TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS REPORT NO I-85-513-SQN

EMPLOYEE CONCERN: XX-85-063-001

SUBJECT: WORK AREAS CONTAMINATED DUE TO LACK OF KNOWLEDGE OF SYSTEM CONTENTS

DATES OF INVESTIGATION: December 12-18, 1985

INVESTIGATOR: D. J. Hornstra — D. J. HORNSTRA — Jan 30, 1986 — DATE

REVIEWED BY: L. E. Brock for — M. W. ALEXANDER — 1/31/86 — DATE

APPROVED BY: R. C. Sauer — R. C. SAUER — 1/31/86 — DATE

I. BACKGROUND

A Nuclear Safety Review Staff investigation was conducted to determine the validity of an employee concern received by Quality Technology Company (QTC)/Employee Response Team. The concern of record, as summarized on the Employee Concern Assignment Request Form from QTC and identified as XX-85-063-001, stated the following:

> Sequoyah Operators and Health Physics: Failure to know and verify the contents of systems. Example: Health Physics gave go ahead to open a line in the Turbine Building Unit 2, saying everything was O.K. and clean. After opening the line, the next night, the entire area was roped off for contamination. This occurred in January/February 1984. C/I has no further information. Nuclear Power concern.

Based upon the additional information from ERT, details of the example identified the line as a 4-inch line under the condenser, off of the condenser. The line had been drilled to remove a sample of water which was analysed and declared not to be contaminated by Health Physics. Subsequently, the entire line was cut and water was allowed to drain onto the floor and into the floor drain system. When the CI came back to the area the next day, the area was being decontaminated.

II. SCOPE

The scope of the investigation was determined from the stated concern of record to be that of two issues requiring investigation:

- An event occurred in January/February 1984 as stated in the example of the concern of record.

- Operations and Health Physics personnel do not provide adequate information to modifications/maintenance personnel prior to breaking into potentially contaminated systems. Once the system is open, Health Physics personnel do not adequately verify the system contents.

To accomplish this investigation, NSRS interviewed Modifications and Health Physics personnel and reviewed work plans and radiation survey packages to attempt to identify the event described in the concern of record. Modifications and Health Physics personnel were interviewed to determined their perceived responsibility for predicting contents of a system.

III. SUMMARY OF FINDINGS

A. Requirements and Commitments

1. Office of Power Radiation Protection Plan (RPP) (Ref. 1) Section A3.6.2 requires that radiation work authorizations be provided in advance when radiation or contamination hazards are unknown or for other reasons for which Health Physics (HP) requires special precautions.

2. SQN Radiological Control Instruction RCI-14 (Ref. 2) requires the use of Radiation Work Permits (RWPs) for areas in which a radioactive or potentially radioactive system is to be breached. RCI-14 states that the work supervisor should initiate the RWP Timesheet after a thorough discussion of the work to be performed with the HP representative. RCI-14 also requires the HP representative provide special instruction for each RWP and RWP Timesheet and monitor and modify protective clothing requirements and special instructions as needed.

B. Findings

1. Modifications personnel (Individuals A and B) and Health Physics personnel (Individuals C and D) provided suggestions that any contamination in the Turbine Building Elevation 662.5 (under the condenser) would probably have been from work in the Steam Generator Blowdown (SGBD) System. However, Individual B could find no record of any unit 2 blowdown lines that had been breached with water in them during the months noted in the employee concern.

2. Individual E stated that work had been done on the SGBD system (time period not remembered) involving the installation of two 4-inch valves which had required the draining of the associated piping up to a boundary valve. He stated that there had been some leakage past the boundary valve and that the area had been roped off as a contamination zone as a precaution.

3. Individual E stated that when the SGBD system was cut into on the 685-foot level (adjacent to the flash tank) the workers had been dressed out as a precautionary measure. Once Health Physics had surveyed the inside of the pipe, the area was declared clean and protective clothing requirements were removed.

4. Based on Health Physics surveys of the Turbine Building, Elevation 662.5, unit 2, the only contamination area identified during the January-February 1984 period was on the SGBD pumps. RWP 02-2-00925 Timesheets 0001 and 0002 indicated general cleanup/decontamination of these areas at a time prior to 1400 on two days. This contamination area did not coincide with the concern of record because:

a. These contamination areas were not established coincident with any work on the nearby SGBD piping.

b. The timing of the decontamination on the above RWPs was such that the CI would not have observed the decontamination process when he reported to work the "next night."

5. Surveys of the unit 2 Turbine Building area during the January-February 1984 period showed that some areas around the SGBD system had been zoned as a regulated area due to radioactive material in the piping system as a result of primary-to-secondary leaks.

6. Two modifications to the SGBD system in the 1983-1984 period were identified by RWPs in which radioactive/potentially radioactive piping was breached. However, as detailed below, neither of the cases fit the description provided by the CI.

   a. Work Plan 10476 required the draining and flushing of the steam generator blowdown lines to accomplish the tie-in of 4-inch lines. Although the work was performed in September 1983, details were compared with the event described by the CI to provide an indication of how Health Physics imposed protective requirements and general practices. In this work, the following sequence occurred:

      (1) The drain valve on each SGBD pump was used as a sample point prior to draining. A lab coat, gloves, booties and shoe covers, and surgeon's cap were required.

      (2) HP coverage was required when draining the system. Based upon the survey referenced in the RWP, the drain and flush operation was conducted in the immediate area of the SGBD pumps. The area around the SGBD pumps had previously been zoned as contaminated. Coveralls, taped gloves, taped booties and shoe covers, and a surgeon's cap were required.

      (3) No evidence was found that the draining operation increased the level of contamination in the work area.

      (4) The SGBD piping was subsequently cut, welding in 4-inch lines and associated valves. Protective requirements included coveralls, plastic suit, gloves, booties and overshoes, canvas hood, and full face mask. The plastic suit, hood, and facemask were required only while breaching the system.

b. WP 11021 cut into the SGBD system piping on the 685-foot level. This work was done in August of 1984. The following sequence indicates Health Physics practices in that timeframe.

(1) Special instructions required continuous Health Physics coverage and a requirement to contain all water.

(2) Protective requirements included lab coat, gloves, plastic booties and shoe covers, a surgeon cap, and face shield.

7. Modifications personnel (Individuals A, B, E, and F) had no negative statements about the adequacy of HP personnel knowledge of plant systems. Individuals A, E, and F stated that the HP technicians establish conservative protective requirements; at times, they felt excessive protection was required.

8. A Modifications supervisor (Individual A) stated that he considered Modifications personnel responsible for determining the contamination sample points prior to breaching a system and for understanding what contamination may be in the system and the potential leakage paths. He considered Health Physics to be responsible only for performing surveys and setting protective requirements. A Health Physics supervisor (Individual G) considered HP personnel responsible for identifying potential contamination problem areas. Neither modifications nor HP personnel considered Operations personnel responsible for informing craft personnel of the contents of a system prior to breaching that system.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusion

The concern of record was not substantiated. No evidence was found that an event occurred as described by the CI. Potentially contaminated systems in the Turbine Building had been breached on other occasions, leading to scenarios similiar to that described by the CI. In these cases, the Health Physics personnel treated these systems as potentially contaminated, conducting surveys, and requiring protective clothing until the areas were declared clean. No evidence was found to corroborate the opinion that Operations and Health Physics personnel do not provide adequate information or verify system contents.

B. Recommendations

None

DOCUMENTS REVIEWED IN INVESTIGATION I-85-513-SQN
AND REFERENCES

1. Office of Power Radiation Protection Plan, Rev. 1, dated November 2, 1983

2. SQN Radiological Control Instruction, RCI-14, R4, "Radiation Work Permit (RWP) Program," dated July 10, 1985

3. Radiation Work Permits 02-2-84924, 02-2-84925, 02-2-83008, and associated radiation surveys

4. Radiation Surveys (HPSIL-1) for the period January-February 1984

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

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

DATE: FEB 07 1986

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-826-SQN

Subject Plant Operating Problems Were Disregarded

Concern No. XX-85-067-001

No response or corrective action is required for this report. It is being transmitted to you for information purposes only. Should you have any questions, please contact W. D. Stevens at theephone 6231-K

Recommend Reportability Determination: Yes ______ No X

for Director, NSRS/Designee

RCS:JTH
Attachment
cc (Attachment):
W. C. Bibb, BFN
W. T. Cottle, WBN
James P. Darling, BLN
R. P. Denise, LP6N40A-C
G. B. Kirk, SQN
D. R. Nichols, E10A14 C-K
QTC/ERT, Watts Bar Nuclear Plant
Eric Sliger, LP6N48A-C
J. H. Sullivan, SQN

0425U

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-862-SQN

EMPLOYEE CONCERN: XX-85-067-001

SUBJECT: PLANT OPERATING PROBLEMS WERE DISREGARDED

DATES OF INVESTIGATION: DECEMBER 11-13, 1985

INVESTIGATOR: N. T. Henrich — 1/29/86
N. T. HENRICH — DATE

REVIEWED BY: MW Alexander — 1/29/86
M. W. ALEXANDER — DATE

APPROVED BY: R. C. Sauer — 1/31/86
R. C. SAUER — DATE

I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of an expressed employee concern received by the Quality Technology Company (QTC)/Employee Response Team (ERT). The concern of record, as summarized on the Employee Concern Assignment Request Form from QTC and identified as XX-85-067-001, stated the following:

> Sequoyah - Small problems in plant operation were disregarded (1983), and the plant (unit 1) was kept operating as if in a race, which resulted in bigger problems. Nuc Power dept. concern. CI has no further information and has expressed this as a generic concern.

Further information was requested from the ERT follow-up group to identify any specific operating problems referred to in this concern. Follow-up disclosed no additional specific information.

II. SCOPE

A. The scope of this investigation was determined from the stated concern of record to be that of a single, specific issue requiring investigation:

- SQN management disregarded small operating problems on unit 1 during 1983 resulting in their escalation into more significant problems.

B. Since specific examples of operating problems were not identified in the concern of record or in subsequent follow-up with ERT, the methodology used in this investigation was to review NRC Systematic Assessment on Licensee Performance (SALP) findings, NRC regulatory violations as documented in I&E inspection reports, License Event Reports (LERs), and monthly operating reports submitted to NRC to determine if any adverse operational trends could be detected which could have been the result of a disregard for small problems and their subsequent escalation into larger ones. Interviews were also conducted with personnel cognizant of SQN unit 1 operation and maintenance activities during 1983.

III. SUMMARY OF FINDINGS

A. Requirements and Commitments

Not applicable to this investigation.

B. Findings

1. NUREG-0834 (Ref. 1) defines the methodology used by the NRC for the conduct of Systematic Assessment of Licensee Performance (SALP) reviews and was implemented in accordance with NUREG-0660 (Ref. 2) Task I.B.2. The SALP program is a licensee management assessment process conducted by senior NRC managers which involves collection of pertinent performance data over an appraisal period of at least one year. It compares plant operation in several areas to regulatory requirements and is intended to aid TVA in improving SQN's performance.

2. NRC conducted SALP appraisals of SQN plant performance for the following periods.

   - July 1, 1981 - December 31, 1982
   - January 1, 1983 - February 29, 1984
   - March 1, 1984 - May 31, 1985

   The appraisals focused on specific performance areas including plant operations. The results of these SALP appraisals are documented in references 3, 4, and 5, respectively, and summarized in attachment 1. This investigation focused on the SALP evaluation results for the period January 1, 1983 - February 29, 1984.

   SALP performance levels are defined by categories as follows:

   <u>Category 1</u> (Highest Rating) - Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented towa d nuclear safety.

   <u>Category 2</u> (Average Rating) - NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety.

   <u>Category 3</u> (Lowest Rating) - Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident. Minimal satisfactory performance with respect to operational safety is being achieved.

SQN's operational performance was rated category 2 in each of the SALP evaluation periods noted above. As NRC noted for the SALP evaluation period January 1, 1983 - February 29, 1984 (Ref. 4), "The Sequoyah facility has improved in overall performance since the last SALP evaluation period. Major strengths were noted in the radiological controls, maintenance, surveillance, fire protection, and refueling areas. Operations was also strong during much of the period, but a temporary decline in performance later in the period reduced the overall performance level."

During October and November 1983, a number of violations dealing with plant operations for failure to follow procedures and/or policies was received by SQN. These violations are noted below.

- Severity Level IV violation for spraying approximately 600 gallons of primary coolant into containment as a result of misaligned valves in the Residual Heat Removal (RHR) system due to failure to follow procedures.

- Severity Level IV violation for failing to chain lock an RHR pump discharge valve due to failure to follow procedures.

- Severity Level IV violation for failure to properly verify locking devices required for containment integrity due to failure to follow procedures.

- Severity Level IV violation when a 120-volt A.C. vital inverter was taken out of service in excess of the 24 hours allowed due to personnel error.

Plant management investigated these problems and initiated appropriate corrective action. During the last two months of the SALP evaluation period for 1983, no additional violations were identified.

NRC summarized their findings in the plant operations area by noting the following:

> Performance in this area was evaluated as Category 2 during the previous SALP assessment. Performance during this period was strong; however, it was not of a sufficient and consistent level to warrant a Category 1 rating. . . . Improved performance was noted near the end of the review period.

3. Attachment 2 summarizes SQN violations noted by NRC for each of the stated SALP evaluation periods. Violations are categorized in terms of levels relative to their importance. Severity Levels I and II are very significant and involve actual or high potential impact on the public. Severity Level III violations are cause for significant concern. Level IV violations are less serious but if left uncorrected could lead to a more serious concern. Level V violations are of minor safety or environmental concern. Level VI violations are the least significant.

   SQN received no Level III violations in 1983 and reduced the total number of violations from the SALP evaluation period covering 1982. NRC noted in reference 4 that this indicated improvement in overall plant performance. Of the four Level III violations received by SQN in 1984, two of the violations related to maintenance activities specifically related to the thimble tube ejection incident on April 19, 1984. There were no Level III violations related to plant operations in 1983 or 1984.

4. Licensee Event Reports (LERs) are submitted to the NRC whenever compliance with plant technical specifications is not maintained. The following summarizes the number of LERs by unit factored into the SALP evaluations review periods.

	Unit 1	Unit 2	Total
7/81 - 12/82	135	93	228
1/83 - 2/84	129	80	209
3/84 - 5/85	81	27	108

   It should be noted that effective January 1984 the reporting criteria for LERs were revised by NRC to ensure reporting consistency for all utilities regardless of their individual technical specification requirements. This could have contributed to a possible reduction in the number of LERs filed by TVA during the later review period.

   A review of LERs filed in 1983 did not identify an increase in the number reported to NRC.

Inadvertent containment vent isolation is a typical example of a reportable event that occurred on more than one occasion in 1983. SQN management initiated an investigation into the root cause of the problems and initiated corrective action to resolve it.

5. The SQN monthly operating reports submitted to NRC reviewed as part of this investigation yielded the following of unit operation for 1983.

<u>Unit 1</u>

In January 1983, the unit was returned to service following a refueling outage. Restart problems included high reactor coolant pump seal leakage and feedwater regulatory valve malfunction. Full power operation was delayed by self-imposed conservative restrictions on steam generator secondary side water chemistry specifications.

No significant problems or downtime was experienced until August 1983 when waste evaporator bottoms were inadvertently introduced into the condensate system resulting in chemical intrusion into the steam generators. The unit was out of service for approximately one-half month for cleanup efforts necessary to reestablish steam generator secondary side chemistry control. In late November an electrical fault on the main generator resulted in a unit trip. SQN management decided to cool down and investigate the cause of the problem. This investigation and the corrective actions taken kept the unit in a forced outage throughout December 1983. No attempt was made to return the unit to service until the cause of the fault was determined and corrective action implemented.

<u>Unit 2</u>

In January 1983 the unit was operating at reduced power due to self-imposed conservative restrictions on steam generator secondary side water chemistry. On January 2 the unit was taken off line to locate and repair a hydrogen leak on the generator.

On January 4 the unit was returned to service and continued commercial operation until July 18 when a main feed pump trip induced a reactor trip ending a record-setting continuous run of 195 days, 9 hours, and 34 minutes. On May 9, 1983, the No. 3 steam generator experienced a through wall tube leak. This resulted in leakage of reactor coolant into the secondary side of the steam generator. The leak was closely monitored by NRC staff and SQN operations and management personnel. The leakage rate never exceeded NRC-approved technical specification limits. Reference 6 provides additional details on this event.

6. Interviews were conducted with selected plant personnel involved in operation and maintenance of the SQN units. None of those interviewed could identify any specific examples of operating problems being ignored during 1983. Required maintenance was performed even if this involved shutting down a unit. Attachment 3 identifies typical examples of decisions to perform maintenance during 1983 at the expense of unit availability or capacity factor as noted in the SQN monthly operating reports submitted to NRC.

7. Division of Quality Assurance Audit Report No. SQ-8400-14 (Ref. 9) identified two instances in 1983 where, contrary to plant Technical Instruction TI-27 (Ref. 10), the specified power reduction on unit 1 was not accomplished within the allowed timeframe when water chemistry exceeded prescribed alert levels. SQN management agreed to and initiated corrective action to resolve DQA Deviation Report No. SQ-8400-14-04. DQA has not performed a follow-up audit to assess the effectiveness of the corrective action.

   Monthly operating reports showed several examples where unit 1 was held at reduced power levels or reduced power to establish proper steam generator secondary side water chemistry. There is no clear evidence that unit 1 was operated without regard for water chemistry specifications addressed in TI-27 (Ref. 10).

8. A review of the Sequoyah Nuclear Safety Review Board's (NSRB) annual report for 1983 (Ref. 11), and NSRB meeting minutes (Ref. 12) did not identify any specific problems related to unit 1 operation in 1983 that were disregarded for the sake of unit operation and which resulted in more serious problems.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The employee concern could not be substantiated. The investigation did not identify any specific problems related to unit 1 operation in 1983 that were disregarded for the sake of unit operation and which resulted in more serious problems. Specifically, the following observations were made:

- The NRC SALP appraisals for SQN performance for the period covering 1983 indicate improved overall plant operation.

- There was a reduction in the number and severity levels of NRC violations during the SALP evaluation period covering 1983 relative to previous evaluation periods.

- There was a slight reduction in the number of LERs submitted to NRC in 1983 relative to 1982.

- There were numerous examples of unit 1 being removed from service or derated to allow maintenance activities to be performed.

B. Recommendations

None

Attachment 1

SQN SALP PERFORMANCE SUMMARY

Performance Category Ratings	Evaluation Periods		
	7/81 - 12/82	1/83 - 2/84	3/84 - 5/85
Plant Operation	2	2	2
Radiation Control	2	1	2
Plant Maintenance	2	1	3
Surveillance	1	1	2
Fire Protection	Not Rated	1	2
Emergency Preparedness	2	3	2
Security/Safeguards	3	2	2
Refueling	2	1	2
Licensing	2	2	2
Training	Not Rated	Not Rated	2
Quality Assurance	3	3	3

Attachment 2

SQN NRC VIOLATION SUMMARY

Evaluation Period	Oper	Rad Cont	Maint	Surv	Fire Prot	Emerg Prot	Security	Refuel	Lic	Trng	QA	Total Violations
	SALP Performance Categories											
7/81 - 12/82												
Level 3	2	-	-	-	-	-	-	-	-	-	-	2
Level 4	7	2	4	1	-	-	4	-	-	-	3	21
Level 5	4	4	4	4	-	-	8	-	-	-	1	25
Level 6	-	-	-	-	-	-	2	-	-	-	1	3
	13	6	8	5	0	0	14	0	0	0	5	51
1/83 - 2/84												
Level 3	-	-	-	-	-	-	-	-	-	-	-	-
Level 4	9	4	3	2	-	-	1	-	-	-	7	26
Level 5	2	-	1	1	-	1	-	-	-	-	4	9
	11	4	4	3	0	1	1	0	0	0	11	35
3/84 - 5/85												
Level 3	-	-	2	-	-	-	1	-	-	-	1	4
Level 4	6	4	11	3	2	1	4	1	-	1	2	35
Level 5	4	2	4	3	-	1	2	-	-	-	1	17
	10	6	17	6	2	2	7	1	0	1	4	56

Attachment 3

SQN OPERATING SUMMARY - 1983

Month	Unit	Description
January	1	Reduced reactor power to mode 5 to repair reactor coolant pump seal leakage.
January	2	Unit was removed from service to investigate and repair a H_2 leak in the generator.
February	1	Power was reduced to allow maintenance on No. 3 heater drain tank pump.
March	1	Reduced power to close ice condenser doors. Following a reactor trip, the unit was placed in mode 5 to allow repair of a source range detector and depressurization of reactor coolant system to replace a ruptured UHI diaphragm.
March	1	Load reductions were made to allow maintenance on condenser water boxes.
March	2	Load reduction was initiated to add oil to No. 2 reactor coolant pump.
April	1	Load reduction initiated to replace cords on Nos. 2 and 3 governor valves and for maintenance on No. 3B heater drain tank pump.
June	1	Reduced power for maintenance on No. 3 heater drain tank level controls.
June	2	Reduced power to add oil to reactor coolant pump No. 1.
August	1	Unit removed from service to clean up steam generator when water evaporator bottoms were inadvertently dumped to the condensate system.
September	1	Reactor taken to mode 5 to drain steam generators to remove contaminates.
September	1	Held unit at reduced power levels to allow maintenance on condensate booster pump B.
October	2	Reactor power held at reduced levels for maintenance on main feed pump turbine controllers.

SQN OPERATING SUMMARY - 1983 (Continued)

Month	Unit	Description
November	1	The unit was kept out of service to allow investigation and repair of an electrical fault in the main generator.
November	2	Load reduction made due to high vibration on reactor coolant pump No. 1.
November	2	Load reductions were made to work on main feed pump oil strainers and to resolve injection water problems.

DOCUMENTS REVIEWED IN INVESTIGATION I-85-862-SQN AND REFERENCES

1. NUREG-0834, "NRC Licensee Assessments," published August 1981

2. NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," published May 1980

3. Letter from James P. O'Reilly (NRC) to H. G. Parris (TVA), "Systematic Assessment of Licensee Performance," dated June 17, 1983 (A02 830620 008)

4. Letter from Richard C. Lewis (NRC) to H. G. Parris (TVA), "Report Nos. 50-259, 260, 296/84-09; 50-327, 328/84-08, 50-390/84-24; 50-391/84-19; and 50-438, 439/84-07," dated June 12, 1984 (A02 840513 010)

5. Letter from William J. Dircks (NRC) to Mr. Charles Dean (TVA) dated September 17, 1985 (A09 850919 005)

6. NSRS Investigation Report No. I-85-372-SQN issued December 16, 1985

7. Sequoyah Monthly Operation Reports to NRC, January - December 1983

8. SQN Licensee Event Reports - Units 1 and 2, January 1982 - December 1984

9. Memorandum from G. W. Killian to T. G. Campbell, "Division of Quality Assurance Audit Report No. SQ-8400-14 - Sequoyah Chemistry Program," dated November 2, 1984 (L17 841102 801)

10. SQN Technical Instruction TI-27, "Chemistry Specifications Units 1 and 2," Revision 25, dated August 30, 1985

11. Memorandum from F. A. Szczepanski to H. G. Parris, "Browns Ferry and Sequoyah Nuclear Safety Review Board's Annual Report for 1983 (A43 840508 002)

12. SQN Nuclear Safety Review Board Meeting Minutes

1-26-83	Meeting 49	A43 830209 003
3-8-83	Meeting 50	A43 830322 003
4-5-83	Meeting 51	A43 830406 C01
4-13-83	Meeting 52	A43 830427 001
5-23-83	Meeting 53	A43 830606 001
6-17-83	Meeting 54	A43 830629 005
6-28-83	Meeting 55	A43 830712 005
7-8-83	Meeting 56	A43 830720 005
7-15-83	Meeting 57	A43 830725 006
8-12-83	Meeting 58	A43 830823 003
9-7-83	Meeting 59	A43 830907 003
9-26-83	Meeting 60	A43 831003 003
10-5-83	Meeting 61	A43 831019 003
12-7-83	Meeting 62	A43 831221 001

TVA 64 (OS-9-65) (OP-WP-5-85)

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: FEB 0 7 1986

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-860-SQN

Subject FALISFIED DRAWINGS

Concern No. XX-85-077-X04

No response or corrective action is required for this report. It is being transmitted to you for information purposes only. Should you have any questions, please contact R. C. Sauer at telephone 2277.

Recommend Reportability Determination: Yes ______ No X

Director, NSRS/Designee

RCS:GDM
Attachment
cc (Attachment):
W. C. Bibb, BFN
W. T. Cottle, WBN
James P. Darling, BLN
R. P. Denise, LP6N40A-C
G. B. Kirk, SQN
D. R. Nichols, E10A14 C-K
QTC/ERT, Watts Bar Nuclear Plant
Eric Sliger, LP6N48A-C
J. H. Sullivan, SQN
W. E. Mason, E11C49 C-K--For review.

0387U

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATIVE REPORT NO. I-85-860-SQN

EMPLOYEE CONCERN: XX-85-077-X04

SUBJECT: FALSIFIED DRAWINGS

DATES OF INVESTIGATION: DECEMBER 16, 1985 - JANUARY 3, 1986

INVESTIGATOR:	R E McClure R. E. McCLURE	Jan. 16, 1986 DATE
REVIEWED BY:	MW Alexander M. W. ALEXANDER	1/16/86 DATE
APPROVED BY:	R.C. Sauer R. C. SAUER	1/29/86 DATE

I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of an expressed employee concern as received by Quality Technology Company (QTC)/Employee Response Team (ERT). The concern of record as summarized on the Employee Concern Assignment Request Form from QTC and identified as XX-85-077-X04 stated:

> Concern: Sequoyah - Drawings have been falsified. Details known to QTC, withheld due to confidentiality. Construction Dept. Concern. CI has no further information.

Further information was requested from the ERT followup group regarding specific drawing numbers, systems, plant location, and the discipline involved. The following was the only additional information QTC could obtain from the CI, although a followup interview was conducted in October 1985:

- Construction may not have followed interdivisional procedures as far as preparation of FCC drawings.
- The CI said when he refused to sign an as-built drawing status sticker his boss would take a look at the drawing and sign it.
- This supposedly occurred around 1980 at the time of systems transfer prior to preoperational testing.
- The CI was talking about electrical drawings.
- This is no longer a concern by the CI.

Though the CI no longer considers this issue a concern, NSRS performed the investigation anyway because of the concern's safety significance, if true. From the information available, it was assumed that the CI was referring to the drawings of the Functional Configuration Control (FCC) and the Systems Drawing Certification List (SDCL) as defined in the TVA Topical Report Table 17B-1 and in the Interdivisional Quality Assurance Procedure ID-QAP-4.0, Rev. 3. These drawings are required to be under configuration control at the time of system tentative transfer from Const[illegible]ion to Nuclear Power. This requirement was implemented by SNP Standard Operating Procedure No. 308.

II. SCOPE

A. The scope of this investigation was defined by the [illegible]ncern of record and the additional information from QTC. This entailed determining if Functional Control or Drawing Certification List Systems drawings were falsified at the time of system tentative transfer to SQN Nuclear Power.

B. A review of procedures and requirements was performed to determine if a unit supervisor in the Construction organization is permitted to sign the Construction Revision Stickers attached to drawings for system transfers.

III. SUMMARY OF FINDINGS

A. Requirements and Commitments

1. "Quality Assurance Topical Report," TVA-TR75-1A, Rev.8, dated October 19, 1984.

2. Interdivisional Quality Assurance Procedure "Functional Configuration Drawing Control for Nuclear Plants," ID-QAP-4.0, Rev. 3, dated January 20, 1978.

3. "Office of Construction Quality Assurance Program Manual Policies and Procedures," Rev. 76, dated October 29, 1985.

4. SNP Construction Standard Operating Procedure No. 308, Rev. 5, dated April 18, 1980, "Configuration Control."

5. SNP Construction Procedure No. P-15, Rev. 3, dated October 15, 1976 "Transfer of Permanent Features and Associated Documentation to the Division of Power Production."

B. Findings

1. SOP 308, Rev. 5, "Configuration Control," identifies the construction responsible engineer(s) as the individual(s) to mark current configuration and initial the construction revision block.

2. SOP 308, Rev. 5, also identifies the construction unit supervisor as being required to affix his initials on the construction revision block.

3. SNP Construction Procedure No. P-15 concerning transfer of permanent features states the cognizant engineering group unit is responsible for identifying incomplete work and that the section unit supervisor is to sign the Incomplete Work Item Form.

4. When the Construction organization was at SQN, cognizant engineers were assigned work tasks and were guided and evaluated by their unit supervisor as described by their job descriptions. Supervisors, in turn, review work performed and are to be informed on problems, progress, and status.

IV. CONCLUSIONS AND RECOMMENDATION

A. Conclusion

The allegation is unsubstantiated for the following reasons:

- The SOP 308, Rev. 5, was written to provide a common method of marking drawings required for a system transfer. The procedure utilized a common method within TVA of cognizant working level individuals performing the tasks and then the unit supervisor reviewing that work. The very assignment of who is responsible within a unit is made by the supervisor.

- Within the Construction organization, the unit supervisor is the person responsible for assuring that cognizant engineers are qualified and are performing the assigned work in a satisfactory manner.

- Technically, the cognizant engineer should initial the construction revision block in the assigned space, and the unit supervisor should initial in his assigned space. However, the unit supervisor, by position, education, and experience, is considered to be qualified to initial that a drawing is marked correctly and, in fact, is called by procedures SNP SOP 308 and SNP Construction Procedure P-15 to do so.

- No objective evidence of drawing falsification was found in this investigation.

B. Recommendations

None

DOCUMENTS REVIEWED IN INVESTIGATION I-85-860-SQN
AND REFERENCES

1. "Quality Assurance Topical Report," TVA-TR75-1A, Rev. 8, dated October 19, 1984

2. Interdivisional Quality Assurance Procedure ID-QAP-4.01, Rev. 3, dated January 20, 1978, "Functional Configuration Drawing Control for Nuclear Plants"

3. "Office of Construction Quality Assurance Program Manual Policies and Procedures," Rev. 76, dated October 29, 1985

4. SQN Construction Standard Operating Procedure No. 308, Rev. 5, dated April 18, 1980, "Configuration Control"

5. SQN Construction Procedure No. P-15, Rev. 3, dated October 15, 1976, "Transfer of Permanent Features and Associated Documentation to the Division of Power Production"

6. SQN Standard Operating Procedure No. 650, "Walkdown of Permanent Plant Features, Systems, or Equipment," R1, dated September 29, 1978

7. TVA Interdivisional Agreement CONST-NUC PR No. 1, Revision 4, "Procedure for Initial Operation, Testing, and Transfer of Equipment and Auxiliaries," dated September 20, 1979

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: James P. Darling, Site Director, BLN

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

DATE: FEB 07 1986

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-620-BLN

Subject Training of BLN Shift Engineers/Electrical Station Operation

Concern No. XX-85-093-002

The attached report contains one Priority 3 [P3] recommendation which requires you to take some form of investigative, followup or corrective action within the next four months (June 2, 1986). No formal response is required for this report unless you disagree with the proposed action. Please notify us if actions taken have been completed sooner. Should you have any questions, please contact W. D. Stevens at telephone 6231-K.

Recommend Reportability Determination: Yes ____ No X

Director, NSRS/Designee

WDS:JTH
Attachment
cc (Attachment):
- H. L. Abercrombie, SQN
- W. C. Bibb, BFN
- W. T. Cottle, WBN
- R. P. Denise, LP6N40A-C
- D. R. Nichols, E10A14 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- Eric Sliger, LP6N48A-C
- Compliance Supervisor, BLN

0426U

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-620-BLN

EMPLOYEE CONCERN: XX-85-093-002

SUBJECT: TRAINING OF BELLEFONTE SHIFT ENGINEERS AND ASSISTANT SHIFT ENGINEERS ON ELECTRICAL STATION OPERATION

DATES OF INVESTIGATION: DECEMBER 2, 1985 - DECEMBER 9, 1985

INVESTIGATOR: Charles L Breeding 1/29/86

C. L. BREEDING DATE

REVIEWED BY: L. E. Brock for 1/30/86

M. W. ALEXANDER DATE

APPROVED BY: R C Sauer 1/31/86

R. C. SAUER DATE

I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of an expressed employee concern received by Quality Technology Company (QTC)/Employee Response Team (ERT). The concern of record, as summarized on the Employee Concern Assignment Request Form from QTC and identified as XX-85-093-002, stated:

> Bellefonte: Shift Engineers (SE) and Assistant Shift Engineers (ASE) are inadequately trained in electrical station operation (switchyard, off-site power feed, etc.) such that there could be an excessive delay in restoring off site power feed to the plant in the event of an emergency. C/I feels that SE/ASE personnel should receive better training in this area. The C/I has no further information.

II. SCOPE

The scope of this investigation as determined from the concern of record entailed four specific issues requiring investigation:

A. Shift engineers (SE) are inadequately trained in electrical station operation.

B. Assistant shift engineers (ASE) are inadequately trained in electrical station operation.

C. In the event of an emergency, excessive delays in restoring offsite power feed to the plant could result.

D. Shift engineers and assistant shift engineers should receive better training in this area.

NSRS reviewed documentation which delineates shift engineer (SE) and assistant shift engineer (ASE) training requirements. Typical duties of the SE and ASE in switchyard operation were reviewed along with applicable operating procedures. A review of the type, scope, and quantity of electrical training provided the SE and ASE was conducted. The investigation used Institute of Nuclear Power Operation (INPO) guidelines and evidence of current problems with switchyard operation to determine the adequacy of this training.

III. SUMMARY OF FINDINGS

A. Requirements and Commitments

1. 10 CFR 55 is the basic implementing regulation for licensing reactor operators and senior reactor operators. Appendix A to 10 CFR 55, "Requalification Programs for Licensed Operators of Production and Utilization Facilities," establishes the basic requirements and the regulatory basis for licensing operators.

2. Regulatory Guide 1.8, "Personnel Selection and Training," dated May 1977, describes an NRC-acceptable method of implementing the NRC regulations with regard to personnel qualifications.

3. TVA-TR75-1A, "TVA Topical Report," Revision 8, in table 17D-3 gives regulatory guidance for quality assurance during station operation. This document commits TVA to Regulatory Guide 1.8 and to 10 CFR 55 with no exceptions.

4. ANSI/ANS 3.1-1981, "Selection, Qualification and Training of Personnel for Nuclear Power Plants," (Ref. 4) establishes the criterion for the selection, qualification, and training of personnel for stationary nuclear power plants.

5. NUREG-1021, "Operator Licensing Examiner Standards" (Ref. 5), provides guidance and establishes procedures and practices for examining and licensing of applicants for NRC operator licenses. This document endorses ANSI/ANS 3.1-1981.

6. Nuclear Power Area Plan Program Procedure 0202.05, "Nuclear Plant Operator Training Program," dated March 15, 1985, summarizes and consolidates training requirements for all nuclear operating personnel.

7. BLN Final Safety Analysis Report Chapter 13 commits to TVA to follow Procedure 0202.05 for the training of nuclear plant operating personnel.

B. Findings

1. 10 CFR 55 (Ref. 1) establishes the procedures and criteria for issuance of reactor operating licenses to operators of nuclear facilities including senior reactor operators (shift engineers and assistant shift engineers). In order to obtain a license as a reactor operator or senior reactor operator, the candidate must demonstrate an understanding of the design and operation of the Bellefonte facility including auxillary systems (switchyard and offsite power supplies) which affect it.

2. ANSI/ANS Standard 3.1-1981 (Ref. 4) has been adopted by the NRC and identifies training requirements for reactor operators and senior reactor operators to be licensed by the NRC. Section 5.2 of this standard requires plant specific system instruction on power plant systems including electrical systems. In addition, it also specified the content of required nuclear power plant fundamentals training which includes fundamentals of electrical theory.

3. NUREG-1021 (Ref. 5) provides guidance to NRC examiners in determining the qualifications of an applicant for reactor operator and senior reactor operator licenses. Section ES-402 category 6 specifies that the candidate be able to reproduce from memory sketches and descriptions of various plant systems including electrical distribution systems and their mechanical components (inplant and switchyard). The candidate must also be able to discuss the design intent, construction, operation, and interrelationships of those systems on nuclear power plant operation and reactor safety. NUREG-1021, section ES-502, specifies control manipulations and plant evolutions for which an applicant for SRO license must demonstrate proficiency. Control manipulations not performed at the plant may be performed on a simulator. One of the specified plant evolutions is a response to loss of electrical power and/or degraded power sources. A candidate's performance can be evaluated using the Bellefonte plant simulator.

4. A comprehensive operator training program has been developed and implemented to ensure that Bellefonte reactor operators and senior reactor operators meet the qualifications and training requirements established or endorsed by the NRC. This training program is described in Nuclear Power Program Procedure 0202.05, revised March 15, 1985, entitled "Nuclear Plant Operator Training Program" (Ref. 6).

5. Training of Bellefonte operators in electrical operation of plant and switchyard systems is conducted from the initial auxiliary unit operator training through the assistant shift engineer training. This training is comprehensive and covers details of electrical theory and the actual operation of switchyard equipment. The operators are required to pass tests to demonstrate their knowledge.

   The operation of electrical switchgear is a normal and routine part of the unit operator job. The electrical training program for nuclear operators is presented in four steps in Nuclear Power Program Procedure 0202.05.

a. Step 1 is a thirteen-week program on basic electrical theory and equipment. It is presented during the Nuclear Plant Operator Training Program (NOTP) during the student level II phase (prior to training for reactor operator or senior reactor operator). All ASEs and SEs must have had this training or its equivalent.

b. Step 2A is a two-week inplant electrical training program on plant electrical systems (onsite and offsite) presented during the student level III phase. All ASEs and SEs must have had this training or its equivalent.

c. Step 2B is defined as unit operator upgrade electrical training and is a four-week program of inplant training on plant electrical systems and station service. All ASEs and SEs must have successfully completed this training or its equivalent.

d. Step 3 is a six-week ASE upgrade electrical training program required prior to taking the accrediting examination for ASE. All ASEs and SEs must have successfully completed this training or its equivalent. This training addresses both offsite and onsite electrical systems.

6. At this time no training is being conducted for shift engineers, assistant shift engineers, or plant operators for Bellefonte. The delay in construction and operation of the plant has left only a skeleton crew of operations personnel at the plant. This crew has received the training listed above for TVA nuclear plant shift engineers and assistant shift engineers.

7. Normal operation of the switchyard is accomplished remotely from the Area Dispatching Control Center (ADCC) at the Chickamauga Dam by the dispatcher. The switchyard can also be operated by the assistant shift engineer on duty at Bellefonte. When the switchyard is operated locally, the PSO dispatcher at the ADCC calls the ASE at Bellefonte and gives instructions for any new configuration of the switchyard. The instructions are written down by the ASE and repeated verbatim to the dispatcher so that there will be no question as to what is to be done. Although there was no evidence of any poor operation of the switchyard at Bellefonte, there does appear to be poor relations between the operators at the plant and some Power System Operations (PSO) personnel. Some PSO individuals that were interviewed felt that the nuclear plant operators did not react quickly enough to their requests for switchyard changes. They felt that this could endanger the reliability of the power system grid. PSO was also critical of the short notice, or no notice, that they were given before one of the nuclear units was taken off line.

8. The "emergency" referred to in the concern is related to power system emergencies. No documented evidence was found to substantiate the complaint of PSO personnel that Bellefonte switchyard operations were not carried out on a timely basis.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

This employee concern was not substantiated by this investigation because:

a. The Bellefonte shift engineers and assistant shift engineers were given extensive training in the operation of the switchyard (both classroom and on the job). The training meets NRC requirements.

b. No examples of poor switchyard operation or operation of this equipment in a manner that endangered the nuclear equipment at Bellefonte were found.

c. The switchyard at Bellefonte is normally operated remotely by the power system dispatcher.

B. Recommendation

I-85-620-BLN-01, Relations Between Plant Operator and PSO

There does appear to be some poor relations between PSO and the Bellefonte nuclear power organizations. This is of no nuclear safety significance; but in the interest of TVA power production and system reliability, this issue should be addressed by management. A potential solution to this poor relationship would be the use of a PSO individual to conduct a week or two of switchyard training during the training program of the shift engineers and assistant shift engineers. This is an NSRS tracking item only. [P3]

DOCUMENTS REVIEWED IN INVESTIGATION I-85-620-BLN
AND REFERENCES

1. 10 CFR 55 dated May 31, 1984, "Operators Licenses"

2. Regulatory Guide 1.8, Revision 1, dated May 1977, "Personnel Selection and Training"

3. TVA-TR75-1A "TVA Topical Report," Rev. 7

4. ANSI/ANS 3/1-1981, "Selection, Qualification and Training of Personnel for Nuclear Power Plants"

5. NUREG-1021, "Operat - Licensing Examiner Standards," dated February 1985, Revision 1

6. Area Plan Program Procedure 0202.05, "Nuclear Plant Operator Training Program"

7. Bellefonte Final Safety Analysis Review (FSAR) Chapter 13

8. TVA Bellefonte Nuclear Plant, "Operating Instruction XE, XM 500-KU Switchyard System 500-KU Main Transformer System Unit 1 and 2," last revision date: April 26, 1985

TVA 64 (OS-9-65) (OP-WP-5-85)

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: FEB 07 1986

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-543-SQN

Subject RADIOACTIVE SPILL INTO UNCONTROLLED DRAIN SYSTEM

Concern No. XX-85-101-003

No response or corrective action is required for this report. It is being transmitted to you for information purposes only. Should you have any questions, please contact W. D. Stevens at telephone 6231-K .

Recommend Reportability Determination: Yes ______ No X

for Director, NSRS/Designee

RCS:CEA
Attachment
cc (Attachment):
- W. C. Bibb, BFN
- W. T. Cottle, WBN
- James P. Darling, BLN
- R. P. Denise, LP6N35A-C
- G. B. Kirk, SQN
- D. R. Nichols, E10A14 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- Eric Sliger, LP6N48A-C
- J. H. Sullivan, SQN

0424U

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-543-SQN

EMPLOYEE CONCERN: XX-85-101-003

SUBJECT: RADIOACTIVE SPILL INTO UNCONTROLLED DRAIN SYSTEM

DATES OF INVESTIGATION: OCTOBER 15-18, 1985

INVESTIGATOR: D. J. Hornstra — D. J. HORNSTRA — Jan 30, 1986 DATE

REVIEWED BY: L. E. Brock for M. W. ALEXANDER — 1/31/86 DATE

APPROVED BY: R. C. Sauer — R. C. SAUER — 1/31/86 DATE

I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of an expressed employee concern as received by the Quality Technology Company (QTC)/Employee Response Team (ERT). The concern of record, as summarized on Employee Concern Assignment Request Form from QTC and identified as XX-85-101-003, stated:

> At Sequoyah, in approximately 1980, there was an unknown quantity of radioactive water spilled into the uncontrolled drain system due to a valve in the water sampling station in the turbine building being left open. Concerned individual has no further information.

II. SCOPE

A. The scope of this investigation was defined by the stated concern and entailed investigating three issues in order to either validate or refute the concern.

1. A radioactive water release was made to the environment through an uncontrolled drain system in the turbine building sometime in 1980.

2. The cause of the radioactive water spill was due to a valve being left open at a water sampling station in the turbine building.

3. The quantity of radioactive water spilled was unknown.

B. Station drawings, procedures, and reports were reviewed and cognizant plant personnel interviewed.

III. SUMMARY OF FINDINGS

A. Requirements and Commitments

1. 10 CFR 50, Appendix A, General Design Criteria 64 (Ref. 1), requires that nuclear power plant designs provide means for monitoring effluent discharge paths for radioactivity that may be released from normal operations, including anticipated operational occurrences and from potential accidents.

2. 10 CFR 20.106 (Ref. 2) requires that radioactive material shall not be released to an unrestricted area in concentrations which exceed the limits in 10 CFR 20, Appendix B, Table II. Concentrations may be averaged over a period not to be greater than one year.

3. SQN Final Safety Analysis Report, Chapter 11.4 (Ref. 3), states that the process and effluent monitoring systems comply with Regulatory Guide 1.21 (1974). FSAR Table 11.4.2-1, "Liquid Radiation Monitors," does not include an identification of a turbine building sump liquid radiation monitor. Table 11.4.3-1, "Liquid Radiation Sample Points," includes only a sampling of the turbine building sump.

4. Regulatory Guide 1.21 (Ref. 4), Appendix A, Section B, requires, "For continuous leakage (e.g., secondary plant leakage), in addition to continuous monitoring, a representative sample of the liquid effluent should be analyzed at least weekly."

5. SQN Technical Specification (Ref. 5) 3/4.11.1 requires that "The concentration of radioactive material released from the site (see Figure 5.1-1) shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2, for radionuclides other than dissolved or entrained noble gases." Surveillance requirement 4.11.1.1.3 requires that the "Radioactivity concentration of liquids discharged from continuous release points shall be determined by collection and analysis of samples in accordance with Table 4.11-1." Table 4.11-1 identifies grab samples for steam generator blowdown and turbine building sump.

B. Findings

1. Mechanical Control Diagram 47W610-90-4 (Ref. 6) and 47W610-40-1 (Ref. 7) identified that the station sump discharge in the turbine building was monitored but not controlled (i.e., the sump system will not automatically realign on receipt of a radiation monitoring alarm signal--operator action was required). The NSRS investigator found this monitoring system to exceed the commitments as detailed in the FSAR and to meet Regulatory Guide 1.21.

2. A radioactive liquid release of sodium-24 occurred on December 1, 1980, to the ponds within the perimeter of the owner-controlled property during the performance of startup test SU 10.2 (Ref. 8). The sequence of events during this release is identified in Table 1. As a result of operator action to divert the turbine building sump discharge from the yard drainage pond to the unlined chemical cleaning pond, radioactive decay of the water initially pumped to the yard drainage pond, and subsequent dilution in the diffuser pond of water from the yard drainage pond, no detectable radioactivity was released to the Tennessee River as measured by plant personnel.

3. Based upon the Shift Engineer's Daily Journal (Ref. 9), the NRC was initially notified of the uncontrolled release on December 2, 1980. Special Report 80-6 (Ref. 10) was transmitted to the NRC to provide details, causes, and corrective actions.

a. Special Report 80-6 reported that the highest concentration of sodium-24 in the turbine building sump was 3.27×10^{-3} microcuries per milliliter; in the yard drainage pond outlet to the diffuser pond it was 4.36×10^{-5} microcuries per milliliters; and in the diffuser pond outlet to the river sodium-24 was not detectable.

b. The immediate cause of this release was identified as a valve being open in the sample path from feedwater heater 1C to the sample sink. The root cause of this valve being open was identified as an inadequate test instruction (the position of the valve was checked as a test prerequisite and not rechecked immediately prior to injection of the sodium) and poor communications between the radiochemical laboratory personnel and the test directors.

c. The test instructions were revised to avoid a similar misunderstanding of the instructions.

4. SU 10.2 was revised (Ref. 11) following this release of sodium-24 to require Hold Orders on the boundary valves (valves to the sample sink and to the tritium sampling room).

5. Contrary to the prerequisites of SU 10.2 (Ref. 8), the turbine building sump discharge was lined up to the yard drainage pond rather than the unlined chemical cleaning pond on December 1, 1980. A Hold Order had been previously placed on the valve to the unlined chemical cleaning pond to prevent discharge to that pond. This Hold Order was released after the turbine building sump was found to be contaminated. Documentation of the aborted SU 10.2 test of December 1 2, 1980, other than the narrative log, was not retained; and no explanation could be found for not meeting the above valve lineup prerequisite.

6. Concurrent with the change to SU 10.2 to require a Hold Order on the drain valves to the sample sink and the valve to the tritium sample room, lineup of the turbine building sump to discharge to the unlined chemical cleaning pond was made optional based upon conditions in the chemical cleaning pond. With the boundary established by the valves under Hold Order, this precaution of lining the turbine building sump to the chemical cleaning pond was found to be unnecessary.

7. Although some differences existed in the reported amount of sodium-24 released, the quantity could not be described as "unknown." The following differences in quantities of radioactive sodium were documented:

a. Release to the yard drainage pond - The initial assessment of the release was calculated as 0.1 curies as documented on the Shift Engineer's Daily Journal (Ref. 9). Special Report 80-6 (Ref. 10) calculated the release to the yard drainage pond to be 0.297 curies. Individual A, who performed the initial assessment, explained the difference to be due to the conservative approach used to calculate the quantity in Special Report 80-6.

b. Total release to the environment (including all releases to owner-controlled property) - The semiannual radioactive release report for this period (Ref. 12) identified that one abnormal release of 1.00 curies had occurred, as reported in Special Report 80-6. Special Report 80-6 identified the total quantity of sodium-24 received onsite as 0.96 curies, with radioactive decay causing the total quantity to decrease to 0.742 curies released.

No problem was found in the conservative reporting of quantities of radioactive sodium in the later reports.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusion

The concern of record was substantiated in that a radioactive water release through the turbine building sump did occur in 1980 during the performance of startup test SU 10.2. However, the concentrations of the release were well established, and plant personnel took appropriate immediate and long-term corrective action.

B. Recommendations

None

Table 1

CHRONOLOGY OF EVENTS OF INVESTIGATION XX-85-101-003
(Data Obtained from Ref. 10)

December 1, 1980 (All times EDT)

-	Prerequisite valve lineup checked for SU 10.2
2:30 p.m.	Chemical laboratory personnel opened valves in sample lines from feedwater heaters to flush lines to sample sink to obtain representative samples in preparation for the test.
4:30 p.m.	Laboratory personnel were briefed by Nuclear Results Section personnel to inform them of the sampling and analyses for which the laboratory would be responsible. The briefing did not describe the flow paths to be used during the test (through sample line from feedwater heater 1C to the sodium-24 feed tank to a sample line downstream of feedwater isolation valve).
5:30 p.m.	Sodium-24 received on site (activity was 0.96 curies at 4:30 p.m.).
	Nuclear Results Section personnel set up the system for injection of the sodium-24. The valve to the sample sink from the 1C feedwater heater (valve VC-2) was not rechecked. (Positioning of this valve was done during the test prerequisites; it was not included or checked in the step-by-step instructions.) Nuclear Results Section personnel were unaware that valve VC-2 was open.
8:15 p.m.	Designated valves operated to inject sodium-24 into the feedwater header. At this time, the feedwater header pressure forced the sodium-24 solution back through the open valve VC-2 into the sample sink which drained to the turbine building sump.
10:55 p.m.	Turbine building sump pumps actuated on high water level. The effluent radiation monitor on the discharge of the pumps alarmed. The discharge lasted for approximately ten minutes and was routed to the yard drainage pond. (The yard drainage pond contents eventually reach the Tennessee River through the plant diffuser pond.)
11:10 p.m.	Operator rerouted the discharge from the turbine building pump to the unlined chemical cleaning pond where the radioactive sodium was allowed to undergo radioactive decay. (The half-life of sodium-24 is approximately 15 hours.)

December 2, 1980

0015 HP initiated a survey of the path of the sodium-24 from the sample sink to the ponds. As a result of this survey, the storm drain was zoned as a Regulated Area.

0106 Immediate notification was provided to NRC of the uncontrolled release of sodium-24. At that time, the supervisor of the radiological chemical laboratory had calculated the release to the yard drainage pond to be 0.1 curies.

0700 Followup radiation surveys allowed the clearing of Regulated Area for the storm drain.

January 9, 1981

Special Report transmitted to NRC to provide details of this event. (The cover letter stated that the report was in accordance with 10 CFR 20.405, "Reports of Overexposures and Excessive Levels and Concentrations.")

DOCUMENTS REVIEWED IN INVESTIGATION I-85-543-SQN AND REFERENCES

1. 10 CFR 50, Appendix A, General Design Criteria 64, "Monitoring Radioactivity Releases"

2. 10 CFR 20.106, "Radioactivity in Effluents to Unrestricted Areas"

3. SQN FSAR Chapter 11.4, "Process and Effluent Radiological Monitoring Systems"

4. NRC Regulatory Guide 1.21, Rev. 1, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," dated June 1974

5. SQN Technical Specification 3/4.11.1, "Liquid Effluents"

6. Mechanical Control Diagram 47W610-90-4, R20, "Radiation Monitoring System"

7 Mechanical Control Diagram 47W610-40-1, R4, "Station Drainage System"

8. SQN Startup Test SU 10.2, R2, "Steam Generator Moisture Carryover Measurement," dated November 30, 1979

9. Shift Engineer, Assistant Shift Engineer, Shift Technical Advisor Daily Journal, December 1-2, 1980

10. Letter, H. J. Green to J. P. O'Reilly, "Tennesee Valley Authority - Sequoyah Nuclear Plant Unit 1 - Docket 50-327 - Facility Operating License DPR-77 - Special Report 80-6," dated January [illegible], 1981 (L51 810108 881)

11. SQN Startup Test SU 10.2, R3, "Steam Generator Moisture Carryover Measurement," dated December 12, 1980

12. Letter, J. M. Ballantine to Director, Office of Inspection and Enforcement, dated February 18, 1981 (L01 810219 662)

13. SQN Monthly Operating Report, May 1980 - December 1981

14. Plant New and Escalated Operational Events Reports, SQN, March 1, 1980 - June 30, 1981

15. Test Engineer Narrative Log for SU 10.2 on December 1, 1980

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. C. Bibb, Site Director, Browns Ferry Nuclear Plant

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

DATE: FEB 11 1986

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-471-BFN

Subject HUMAN FACTORS CONTROL ROOM DESIGN REVIEW

Concern No. XX-85-122-022

The attached report contains one Priority 3 [P3] recommendation which requires you to take some form of investigative, follow-up, or corrective action within a specified time frame. Please refer to recommendation I-85-471-BFN-01 for details. No formal response is required for this report. Please provide the requested information when completed. Should you have any questions, please contact W. D. Stevens at telephone 6231-K.

Recommend Reportability Determination: Yes _____ No X

Director, NSRS/Designee

WDS:JTH
Attachment
cc (Attachment):
H. L. Abercrombie, SQN
W. T. Cottle, WBN
James P. Darling, BLN
R. P. Denise, LP6N40A-C
B. C. Morris, BFN
D. R. Nichols, E10A14 C-K
QTC/ERT, Watts Bar Nuclear Plant
Eric Sliger, LP6N48A-C

0447U

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-471-BFN

EMPLOYEE CONCERN: XX-85-122-022

SUBJECT:	HUMAN FACTORS CONTROL ROOM DESIGN REVIEW
DATES OF INVESTIGATION:	DECEMBER 18-19, 1985

INVESTIGATOR: N. T. Henrich — N. T. HENRICH — 1/29/86 DATE

REVIEWED BY: MW Alexander — M. W. ALEXANDER — 1/29/86 DATE

APPROVED BY: R.C. Sauer — R. C. SAUER — 1/31/86 DATE

I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of an expressed employee concern as received by the Quality Technology Company (QTC)/Employee Response Team (ERT). The concern of record, as summarized on the Employee Concern Assignment Request Form from QTC and identified as XX-85-122-022, stated:

> Browns Ferry: Human Factors engineering and/or reviews have not been implemented for control panels and stations. CI expressed that this is a violation of NUREG-0700. CI further stated that there are toc many poor engineering practices in this area. CI has no further information. Anonymous concern via letter.

An identical Sequoyah employee concern (XX-85-122-020) has been received by QTC/ERT. It is addressed by NSRS Investigation Report No. I-85-241-SQN.

II. SCOPE

A. The scope of this investigation was determined from the stated concern of record to be that of two specific issues requiring investigation:

   1. The BFN Human Factors Control Room Design Review specified in NUREG-0700 has not been implemented.

   2. A significant number of poor engineering practices exists in the application of human engineering principles to the BFN control panels.

B. To accomplish this investigation, a review of regulatory requirements and TVA commitments for conducting the control room design review (CRDR) was conducted. This included applicable regulatory documents and the TVA CRDR program plan. Interviews with individuals cognizant of BFN CRDR activities were also conducted to determine the nature and extent of activities in this area. Finally, a review was conducted of TVA engineering procedures which govern the application of human engineering principles in the design, layout, and modification of BFN control room panels.

III. SUMMARY OF FINDINGS

A. Requirements and Commitments

   1. NUREG-0737, "Clarification of TMI Action Plan Requirements," Task I.D.1 (Ref. 2), including the transmittal letter from D. G. Eisenhut of NRC (Ref. 1).

2. NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability (Generic Letter 82-33)," Section 5 (Ref. 5), including the transmittal letter from D. G. Eisenhut of NRC (Ref. 4).

3. Letter from L. M. Mills (TVA) to H. R. Denton (NRC) committing BFN to complete CRDR activities begun by the BWR Owner's Group and to an implementation schedule for this work (Ref. 6).

4. Letter from D. B. Vassallo to H. G. Parris dated June 12, 1984, issuing a confirmatory order for submission of a summary report of the completed control room design review by December 31, 1986 (Ref. 7).

B. Findings

1. NUREG-0737 (Ref. 2) was transmitted to TVA by reference 1 on October 31, 1980. Task I.D.1 of this NUREG required a detailed control room design review (CRDR) be conducted to identify and correct any human engineering deficiencies. This review was to use NRC guidelines on how to conduct a CRDR (NUREG-0700) once they were issued. No implementation schedule was given in task I.D.1. The transmittal letter (Ref. 1) required TVA to confirm its commitment to implement the CRDR requirements as defined in Task I.D.1.

2. By reference 3, TVA withheld specific comments pending issuance of regulatory guidance in NUREG-0700.

3. Earlier in 1981, in conjunction with the BWR Owner's Group (BWROG), undertook an evaluation of the BFN units 1, 2, and 3 control rooms using the BWROG developed review methodology. This review identified a number of human engineering discrepancies which were to be factored into the CRDR required by NUREG-0737.

4. NUREG-0737, supplement 1, was transmitted to TVA by D. G. Eisenhut (NRC) on December 17, 1982, by reference 4. Section 5 of this supplement sets forth the following requirements for conducting the CRDR:

   a. The establishment of a qualified multidisciplinary review team and a review program incorporating accepted human engineering principles.

   b. The use of function and task analysis to identify control room operator tasks and information and control requirements during emergency operations.

c. A comparison of the display and control requirements with a control room inventory to identify missing displays and controls.

d. A control room survey to identify deviations from accepted human factors principles. This survey will include, among other things, an assessment of the control room layout, the usefulness of audible and visual alarm systems, the information recording and recall capability, and the control room environment.

e. Assess which human engineering discrepancies are significant and should be corrected. Select design improvements that will correct those discrepancies.

f. Verify that each selected design improvement will provide the necessary correction and can be introduced in the control room without creating any unacceptable human engineering discrepancies because of significant contribution to increased risk, unreviewed safety questions, or situations in which a temporary reduction in safety could occur.

g. The submittal of a summary report of the completed review outlining proposed control room changes, including their proposed schedules for implementation. The report will also provide a summary justification for human engineering discrepancies with safety significance to be left uncorrected or partially corrected. In addition, NRC required submittal of a CRDR program plan describing how TVA intended to meet these requirements and a proposed schedule for completion of the BFN CRDR.

5. On April 15, 1983 (Ref. 6), TVA committed to complete the BFN CRDR activities outlined in the TVA CRDR program plan and took credit for the CRDR activities previously undertaken at BFN by the BWROG.

6. The TVA-developed CRDR program plan is applicable to all nuclear plants. This program plan was issued as Special Engineering Procedure SEP 82-17 (Ref. 9a) and was transmitted to NRC on June 9, 1983, by reference 10. The TVA CRDR program plan described the main elements of the human engineering efforts to identify and correct deficiencies in design and operation of TVA nuclear power plants. Guidance was provided to TVA personnel responsible for planning, conducting, and reporting detailed control room design reviews and for recommending appropriate follow-up corrective actions related to the human engineering discrepancies revealed in the detailed review. The program plan also was intended to ensure compliance with pertinent NRC directives and guides, specifically NUREG-0700.

6. On June 12, 1984, NRC issued a confirmatory order for the completion of the BFN CRDR including submittal of the summary report of the completed review by December 31, 1986 (Ref. 7).

8. NUREG-0700 (Ref. 8) provided guidance NRC believes should be followed to accomplish a CRDR. It does not define a regulatory requirement. In fact, NUREG-0700 allows alternate approaches, methods, and reporting procedures which may differ from the published guidance provided adequate justification is provided.

9. NRC reviewed the TVA CRDR program plan and provided comments on December 23, 1983 (Ref. 11). TVA responses to these comments were provided to NRC Human Factor Engineering Branch in a meeting in Bethesda, Maryland, on June 14, 1984. The TVA responses are documented in reference 12. As a result of this meeting, revisions were made to SEP 82-17 (Ref. 9b). Reference 6 committed TVA to conduct the BFN CRDR in accordance with the TVA-developed CRDR program plan.

10. In May 1985 TVA contracted with Impell Corporation to assist in completing the BFN CRDR. The BFN CRDR officially began May 24, 1985.

11. As of December 19, 1985, the following major BFN CRDR tasks have been completed.

    - Operator questionnaires.
    - Operator interviews.
    - Operating experience reviews of licensee event reports and scram reports.
    - Control room checklist surveys and inventories.
    - Task analysis of emergency operating procedures.
    - Human engineering concern (HEC) assessment.
    - Determination of human engineering discrepancies (HEDs).

    Each of these tasks is addressed by NUREG-0700 and detailed in the TVA CRDR program plan.

12. The following is a list of major BFN CRDR tasks yet to be completed as defined by the TVA CRDR program plan.

    - Development of BFN CRDR team recommended corrective actions for any identified human engineering discrepancies (HEDs).
    - Submittal of CRDR team proposed action plan to BFN management.
    - Preparation and submittal of the summary report of the completed review to NRC by December 31, 1986.

13. As a result of the BFN CRDR, approximately 1250 HECs were identified. Assessment of these concerns by the BFN CRDR team in accordance with the CRDR program plan assessment methodology resulted in 258 HEDs.

These HEDs are broken down into four categories as follows:

- Category 1 - HED could result in errors which directly challenge or cause a loss of a critical safety function (58 total HEDs).

- Category 2 - HED could reduce or cause a loss of resources needed to maintain a critical safety function (36 total HEDs).

- Category 3 - HED could adversely affect normal plant operation or has potential to affect critical safety function resources (78 total HEDs).

- Category 4 - HED has no significant affect on plant operations (86 total HEDs).

The proposed resolution of these HEDs, along with a proposed schedule for implementing corrective actions, must be submitted to NRC in the CRDR Summary Report. At this time, they are not required to be resolved prior to the startup of any unit.

14. The CRDR is not a complete redesign of the control room nor is it an ongoing control room design change effort. It is intended to identify and resolve human engineering discrepancies with the existing control room layout/environment in light of lessons learned from the TMI incident and subsequent NRC human factors guidelines issued in 1981.

15. Office of Engineering Procedure OEP-11 (Ref. 13) defines the process by which plant design changes, including control room design changes, are identified, scoped, coordinated, reviewed, and approved. This procedure includes the application of human factor engineering principles in these changes and requires the project engineer to coordinate the design and design review effort with appropriate OE organizations. A checklist is provided in the procedure to aid in this process. All future changes to the BFN control room/control boards will be handled by this procedure.

16. The OE Electrical Engineering Branch, Operator Interface Section, has the responsibility to address the application of human factor engineering principles in control room/control board changes. A number of engineering design guides are used in this process. The principle ones are noted below:

a. Design Guide E18.1.11 (Ref. 14)

This design guide presents principles and techniques of human factors engineering (HFE) pertinent to designing operator work stations in power generating plants.

b. Design Guide E18.1.12 (Ref. 15)

This guide describes methods and techniques of HFE in control console and cabinet design and panel layout. It provides a means for measuring the HFE adequacy of new designs and of modifications to existing designs.

c. Design Guide E18.1.13 (Ref. 16)

This document defines and documents accepted HFE principles and standards to be employed for the design of annunciators and alarm systems.

d. Design Guide E18.1.14 (Ref. 17)

This design guide details the human factors requirements for controls and displays that are integrated into a functional panel design. Criteria that will help the operator identify and operate the controls and displays quickly and efficiently are presented.

e. Design Guide E18.1.15 (Ref. 18)

This design guide contains general HFE requirememts for operator interface with computers and computer driven devices.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. The first issue raised by the concern of record is not substantiated because the required BFN control room design review is currently in progress.

2. The second issue raised by the concern of record appears to be substantiated because the BFN CRDR has identified 258 human engineering discrepancies based on NRC guidelines in NUREG-0700 which will be resolved to NRC's satisfaction.

B. Recommendations

1. I-85-471-BFN-01, CRDR Follow-up

Copies of the final BFN CRDR team recommendations and the BFN CRDR summary report of the completed review should be submitted to the NSRS for review. [P3]

DOCUMENTS REVIEWED IN INVESTIGATION I-85-471-BFN
AND REFERENCES

1. Letter from D. G. Eisenhut (NRC) to All Licensees of Operating Plants and Applicants for Operating Licenses and Holders of Construction Permits, "Post TMI Requirements," dated October 31, 1980 (A02 801110 008)

2. NUREG-0737, "Classification of TMI Action Plan Requirements," October 1980

3. Letter from L. M. Mills to H. R. Denton of the Nuclear Regulatory Commission dated December 23, 1980, transmitting the BFN response to Reference 1 (A27 801223 019)

4. Letter from D. G. Eisenhut to All Licensees of Operating Reactors, Applicants for Operating Licenses and Holders of Construction Permits, "Supplement 1 to NUREG-0737 - Requirements for Emergency Response Capability (Generic Letter 82-33)," dated December 17, 1982

5. Supplement 1 to NUREG-0737, "Requirements for Emergency Response Capability," December 1982

6. Letter from L. M. Mills (TVA) to H. R. Denton (NRC) dated April 15, 1983, in response to Generic Letter 82-33 (Ref. 4) (A27 830415 012)

7. Letter to H. G. Parris from D. B. Vassallo (NRC), "Issuance of Orders Confirming Licensee Commitments on Emergency Response Capability," dated June 12, 1984 (A02 840620 003)

8. NUREG-0700, "Guidelines for Control Room Design Reviews," published September 1981

9. Special Engineering Procedure SEP 82-17, "Control Room Design Reviews for All TVA Nuclear Plants"
   a. Revision 0 dated April 13, 1983
   b. Revision 1 dated May 2, 1984

10. Letter from D. S. Kramer (TVA) to Ms. E. Adensam (NRC) transmitting the TVA CRDR Program Plan dated June 9, 1983 (A27 830609 001)

11. Letter from T. M. Novak (NRC) to H. G. Parris (TVA), "Comments on TVA Program Plan for Control Room Design Reviews," dated December 23, 1983 (A02 831229 001)

12. Memorandum from M. C. Brickey to Electrical Engineering Files, "Main Control Room Design Review - All Nuclear Plants," dated June 22, 1984 (EEB 840626 927)

13. Office of Engineering Procedure OEP-11, "Change Control," Revision 0, dated April 26, 1985

14. EN DES Design Guide E18.1.11, "Human Factors Engineering in Main Control Room and Local Work Stations," Revision 0, dated May 11, 1982

15. EN DES Design Guide E18.1.12, "Human Factors Engineering in Control Console, Cabinet, and Panel Layout," Revision 0, dated April 30, 1982

16. EN DES Design Guide E18.1.13, "Human Factors Engineering in Alarm Systems," Revision 0, dated July 16, 1982

17. EN DES Design Guide E18.1.14, "Human Factors Engineering in Controls and Visual Displays," Revision 0, dated April 30, 1982

18. EN DES Design Guide E18.1.15, "Human Factors Engineering in Operator/ Computer Interface and Dialog," Revision 0, dated May 19, 1982

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. T. Cottle, Site Director, Watts Bar Nuclear Plant

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

DATE: FEB 10 1986

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : IN-85-091-001

SUBJECT : QUALITY DOCUMENTATION WAS LOST

CONCERN NO.: IN-85-091-001

(X) ACCEPT ( ) REJECT

K. W. Whitt

JJK:JTH
cc (Attachment):
R. P. Denise, LP6N40A-C
D. R. Nichols, E10A14C-K
QTC/ERT, CONST-WBN
E. K. Sliger, LP6N48A

Principally prepared by John J. Knightly.

0434U

TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : W. T. Cottle, Site Director, Watts Bar Nuclear Plant NUC PR

DATE : JAN 30 1986

SUBJECT: WATTS BAR NUCLEAR PLANT - RESPONSE TO EMPLOYEE CONCERN INVESTIGATION REPORT IN-85-091-001 (EMPLOYEE CONCERN IN-85-091-001)

Transmitted herein is Construction's response to recommendation IN-85-091-001 contained in the Nuclear Safety Review Staff (NSRS) employee concern investigation report IN-85-091-001

If you have any questions, please contact W. L. Byrd at 3774, Watts Bar Nuclear Plant NUC PR.

W. T. Cottle

WLB:RDA:NC
Attachment

This memorandum was principally prepared by R. D. Anderson.

Re. 2/6/86

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : W. T. Cottle, Site Director, Watts Bar Nuclear Plant

FROM : Guenter Wadewitz, Project Manager, Watts Bar Nuclear Plant OC

DATE : JAN 27 1986

SUBJECT: WATTS BAR NUCLEAR PLANT - REQUEST FOR INVESTIGATION/EVALUATION

Attached is our response to employee concern number IN-85-091-001.

Guenter Wadewitz

COC:CMR
QERT.CR
Attachments

RECOMMENDATIONS: Q-85-091-001-01, "Unlocated Documents." Provide missing data as required on the records specified in Finding Nos. 10, 11, 14, 15, 16, 17, 18, and 21.

RESPONSE: 10. Documentation was located, computer program updated, and tests 55B, 56B, and 77B was statused and filed in the vault.

11. The original cable with the splice was later removed and replaced with a continuous cable, therefore, no splice documentation is required.

14. The pencil entries made on cable splice inspection documentation was the inspection date of March 19, 1979. Black ink was not a requirement until May 20, 1981, per WBN QCI-1.08 R1.

15. Records were revised to correct missing date or signature.

16. Examination of the test 57 cards for cables 1-5PP-67-700-B and 1-5PP-67-712-B confirm the following:

a. Raychem Heat Shrink Sleeve part number and butt splice connector number and manufacture are in the space provided for "splice kit" identification.

b. The inspection and acceptance was in accordance with WBN QCP-3.06-4, revision 1.

Examination of WBN QCP-3.06-4, revision 1, gave the pertinent information:

a. Attachment C does specify Raychem splice kit HVS-A3-2-4/0 for cable types WNB and WBN-1.

b. Paragraph 7.3 details the specific materials and methods for making a medium voltage splice for the cables exemplified.

c. Attachment B specifies heat shrink sleeves based on the "outer diameter of conductor insulation (inches)."

Materials specified in paragraph 7.3 and attachment B are available separately or in the HVS-A3-2-4/0 kit. Failure to use and specify the kit is not reason to suspect a defective splice.

The test 57 card has been revised and clarified. Also the HVS-A3-2-4/0 will be deleted from the procedure in revision 5. Revision to WBN QCP 3.06-4 is being held up awaiting resolution of NCR 6536. General Construction Spec G-38 revision 7 was issued January 15, 1986, deleting the HVS kits. An ECD cannot be determined at this time. As soon as possible, we will supply this information.

17a.1. We agree that the disposition required was not completed before NCR 5764 was closed. A NCR will be generated for failure to follow procedure WBN QCI-1.02 by February 3, 1986.

17a.2. The NCR number has been entered where missing on the documents referenced in this concern. In addition, all electrical records which have a % sign in the accountability program will be reviewed per the requirement of WBN QCI-1.02, paragraph 6.1.2.7.1.

17a.3. We agree there was a failure to follow procedure WBN QCI-1.02 in that a revision was made to the NCR after closure. See 17a.1.

17a.4. The test 77 status should be changed as stated for cables 1-3Y-70-4051-B and 1-4PL-31-4060-A.

The test 77 status should be left a level A for cables 1-2PM-3-4506-A, 1-2PM-3-4491-A, 1-2PM-4476-A and 1-2PM-3-4466A. The present procedure for bumping test levels has been the same for several years and requires a bumping a test level only when "supplementing" a previous test not when "reconstructing" or "engineer evaluating." The "Engineering Evaluation" ordered by Mr. Burke (see 17-3) will be completed on these form cables.

17a.5. Cable 2-3PL-67-3917-A was reworked in workplan 4712 completed in March 1985. The rework was inspected and documented by Nuclear Power. Since Nuclear Power does not update constructions program, a WBN QCI-1.08, attachment D will be processed to document the tests for construction.

17a.6. We agree approved engieering criteria were needed for closure of NCR 5764. The NCR to be written per our response to 17a.1 will require a review of these evaluations done by electrical engineering since WBN QCI-1.08, revision 10 became effective July 13, 1984. that which was used in this case.

17b.1. WBN QCI-1.02, paragraph 6.5.1 clearly requires satisfactory completion of work before closure of a NCR. A NCR will be generated for failure to follow procedure by February 3, 1986.

17b.2. The records for these tests were missing which constituted reconstruction to the current level of completion.

17b.3. See 17b.1 above.

17b.4. See 17a.2.

17c.1. Six records were located prior to the issue of NCR 6161. The documentation list reflected this change but due to an oversite, item 1A of the NCR did not. NCR 6161 will be revised to reflect the correct number of records (28).

17c.2. At the time the nonconformance condition was written the apparent cause did not exist. The apparent cause had been identified as a bad practice over six months prior to the identification of the nonconforming condition. Corrective measures were taken to process the incomplete slip separate from the completed documentation review process. In addition all incomplete slips are filed separate in the vault.

17c.3. Continuation sheets are numbered "1 of 4", "2 of 4", "3 of 4", and " 4 of 4" at the bottom of the respective sheets.

18. The pull slip and both termination slips for cable 0-3PL-67-2179-B give the "minimum pulling radius" on the front on the cards. The "minimum pulling radius" applies during pulling and is 1-236 which is based on the outside diameter of the cable. The "minimum training radius" applies after the pulling operation has been completed and the cable is ready for termination. The minimum training radius is .688 which is based on the outside diameter of a single conductor and is the "measured bend radius" recorded by the inspectors on both termination cards.

The cable pulling and termination cards have been revised and the minimum bends applying to each are now put on the cards by Watts Bar electrical engineering personnel. WBN QCP-3.05 covers pulling cables and WBN QCP-3.06-3 covers "Inspection of cable terminations."

21. See 17a.2.

RECOMMENDATIONS: Q-35-091-001-02, "Transmittal Accountability." For finding Nos. 7, 8, and 9, review procedures and revise as needed for the following: WBN QCI-1.40, WBN QCI-1.08, and WBN QCP-3.06 to include transmittal requirements to assure control/accountability for transmittal of QA documents; WBN QCP-3.05 to include record retention requirement; WBN QCP-3.05 and WBN QCP-3.06-4 to reference quality records procedure WBN QCI-1.08.

RESPONSE: 7. Documents for QA storage are transmitted using various methods. Methods for transmitting documentation include use of transmittal memos, online computer tracking, and marked-up printouts. The DCU supervisor and the supervisor of the units submitting documentations are held accountable for the methods they devise.

8. This was corrected by revision 24 to WBN QCP-3.05.

9. It is the policy at WBN to reference only documents which are directly referred to in the text of the procedure. WBN-QCI-1.08 and 1.40 are general instructions and will not be referenced by all other procedures.

RECOMMENDATIONS: Q-85-091-001-03, "Records NCRs." Review NCR process as applied to records management (Finding No. 13) to assure (1) that NCRs are written when appropriate; and, (2) that appropriate actions are taken to prevent recurring records mamagement problems.

RESPONSE: 13. The findings and the disposition set forth in "findings" paragraph 13, page 11, and "summary" paragraph 7, pages 18 and 19 are valid. Paragraph 6.5.5 of WBN QCI-1.08 has been revised to specify use of the percent (%) sign on attachment D when Nuclear Power inspects and documents the installation.

RECOMMENDATIONS: Q-85-091-001-04, "Deviation Closure." For Finding No. 19, review deviation report closeout for records management audit WB-A-85-10, Deviation D01, to assure adequacy of corrective action.

RESPONSE: 19. Informal memorandum dated June 25, 1985 from J. E. Smith to distribution was not the corrective action response. The corrective action was documented on the deviation report number WB-A-85-10-D01 section 3.B. Past practice was reviewed by the auditor and was found to be adequate with the exception of who issued the stencil to the inspector. Therefore no deviation affecting past practice was written requiring a response. The action proposed and taken on deviation report number WB-A-85-10-D01 was adequate and complied with procedure requirements.

RECOMMENDATIONS: Q-85-091-001-05, "Surveillance Followup." Perform specified followup on surveillance concern referenced in Finding No. 20 to assure satisfactory resolution of concern.

RESPONSE: 20. The Surveillance Report referenced is number 107R184D0120-00. It called attention to a deletion of Quality Assurance requirements from contract 77K5-545288 with Service Air Company of Glendale, California and the subsequent decision by Engineering Design that a new contract would be awarded.

Since the contract was awarded by Engineering Design, we are requesting the Office of Engineering (formerly Engineering Design) to respond to the suitability of the flexible stainless steel conduit and fittings purchased under contract 77K5-545288 for use in class 1E installations.

The Watts Bar Quality Assurance Audit Group has been asked to review Surveillance Report No. 107R18400120-00 and take appropriate action.

Watts Bar Quality Control Managers and Electrical Engineering Managers will follow up and determine action necessary in their organizations.

DE05
Q091.CR

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. T. Cottle, Site Director, Watts Bar Nuclear Plant

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

DATE: FEB 11 1986

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : I-85-159-WBN

SUBJECT : HEAT CODE TRACEABILITY

CONCERN NO.: IN-85-388-006

(X) ACCEPT ( ) REJECT

Response is acceptable; however, the concern cannot be closed until NCR 6369 is closed and reviewed for adequate corrective action.

K. W. Whitt

MAH:JTH

cc (Attachment):

R. P. Denise, LP6N40A-C

D. R. Nichols, E10A14C-K

QTC/ERT, CONST-WBN

E. K. Sliger, LP6N48A

Principally prepared by Michael A. Harrison.

0438U

TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : W. T. Cottle, Site Director, Watts Bar Nuclear Plant NUC PR

DATE : JAN 30 1986

SUBJECT: WATTS BAR NUCLEAR PLANT - CORRECTIVE ACTION IMPLEMENTATION FOR NSRS INVESTIGATION REPORT NUMBER I-85-159-WBN - HEAT CODE TRACEABILITY

Attached is Construction's response on the implementation of corrective action for Nuclear Safety Review Staff (NSRS) investigation report I-85-159-WBN and employee concern IN-85-388-006.

If you have any questions, please contact W. L. Byrd at 3774, Watts Bar Nuclear Plant NUC PR.

W. T. Cottle

WLB:RDA:NC
Attachment

This memorandum was principally prepared by R. A. Anderson.

Rec. 2/5/86

TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : W. T. Cottle, Site Director, Watts Bar Nuclear Plant P&E (Nuclear)

FROM : Guenter Wadewitz, Project Manager, Watts Bar Nuclear Plant QC

DATE : JAN 21 1986

SUBJECT: WATTS BAR NUCLEAR PLANT - EVALUATION OF CORRECTIVE ACTION IMPLEMENTATION FOR NSRS INVESTIGATION REPORT NO. I-85-159-WBN - HEAT CODE TRACEABILITY

All COCs and CMTRs for quality level I material have been entered into the RIMS site data base and is being used for heat code verification effective October 14, 1985. NCR 5087 required additional inspection on upgrade of material. Upgrade documents have been placed into the RIMS site data base and NCR was closed on December 9, 1985.

COCs and CMTRs for material on NCR 6369 are correctly identified in the RIMS site data base per documentation received. NCR 6369 cannot be closed at this time pending material upgrading. Based on the above, we feel that Employee Concern IN-85-388-006 can be closed.

Guenter Wadewitz

JES:CMR
Q0388.CR

Principally prepared by J. E. Smith, extension 3132.

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. T. Cottle, Site Director, Watts Bar Nuclear Plant

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

DATE: FEB 11 1986

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : I-85-234-WBN

SUBJECT : "050"/PROCEDURAL CONFLICTS

CONCERN NO.: IN-85-532-006

(X) ACCEPT ( ) REJECT

K. W. Whitt

BFS:JTH
cc (Attachment):
J. W. Coan, W9 C135 C-K
R. P. Denise, LP6N40A-C
F. E. Laurent, CEO-WBN
D. R. Nichols, E10A14C-K
QTC/ERT, CONST-WBN
E. K. Sliger, LP6N48A
Kent Therp, IOB-WBN

Principally prepared by Bruce F. Siefken.

432U

TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : W. T. Cottle, Site Director, Watts Bar Nuclear Plant NUC PR

DATE : JAN 30 1986

SUBJECT: WATTS BAR NUCLEAR PLANT - RESPONSE TO EMPLOYEE CONCERN INVESTIGATION REPORT - TRANSMITTAL

Transmitted herein is Construction's response to recommendation Q-85-234-WBN-01 contained in Nuclear Safety Review Staff (NSRS) employee concern investigation report I-85-234-WBN covering concern IN-85-532-006.

Informal discussion with your staff indicated this response is acceptable.

If you have any questions, please contact W. L. Byrd or J. R. Inger at 3774, Watts Bar Nuclear Plant NUC PR.

W. T. Cottle

WLB:JRI:SKF

This memorandum was principally prepared by J. R. Inger.

Rec 2/6/86

TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : W. T. Cottle, Acting Site Director, Watts Bar Nuclear Plant NUC PR

FROM : Guenter Wadewitz, Project Manager, Watts Bar Nuclear Plant OC

DATE : [illegible]

SUBJECT: WATTS BAR NUCLEAR PLANT - REQUEST FOR INVESTIGATION/EVALUATION

85 JRT 12/19/85

Attached is our response to employee concern number IN-~~86~~-532-006.

Guenter Wadewitz

Guenter Wadewitz

COC:CMR
QERT.CR
Attachments

EMPLOYEE CONCERN IN-~~86~~ 85-532-006

CONCERN: OCP 4.13 VTC states that hanger fillet welds are to be 1/8-3/16" max. Dwg. 47A050, sheet in, note 50 states that welds may be 100% oversize. The OC hanger cards state that the installation was inspected per OCP 4.13 VTC. Procedure dwg note conflicts with oversize welds that have been accepted. (No specific cases given).

RESPONSE: The acceptance criteria contained in OCP 4.13 VTC is Process Specification 3.C.5.4 from General Construction Specification G-29C.

Discussion with W. P. Joest (OE Codes, Standards, and Materials) has established that when requirements on OE drawings and Process Specifications from G-29 conflict, the OE drawing is the governing document.

WBN RR-403 has been initiated to incorporate these instructions in OCP 4.13 VTC.

Principally prepared by K. G. Galloway, extension 3477.

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. T. Cottle, Site Director, Watts Bar Nuclear Plant

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

DATE: FEB 10 1986

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : I-85-396-WBN

SUBJECT : FIRE PROTECTION SYSTEM

CONCERN NO.: IN-85-534-001

(X) ACCEPT ( ) REJECT

Acceptance is not based on the response furnished. TVA did not and can not take exceptions to the code. They can request waivers of certain requirements, but a request does not constitute automatic approval. TVA did not request a waiver of Chapter 7, they merely stated that they would use this method to confirm the validity of the system.

Since the system was hydraulically confirmed, and not originally so designed, the signs required by Chapter 7 are not required for this system. Above statements verified by Bill Baker and Frank Hawkins.

K. W. Whitt

JCC:JTH

cc (Attachment):

R. P. Denise, LP6N40A-C

D. R. Nichols, E10A14C-K

QTC/ERT, CONST-WBN

E. K. Sliger, LP6N48A

Principally prepared by J. C. Catlin.

0441U

TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : W. T. Cottle, Site Director, Watts Bar Nuclear Plant P&E (Nuclear)

DATE : DEC 18 1985

SUBJECT: WATTS BAR NUCLEAR PLANT - RESPONSE TO EMPLOYEE CONCERN INVESTIGATION REPORT TRANSMITTAL (EMPLOYEE CONCERN NUMBER IN-85-534-001)

Attached is our response to the recommendation contained in Nuclear Safety Review Staff (NSRS) report number I-85-396-WBN.

If you have any questions, please contact W. L. Byrd at 3774, Watts Bar Nuclear Plant P&E (Nuclear).

W. L. Byrd for
W. T. Cottle

WLB:SRS:NC
cc (Attachment):
J. C. Standifer, Watts Bar Engineering Project, P-104 SB-K

This memorandum was principally prepared by S. R. Stout.

1/2/86--JTH
cc (Attachment):
J. C. Catlin, NSRS, ION-WBN--For evaluation.

MAH

JTH

WATTS BAR NUCLEAR PLANT
RESPONSE TO NSRS REPORT NUMBER I-85-396-WBN
(EMPLOYEE CONCERN NUMBER IN-85-534-001)

We have reviewed Nuclear Safety Review Staff (NSRS) Report Number I-85-396-WBN and concur with the findings with the following comments/clarifications.

1. Section III.A.2:

   Note that the 1975 version of National Fire Protection Association (NFPA) 13 is the code of record for Watts Bar. This version was included in Volume I of the 1976 National Fire Codes which was the latest edition of the codes that was available when the sprinkler system designs were started. The sprinkler system was designed in accordance with (NFPA) Standard (NFPA) 13-1975, Standard for the Installation of Sprinkler Systems except as noted in J. A. Domer's letter to E. Adensam dated March 21, 1985 (L44 850321 814).

2. Section III.A.6:

   10CFR50 Appendix R requires fire suppression systems be provided in areas containing redundant safe shutdown equipment and circuits that are separated by less than 3-hour fire rated barriers or by space. In order for a sprinkler system to satisfy this requirement, the NRC expects the system to be designed and installed in accordance with NFPA 13. To satisfy these expectations and to specifically address obstructions in sprinkler spray patterns and intervening combustibles located between the redundant shutdown equipment and circuits, TVA committed to upgrading the sprinkler systems per criteria in J. A. Domer's letter to E. Adensam dated December 13, 1985 (L44 841213 808).

3. Section III.B.1:

   Under ECN 5216, the system was modified to address sprinkler obstructions and Appendix R intervening combustibles. After these modifications were made, the system was hydraulically analyzed to confirm compliance with NFPA 13. The Office of Engineering has retained hydraulic calculations.

The following discussion responds to the recommendation contained in the report.

<u>Recommendation I-85-396-WBN-01</u>

The report stated that the plant's sprinkler systems were designed in compliance with National Fire Protection Association (NFPA) Standard 13. It further stated that hydraulically designed portions of these systems had not been provided with permanent nameplates as required by NFPA 13, paragraph 7-1.2, and therefore recommended that such nameplates be provided. We do not agree with this recommendation for the following reasons.

First, TVA is not committed to compliance to all sections of NFPA 13. In a letter from J. A. Domer to E. Adensam dated March 21, 1985 (L44 850321 814), the NRC was provided documentation on the Watts Bar level of compliance to NFPA 13. This statement indicated that with specific exceptions TVA design and documentation procedures are used in lieu of NFPA 13, chapter 7 requirements. The exceptions involve only the calculation methods in chapter 7. Therefore, we are not deviating from our commitments to the NRC when nameplates are not provided.

Second, some of the Watts Bar sprinkler systems provide fire protection in several rooms that have different hydraulic design requirements. Thus, the nameplates could not be limited to the size and content shown in NFPA 13, figure A-7-1.2.

Finally, the NFPA Automatic Sprinkler System Handbook states that nameplates are intended to document information needed in assessing the capability of a system in controlling fires as the function of a building changes and as the water supply deteriorates with time. The handbook further states that the information is also necessary in hydraulically designing revisions or additions to a system. The code requirement for nameplates undoubtedly resulted from experiences on non-nuclear facilities where original design documentation may not be retrievable after a sprinkler system has been in service for a number of years. This problem does not exist at a nuclear plant. At Watts Bar, the sprinkler system procurement documents, design drawings, calculation packages, and preoperational and surveillance test results provide more complete information than can be placed on a nameplate and are readily retrievable from TVA's document control systems. We therefore feel the addition of nameplates is unnecessary.

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. T. Cottle, Site Director, Watts Bar Nuclear Plant

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

DATE: FEB 10 1986

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : I-85-398-WBN

SUBJECT : HYDROSTATIC TESTING OF FIRE PROTECTION SYSTEM

CONCERN NO.: IN-85-534-005

( ) ACCEPT (X) REJECT

The response to I-85-398-WBN-02 is acceptable.

The response to I-85-398-WBN-01 is not acceptable.
The purpose of QCT 4.37, or any other procedure is not as stated in the response. A procedure is a document which delineates a systematic series of actions directed toward some end, i.e., a "how to" document. Requirements, acceptance criteria, documentation requirements, etc. are ancillary to the main purpose.

It is agreed that pump selection is not a procedure requirement. However, if the test pressure cannot be obtained or maintained without the use of an auxiliary pump; then the use of an auxiliary pump becomes a requirement in the "how to" portion of the procedure.

An addendum to QCT 4.37 should be generated which serves this purpose. It is not necessary to designate or select any particular type of pump except to call it an "auxiliary pump".

K. W. Whitt

JCC:JTH
cc (Attachment):
R. P. Denise, LP6N40A-C
D. R. Nichols, E10A14C-K
QTC/ERT, CONST-WBN
E. K. Sliger, LP6N48A

436U

Principally prepared by J. C. Catlin.

TVA 63 (OS-9-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : W. T. Cottle, Site Director, Watts Bar Nuclear Plant P&E (Nuclear)

DATE : DEC 30 1985

SUBJECT: WATTS BAR NUCLEAR PLANT - RESPONSE TO EMPLOYEE CONCERN INVESTIGATION REPORT I-85-398-WBN (EMPLOYEE CONCERN IN-85-534-005)

Transmitted herein is Construction's response to recommendation numbers I-85-398-WBN-01 and I-85-398-WBN-02 contained in Nuclear Safety Review Staff (NSRS) employee concern investigation report I-85-398-WBN.

If you have any questions, please contact W. L. Byrd at 3774, Watts Bar Nuclear Plant P&E (Nuclear).

W. T. Cottle

JAN 2 '86

WLB:RDA:NC
Attachment

This memorandum was principally prepared by R. D. Anderson.

Note	Action		Noted
		Whitt	
✓			
		LML	
		JJN	
		WCS	
		JTH	
		RG	
		TARG	

✓ FILE

1/7/86--JTH
cc (Attachment):
J. C. Catlin, NSRS, IOB-WBN--For evaluation & return.

Recommendations:

I-85-398-WBN-OC - Construction should generate an addendum to QCT 4.37 which shows the procedure for the use of an auxiliary pump to maintain system test pressure during certain hydrostatic tests.

I-85-398-WBN-02 - Hydrostatic test reports should be reviewed and corrected to reflect the correct revision number of WBNP-QCT-4.37 used to conduct the test.

Response:

I-85-398-WBN-01 - The purpose of "Quality Control Test Procedures", such as QCT 4.37 is to specify test requirements, acceptance criteria, and documentation requirements. Pump selection is not a procedure requirement. The pump selected whether it is an auxiliary pump or the system pump depends on its capability to pressurize the system to test specifications. WBN-OC feels that a revision to QCT 4.37 is not warranted.

I-85-398-WBN-02 - A review of unit 1 Fire Protection hydrostatic test packages was performed to verify that the procedure used was in effect at the time the test was performed. During this review no discrepancies were found.

Per conversation with Mr. J.C. Catlin, NSRS Investigator, his review was performed using the effective dates of QCT 4.37 only. Two hydrostatic test procedures, QCT 4.37 and QCT 4.51 were in effect during this review period. QCT 4.51 was applicable for hydrostatic testing of ANSI B31.1 systems and QCT 4.37 was applicable for hydrostatic testing of ASME Section III systems. QCT 4.51 was cancelled and was incorporated into QCT 4.37 R1 on 8-05-82. A review of a QCT 4.51 test package using QCT 4.37 effective dates would apparently indicate a false discrepant condition.

	Effective Date	Inactive Date
QCT 4.51 R0	5-08-81	8-05-82
QCT 4.37 R0	2-15-81	
QCT 4.37 R1	8-05-82	
QCT 4.37 R2	8-15-83	
QCT 4.37 R3	10-23-84	

Based on the above review of unit 1 Fire Protection hydrostatic test packages and the explanation of two test procedures being in effect during NSRS review we feel that a review of all hydrostatic test packages is not required.

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. T. Cottle, Site Director, Watts Bar Nuclear Plant

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

DATE: FEB 11 1986

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : IN-85-770-002

SUBJECT : WELDER CERTIFICATION

CONCERN NO.: IN-85-770-002

(X) ACCEPT ( ) REJECT

K. W. Whitt

BFS:JTH

cc (Attachment):

J. W. Coan, W9 C135 C-K
R. P. Denise, LP6N40A-C
F. E. Laurent, CEO-WBN
D. R. Nichols, E10A14C-K
QTC/ERT, CONST-WBN
E. K. Sliger, LP6N48A
Kent Therp, IOB-WBN

Principally prepared by Bruce F. Siefken.

0433U

TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : W. T. Cottle, Site Director, Watts Bar Nuclear Plant NUC PR

DATE : JAN 31 1986

SUBJECT: WATTS BAR NUCLEAR PLANT - RESPONSE TO EMPLOYEE CONCERN INVESTIGATION REPORT - TRANSMITTAL

Transmitted herein is Construction's response to recommendation Q-85-770-002-01 contained in investigtion report number IN-85-770-002 covering the following employee concerns: IN-85-770-002, IN-85-965-001, WI-85-003-001, IN-85-424-X13, IN-85-612-X07, IN-85-778-X07, IN-85-021-X05, IN-85-770-X07, IN-86-143-002, IN-86-167-005, IN-86-167-X06, WI-85-003-X02.

MAH

The response appears to be consistent with your recommendation with additional information provided in Non Conformance Report (NCR) number 6277 and accepted response to investigation report number IN-85-113-003.

The results of Construction's reinspection program have not been fully evaluated because NCR 6562 must be dispositioned for some welds found to be out of specification. Upon receipt of your acceptance of this response, I will request the scheduled date when Construction expects to have all described activities documented and sampling results evaluated and accepted. Additionally, the above concerns cannot be closed until satisfactory completion of the Department of Energy Weld Evaluation Project (DOE-WEP).

Although none of the concerns implicated the WBN-NUC PR program, the program was evaluated. See memorandum from E. R. Ennis to K. W. Whitt, dated November 7, 1985 (T16 851107 916) regarding concern IN-85-113-003.

My staff has discussed this response with your Mr. M. A. Harrison and obtained informal acceptance.

If you have any questions, please contact W. L. Byrd or J. R. Inger at 3774, Watts Bar Nuclear Plant NUC PR.

W. L. Byrd for

W. T. Cottle

WLB:JRI:NC
Attachment

This memorandum was principally prepared by J. R. Inger.

Employee Concern IN-85-770-002 (et al)

CONCERN: Recommendations

Q-85-770-002-01 - "Backdating Welder Certification Card" - WBN Construction should issue an NCR to document and obtain resolution for the indeterminate condition of welds performed by welders whose qualifications had expired by virtue of not updating certification cards on schedule or from actual non-performance of processes.

A suggested resolution is to evaluate the results of a proposed welding program review for which extensive reexamination of welds/weldments is planned to be performed.

RESPONSE: Stop Work Order 25 was issued August 23, 1985, which identified the welder certification program at WBN to have some aspects of concern with respect to adequacy and accuracy of records.

NCR 6277 was issued August 26, 1985, to document and obtain resolution for the indeterminate condition. An in-depth review of the welder initial certification program as well as the recertification program has been performed to assure compliance to ASME and AWS requirements.

The conclusion of this review is that both programs as delineated in construction procedures meet or exceeds ASME and AWS requirements; however, a breakdown in the implementation of the recertification program did occur.

Watts Bar site procedures controlling welder certification maintenance were revised effective August 26, 1985, and all welding engineering and inspection personnel have been retrained to ensure that all personnel involved with welding activities are thoroughly familiar with requirements.

A total of 567 welders possessed active welder certifications at the time Stop Work Order 25 was issued. All welder certifications older than 90 days were withdrawn. Thirty of these welders had received initial certification tests within 90 days prior to the stop work order; therefore, were considered acceptable.

A renewal qualification test program was initiated August 28, 1985, for the 537 welders whose certification maintenance was questionable. The tests were performed in accordance with ASME Boiler and PV Code, Section IX and AWS D.1.1 as applicable. A total of 1008 tests were administered and 120 welders had one or more coupons rejected. In order to assure no weld quality has been compromised, TVA has identified all welding performed by these welders on ASME code items. A statistical sampling reinspection program is currently in progress on this group of welds in accordance with NCIG-02. In addition, all other welds on ASME systems identified to have been welded during the time frame in question have been identified. All welds made by a welder who showed a lapse in continuity (after the lapse occurred) will also be subjected to a statistical sampling reinspection program. The reinspection program and results are currently scheduled for completion in January, 1986.

Employee Concern IN-85-770-002 (et al)

A seperate program is currently in progress to review the total welding program at WBN which includes an extensive reexamination of welds/weldments by a third party agency.

The results of the reinspection/program review will be evaluated to assure weld/weldment integrity at WBN has not been compromised.

Principally prepared by Kenneth Hasting, extension 3395

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. T. Cottle, Site Director, Watts Bar Nuclear Plant

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

DATE: FEB 10 1986

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : I-85-383-WBN

SUBJECT : CONTROL OF USE OF TEFLON TAPE ON STAINLESS STEEL

CONCERN NO.: IN-85-977-001

(X) ACCEPT ( ) REJECT

K. W. Whitt

BFS:JTH
cc (Attachment):
R. P. Denise, LP6N40A-C
D. R. Nichols, E10A14C-K
QTC/ERT, CONST-WBN
E. K. Sliger, LP6N48A

Principally prepared by Bruce F. Siefken.

0435U

T.V.A 64 (03-9-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : W. T. Cottle, Site Director, Watts Bar Nuclear Plant NUC PR

DATE : JAN 30 1985

SUBJECT: WATTS BAR NUCLEAR PLANT - REPORT NUMBER I-85-383-WBN - EMPLOYEE CONCERN IN-85-977-001 - CONTROL OF USE OF TEFLON TAPE ON STAINLESS

Reference: Your memorandum to me dated January 17, 1986, (Corrective Action Response Evaluation)

The referenced memorandum rejected the Watts Bar response to the subject employee concern based on the fact that generic evaluation results for Browns Ferry, Sequoyah, Bellefonte were not included in the Watts Bar response. However, since Watts Bar has initiated the generic evaluation as required, the Watts Bar item should not be held open. Any request for follow-up information on generic review results should be directed to the appropriate organization responsible for the investigation of each plant. All Watts Bar actions required to resolve this concern have been completed and I request that the subject employee concern be closed for Watts Bar.

If you have any questions, please contact W. L. Byrd at 3774, Watts Bar Nuclear Plant NUC PR.

W. L. Byrd for

W. T. Cottle

WLB:SRS:NC

cc (Attachment):

J. C. Standifer, Watts Bar Engineering Project, P-104 SB-K

This memorandum was principally prepared by S. R. Stout.

Rec. 2/5/8

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: W. T. Cottle, Site Director, Watts Bar Nuclear Plant

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

DATE: JAN 17 1986

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : I-85-383-WBN

SUBJECT : CONTROL OF USE OF TEFLON TAPE ON STAINLESS STEEL

CONCERN NO.: IN-85-977-001

( ) ACCEPT (X) REJECT

NSRS agrees with the course of action to be, however the response does not include the results of the generic evaluations as requested Please forward these results to NSRS.

K. W. Whitt

WLB

BFS:JTH

cc (Attachment):

R. P. Denise, LP6N35A-C
D. R. Nichols, E10A14C-K
QTC/ERT, CONST-WBN
E. K. Sliger, LP6N48A
W. F. Willis, E12B16 C-K (4)

Principally prepared by Bruce F. Siefken.

WATTS BAR NUCLEAR PLANT

TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : W. T. Cottle, Site Director, Watts Bar Nuclear Plant P&E (Nuclear)

DATE : JAN 13 1986

SUBJECT: WATTS BAR NUCLEAR PLANT - RESPONSE TO EMPLOYEE CONCERN INVESTIGATION REPORT I-85-383-WBN (EMPLOYEE CONCERN NUMBER IN-85-977-001)

Attached is our response to the recommendations contained in Nuclear Safety Review Staff (NSRS) report number I-85-383-WBN.

If you have any questions, please contact W. L. Byrd at 3774, Watts Bar Nuclear Plant P&E (Nuclear).

W. T. Cottle

WLB:SRS:MC

cc (Attachment):

J. C. Standifer, Watts Bar Engineering Project, P-106 SB-K

This memorandum was principally prepared by S. R. Stone

JAN 13 '86

WATTS BAR NUCLEAR PLANT
NSRS INVESTIGATION REPORT I-85-383-WBN
EMPLOYEE CONCERN IN-85-977-001

NSRS Recommendation

No action is required at Watts Bar Nuclear Plant.

I-85-383-WBN-01 - Applicability of NCR W-231-P to Other Plants

Reevaluate Watts Bar Nuclear Plant NCR W-231-P for generic applicability to Bellefonte, Sequoyah, and Browns Ferry; or provide justification for determination of not generic.

Response

A generic evaluation of NCR W-231-P for generic applicability to other plants has been initiated. A potential generic condition evaluation memorandum (B45 851217 269) was sent to Bellefonte, Browns Ferry and Sequoyah Nuclear Plants for their evaluation. Any condition adverse to quality identified at those plants will be documented and resolved per existing procedures at those plants.

CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO: I-85-383-WBN

SUBJECT:

CONCERN NO: IN-85-977-001

☐ ACCEPT

☒ REJECT

NSRS agrees with the course of action as is - however the response does not include the results of the generic evaluation as requested. Please forward these results to NSRS.

Prepared By

Reviewed By

64 (03-8-83)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Acting Site Director, Watts Bar Nuclear Plant

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

DATE : OCT 16 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

WATTS BAR NUCLEAR PLANT SITE DIRECTOR'S OFFICE OCT 18 '85

Transmitted herein is NSRS Report No. I-85-383-WBN

Subject Control of Use of Teflon Tape on Stainless Steel

Concern No. IN-85-977-001

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached recommendations by October 31, 1985. Should you have any questions, please contact P. R. Davis at telephone 426-143-5844

Recommend Reportability Determination: Yes X No ___

Director, NSRS/Designee

Attachment
cc (Attachment):
H. N. Culver, W12A12 C-K
QTC/ERT, Watts Bar Nuclear Plant
W. F. Willis, E12B16 C-K (4)

--Copy and Return--

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

From: E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant P&F (Nuclear)

Date: October 31, 1985

I hereby acknowledge receipt of NSRS Report No. I-85-383-WBN
Subject Control of Use of Teflon Tape on Stainless Steel for action/disposition.

Signature

10/24/85
Date

0029U

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-383-WBN

EMPLOYEE CONCERN IN-85-977-001

MILESTONE 1

SUBJECT: CONTROL OF USE OF TEFLON TAPE ON STAINLESS STEEL

DATES OF INVESTIGATION: September 16-24, 1985

INVESTIGATOR: P. R. Bevil ________ 10/10/85 Date

REVIEWED BY: P. B. Border ________ 10/10/85 Date

APPROVED BY: M. A. Harrison ________ 10/10/85 Date

I. BACKGROUND

NSRS has investigated a Watts Bar Nuclear Plant (WBN) employee concern which was identified to the Quality Technology Company (QTC) as follows:

<u>Concern IN-85-977-001</u>

"TVA management has stated that teflon tape which was used on the Reactor Coolant System (RCS) must be identified and replaced with another type of tape; however, no program to accomplish this task has started."

II. SCOPE

Reviews and interviews were conducted to determine if, in fact, TVA/WBN management had required that teflon tape used on the RCS be identified and removed and this removal documented. A determination was also made as to whether recurrence control had been established to control the use of teflon tape in the future.

III. SUMMARY OF FINDINGS

A. Applicable Requirements and Commitments

Construction Specification G-29M, section 4.M.1.1 (R9), and NUC PR WBN TI-35, section [illegible], rev. [illegible], state that "Fluorocarbon gas tapes (TFE type) are acceptable on joints only when temperatures are below 300°F and radiation levels are below 10^4 rads and are not for use on lines that reenter the reactor system."

B. Findings

1. Teflon tape was on lines that reenter the reactor system at WBN on Units 1 and 2. This problem was subsequently identified on 4/24/85 in Nonconformance Report (NCR) W-[illegible]31-P. This issue was also raised in NRC Inspection Report 390/85-32-01 dated 5/24/85.

2. As part of the NCR corrective action measures, OE was requested to evaluate the use of teflon tape at WBN and specify those areas where its use is unacceptable. OE made their reply in a J. C. Standifer to G. Wadewitz memorandum dated 5/9/85 (RIMS B45 850509 254). This memorandum recommended immediate removal of teflon tape from specific areas of the plant and also justified use as is in the remainder of the plant until all tape can be replaced on a no-delay-to-operations basis. It also stated that teflon tape located outside the applicable RCS boundary did not pose a safety concern.

3. The memorandum further stated that teflon tape would no longer be used at Watts Bar after 5/1/85. NSRS verified removal of teflon tape from Power storeroom and Construction warehouse stock. All of this type of sealant was either transferred to a TVA fossil or hydro plant, or auctioned off. This decision virtually eliminates any use of teflon tape and possible future problems in this area.

4. Subsequent to this memorandum, NUC PR removed all teflon tape applied on the referenced applicable stainless-steel lines in Unit 1 (reference 9/27/85 memorandum from E. R. Ennis to G. Wadewitz, RIMS T07 850927 960). The Unit 2 portion of the NCR remains open until similar action can be accomplished on the applicable Unit 2 lines.

IV. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The concern was not substantiated. A program has been established by NUC PR to remove all applied teflon tape from the applicable RCS instrument and sample lines. As stated above, Unit 1 corrective actions have already been completed, and Unit 2 corrective action is forthcoming.

All teflon tape has also been removed from stock at Power Stores and OC; therefore, no future problems in this area are anticipated.

There is a program to remove all teflon tape already applied in other areas of the plant as well, but this program is informal. The 5/7/85 memorandum from OE, however, justifies that this situation is not a safety concern.

Note: WBN NCR W-231-P is listed as a nongeneric problem; however, NSRS believes this could be a potential problem at BFN, SQN, and BLN as G29 specification is applicable to all TVA nuclear plants.

Recommendations

No action is required at WBN.

I-85-733-WBN-01 -- Applicability of NCR W-231-P to Other Plants

Reevaluate WBN NCR W-231-P for generic applicability to BFN, SQN, and BLN; or provide justification for the determination of "not generic."