functional test on valve limit switches without an AOU until it was brought to his attention by some AOs. At that time, he verbally directed

shift engineers to require the presence of an AUO for this functional test. He stated that the presence of an AUO was needed to ensure that the proper valve was operated and was also necessary to evaluate the system impact of operating a valve.

10. No evidence was found that any attempt had been made to cover up or down play the spill event that occurred on December 10, 1985.
11. No evidence was found that the spill on December 10, 1985, was caused by procedures not being followed.
12. The Modifications engineer (Individual C) and electricians involved in the spill event (Individuals A and B) stated that they had received no excessive pressure associated with functional testing of valves that reflected a "hurry up and get the job done" attitude. Operations management (Individual F) stated that Modifications personnel had complained that valve testing would take longer after he instructed shift engineers to require AUOs for all the valve limit switch functional tests.
13. Although other electricians (Individuals G through S) had discussed an emphasis on productivity indicators (number of packages, maintenance requests, etc., completed), no individuals interviewed substantiated the concern that an attitude of "hurry up and get the job done" existed such that procedures would not be followed in order to allow the plant to return to operation.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. Concern SQP-5-003-001 was substantiated since the spill on December 10, 1985, was caused by the operation of a valve by an electrician without an operating permit or the direct supervision of appropriate Operations personnel. This modifications electrician did not have an operating permit. The communications through a third party (the modifications engineer) to the UO contributed to the severity of this spill. There was no basis to conclude that the presence of an AUO would have prevented the spill by detecting the open status of the RHR HX drain valve (74-543) in combination with the internal leakage of valve 74-28 prior to operation of valve 74-35 in this test. Operations management (through verbal direction to shift engineers) has taken action to prevent this practice from recurring in the future by requiring the presence of an AUO.
2. Concern SQP-5-003-002 was not substantiated in that the example given as evidence (the spill on December 10, 1985) was not found to be caused by a failure to follow specific procedures in the workplan. No evidence was found that

management/supervision was directing that procedures not be followed in order to expedite work to get the plant back on line.

B. Recommendations

None

DOCUMENTS REVIEWED IN INVESTIGATION I-85-137-SQN
AND REFERENCES

1. SQN Administrative Instruction AI-30, R7, "Nuclear Plant Method of Operation," dated July 18, 1984
2. Radiation Work Permit 02-2-85636, Timesheet 0021
3. Unit Operation Daily Journal, December 10, 1985
4. Health Physics Daily Journal for December 1985
5. Radiological Survey 2-85-2235 for December 10, 1985
6. SQN Administrative Instruction AI-3, R29, "Clearance Procedure," dated January 30, 1986
7. SQN Maintenance Instruction MI-10.46, R2, "Limitorque, Motor Operated/ Control Valve," dated February 20, 1986

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: H. L. Abercrombie, Site Director, Sequoyah Nuclear Plant

FROM: K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

DATE: **MAR 17 1986**

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-165-SQN

Subject CRAFTSMEN DIRECTED TO VIOLATE PROCEDURES, USE TOOLS OTHER THAN THOSE SPECIFIED, AND USE QUESTIONABLE QA MATERIAL

Concern No. SQP-5-004-004 and SQP-5-004-006

This report contains four Priority 1 [P1] recommendations which must be addressed before startup. It is requested that you respond to the attached three Priority 2 [P2] recommendations by May 17, 1986. The Priority 3 [P3] recommendations will be looked at for corrective action follow through by July 17, 1986. No response is required for this item. Should you have any questions, please contact W. D. Stevens at telephone 6231-K.

Recommend Reportability Determination: Yes X No

WATTS BAR NUCLEAR PLANT SITE DIRECTOR'S OFFICE			
MAR 19 '86			
	NOTE	ACTION	REPLY
W. C. Bibb, BFN			
W. T. Cottle, WBN			
James P. Darling, JLN			
R. P. Denise, LP6NABA-C			
G. B. Kirk, SQN 25 M2			
Martha Martin, JLN			
D. R. Nichols, E3A8 C-K			
QTC/ERT, Watts Bar Nuclear Plant			
Eric Sliger, LP6NABA-C			
J. H. Sullivan, SQN (2)			

Ben L. Baker
Director, NSRS/Designee

RPD

WDS:JTH
Attachment
cc (Attachment):

W. C. Bibb, BFN

W. T. Cottle, WBN

James P. Darling, JLN

R. P. Denise, LP6NABA-C

G. B. Kirk, SQN 25 M2

Martha Martin, JLN

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