

TVA EMPLOYEE CONCERNS  
SPECIAL PROGRAM

REPORT NUMBER: 309.01-SQN

REPORT TYPE: Sequoyah Nuclear Plant - Element

REVISION NUMBER: 3

TITLE: Adequacy of Procedure

REASON FOR REVISION:

To incorporate TAS and SRP Comments

Revision 1

To incorporate SQN Corrective Action Response

Revision 2

To incorporate NRC Comments

Revision 3

PREPARATION

PREPARED BY:

*W. J. Elliott*

SIGNATURE

*3-13-87*

DATE

REVIEWS

PEER:

*M. W. Murphy*

SIGNATURE

*3-13-87*

DATE

TAS:

*3/16/87*

*R. R. Little*

SIGNATURE

*3/16/87*

DATE

CONCURRENCES

SIGNATURE

DATE

for CEG-H:

SRP:

SIGNATURE\*

*3/13/87*

*3-17-87*

DATE

APPROVED BY:

*W. R. Brown*

ECSP MANAGER

*3/17/87*

DATE

N/A

MANAGER OF NUCLEAR POWER  
CONCURRENCE (FINAL REPORT ONLY)

DATE

\*SRP Secretary's signature denotes SRP concurrences are in files.

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

Subcategory: Engineering

Element: Adequacy of Procedure

Report Number: 309.01-SQM Revision 3  
IN-85-977-001

Evaluator:	<u>Tim Massey WJE</u> Tim Massey	<u>3-13-87</u> Date
Reviewed by:	<u>MM Murphy</u> OPS CEG Member	<u>3-13-87</u> Date
Approved by:	<u>Thomas J. Huth</u> for W. R. Lagergren	<u>3/13/8</u> Date

## I. ADEQUACY OF PROCEDURE

This report evaluates the concern addressing the implementation of programs to identify and replace the teflon tape used on the reactor coolant system and those systems that return to the reactor coolant system at Sequoyah Nuclear Plant (SQN). The programs and procedures must identify the unacceptable locations of the teflon tape and stipulate replacement with another type of acceptable material where required. This program implementation has been generated by TVA management who stated that this tape replacement shall occur.

## II. SPECIFIC EVALUATION METHODOLOGY

Concern IN-85-977-001 states: "TVA management has stated that teflon tape which was used on the reactor coolant system must be identified and replaced with another type of tape, however, no program to accomplish this task has started."

A review was performed of the division and plant procedures, the Nuclear Safety Review Staff (NSRS) inspection report (I-85-383-WRN), the operating experience review, and associated memorandums. Supervisors, planners, and foreman were interviewed for knowledge of the use of teflon tape.

The above referenced NSRS report was reviewed to determine its adequacy and completeness with relation to the above stated SQN generic employee concern.

## III. FINDINGS

An employee at Watts Bar Nuclear Plant (WRN) expressed a concern that management had said teflon tape was not acceptable to use at the plant, but nothing was being done to correct the problem. An Operating Experience Review (OER), SQN850088001 was issued in February 1986, at SQN for the problem to be addressed.

A review of the documents governing use of teflon tape was conducted. These are listed in the reference section of this report.

Type TFE teflon tape is generally used in applications where the temperature is less than 400°F. When the temperature exceeds this value, the properties begin to change, thus allowing the possibility of leakage. When TFE teflon is used where radiation doses exceed  $10^4$  RADS, fluorine is released.

General Construction Specification, G-29 and Division Procedure Manuals (DPM) N73E1 and N73M2 restrict the use of teflon tape to a maximum temperature of 300°F and a maximum radiation dose of  $10^4$  RADS. These procedures go on to say that this tape is not for use on lines that

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## FINDINGS (con't)

re-enter the reactor system. Plant procedure SQN SQA-160, Revision 4, reflected the same procedure. Grafoil tape is listed as acceptable for any circumstances; however, it is not practical for use in all situations.

The Chemical Engineering Section performed a walkdown of the reactor coolant system chemical sampling lines, the chemical volume and control system sampling lines, and the post accident sampling lines on both units and discovered 26 problem locations. Of the 26, two were determined to exist in locations where the temperature is greater than 300°F and the accident condition dose rate exceeds 10<sup>4</sup> RADS. Work requests B111371 and B113880 were initiated and worked to remove the teflon tape on the two locations identified above. The remaining 24, do not violate the radiation dose requirement or the temperature requirement; however, they do violate the requirements that specify that the tape should not be used on lines which re-enter the reactor system. This is discussed in the evaluation of OER SQN850088001.

Memorandum from Metallurgical Engineering to Nuclear Engineering and OER SQN850088001, I-85-383-WBN Attachment Z references testing currently being performed to find an acceptable substitute for teflon tape. The testing program being conducted by DNE, is being performed to retest existing thread sealants and qualify other sealants for use. This testing is to take from 6 to 12 months. When the testing is complete, a walkdown will be performed to identify the areas where teflon tape is installed but is outside the scope of the experience review SQN 850088001, which was generated by the WBN concern. The target date at SQN for this work is the unit 2 cycle 4 refueling outage.

Interviews were conducted with planners, foremen, a general foreman and an engineer. The planners, foremen and general foreman all indicated that they did not know that teflon tape had only certain acceptable applications before the areas were identified to have the tape removed. The engineer stated that he knew it was not acceptable for certain applications and that he felt implementing procedures were not adequate for controlling the tape. The planners, foreman and general foreman said that its use should be addressed in the planning of the work either by a working level instruction or in the planning of the work request.

The steamfitters have been instructed not to use teflon tape inside the Reactor Buildings. A memorandum was issued to the general foreman to direct his workers not to use the teflon tape in the Reactor Buildings.

OER SQN850088001 provides the means by which the testing is being conducted and tracked. When substitutes are found, this same OER will be used as the implementing device. Currently, the Division of Nuclear Engineering (DNE) has Singleton Lab testing different thread sealants.

Subsequent to the initial evaluation and the Corrective Action Plan (CAP), indicated in section VII, some questions were raised by the NRC. Additional information was obtained in response to questions concerning the proposed corrective action.

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## FINDINGS (con't)

It was determined that teflon tape is not a problem if used within the environmental limits, regardless of which system it is used on. Revision 5 of SQA-160 removed the restriction prohibiting use of teflon tape on any lines that will reenter the reactor system. The removal of this requirement creates an inconsistency with the upper tier requirements in G29, DPM N73E1 and N73M2.

The requirements in revision 5 of SQA-160 will over ride DPM N73E1 until the DPM is revised to reflect the same requirements. This is allowed by plant procedure SQA-188 and a cover sheet is attached to revision 5 of SQA-160 documenting headquarters endorsement in lieu of the upper-tier document indicated on the cover sheet. The cover sheet indicates DPM N73E1 but does not indicate G-29 or DPM N73M2. Therefore an inconsistency still exists between SQA-160 and upper tier documents G-29 and DPM N73M2.

The requirements of G-29 are applicable to SQA-160 since G-29 is a Division of Nuclear Construction (DNC) Document and Modifications, which is a branch of DNC, uses SQA-160.

The disposition of OER SQN 850088001 indicates an environmental drawing prerequisite will be imposed on teflon tape usage. A discussion with OER tracking personnel revealed that this prerequisite has not been implemented and remains an open item on the OER.

A Condition Adverse to Quality Report, (CAQR) SQP 870155 was initiated on March 9, 1987 which identifies the lack of a "consistent policy or program to identify, control, and eliminate improper usage of teflon tape".

## CONCLUSIONS

The teflon tape on RCS related components which was unacceptable has been identified and replaced. However, a program to identify and replace the tape in all unacceptable locations and to prevent it's use in these areas has not been established. Although SQN has a standard practice which specifies when teflon tape can be used, this has proven ineffective. To prevent teflon tape reinstallation in the unacceptable locations, plant personnel must be familiar with its acceptable uses. Implementing procedures should be initiated which address what thread sealants and lubricants can be used and the application restrictions of their use. It appears that an environmental drawing prerequisite is essential since the usage criteria is based upon the environmental conditions of components on which the tape is used.



## CONCLUSION (con't)

The specific concern that no program has been established to identify and replace teflon tape on the RCS is not valid. However, the issue of preventing the use of teflon tape in all unacceptable locations is valid. The present approach by SQN in allowing limited, controlled use of teflon tape is not consistent with the WBN and BFN approach as indicated in OER SQN 850088001. CATD 30901-SQN-02 has been written for tracking purposes concerning CAQR SQP 870155.

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## IV. ROOT CAUSE

The absence of implementing procedures and unfamiliarity with SQN/SQA-160 requirements aided in the misapplication of teflon tape.

## V. GENERIC APPLICABILITY

This concern has been determined to be applicable to all TVA nuclear plants. Because of the findings cited, these conditions could exist at other plants.

## VI. References

1. DPM Division Procedure Manual N73M2, Section 4.M.1.1., Revision 9, January 24, 1985
2. SQN SQA Standard Practice 160, Revision 4, dated July 13, 1986
3. NSRS Inspection Report I-85-383-WBN, dated October 10, 1985, contained in OER SQN 850088001
4. Operating Experience Review, OER SQN 850088001, dated February 18, 1986
5. Unimplemented Design Item Evaluation, from H. L. Jones, Nuclear Lead Engineer to SQEP Project Files dated June 2, 1986, (B25 860620 002)
6. Memorandum from K.E. Cooper, Metallurgical Engineer to Nuclear Engineering Branch Files Use of Pipe ("Teflon") Tape at TVA Nuclear Plants, dated April 18, 1986, (B45 860418 251)
7. Memorandum from C.J. Brimer, Manager Site Services to B. M. Patterson, Maintenance Superintendent, "Sequoyah Nuclear Plant - Justification for Continued Operation for Teflon Tape Presently Installed," dated April 18, 1986, (S01 860716 931)

8. Memorandum from C.R. Brimer, Manager Site Services to P. R. Wallace, Plant Manager, "Watts Bar Nuclear Plant - Review of Operating Experience Review Item No. I-85-383-WBN," dated February 19, 1986, (S01 860219 834)
9. Memorandum from J. C. Standifer, Project Manager, Watts Bar Engineering Project to G. Wadewitz, Project Manager Watts Bar Nuclear Plant, "Watts Bar Nuclear Plant Nonconformance Report (NCR) No. W-231-P, Revision 0 Inappropriate use of Teflon Sealant Tape," dated May 9, 1985, (B45 850509 254)
10. Memorandum from E.R. Ennis, Plant Manager, Watts Bar Nuclear Plant to Guenter Wadewitz, Project Manager, Watts Bar Nuclear Plant, "Watts Bar Nuclear Plant-Nonconformance Report, W-231-P, dated May 1, 1986, (T07 850426 894)
11. Memorandum from R. A. Sessoms, Project Manager Environmental Qualification Project to H. L. Abercrombie, Site Director, Sequoyah Nuclear Plant, "Thread Sealant/Lubricants for Use on Solenoid Valve Interface Connections with Airline," dated February 6, 1986, (B70 860206 004)
12. SQN Condition Adverse to Quality Report (CAQR) SQP 870155, March 9, 1987. |R3  
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#### VII. IMMEDIATE AND LONG-TERM CORRECTIVE ACTION

The SQN Corrective Action Plan states: (CATD-30901-SQN-01)

Revise SQN standard practice SQA 160 to clarify limitations of teflon tape. Also, issue memorandum to employees who may use teflon tape advising of the restrictions on teflon tape application. These two action items will be tracked by management action tracking system (MATs) assignment numbers 9357 and 9356 respectively.

CATD 30901-SQN-02 has been issued to track closure of CAQR SQP-870155. |R3

REFERENCE - ECPS120J-ECPS121C  
FREQUENCY - REQUEST  
ONP - ISSS - RHM

TENNESSEE VALLEY AUTHORITY  
OFFICE OF NUCLEAR POWER  
EMPLOYEE CONCERN PROGRAM SYSTEM (ECP)  
LIST OF EMPLOYEE CONCERN INFORMATION

PAGE  
RUN TIME  
RUN DATE

CATEGORY: OP PLANT OPER. SUPPORT

SUBCATEGORY: 30901 ADEQUACY OF PROCEDURES

CONCERN NUMBER	CAT	SUB CAT	S H R PLT D LOC	GENERIC APPL B B S W F L Q B	QTC/NSRS INVESTIGATION REPORT	P S R	CONCERN DESCRIPTION
IN -85-977-001 T50112	OP	30901	N MBN	Y Y Y Y REPORT	I-85-383-MBN	NS	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. CI HAS NO ADDITIONAL INFORMATION. NO FOLLOW UP REQUIRED.

KEYWORD A  
KEYWORD B  
KEYWORD C  
KEYWORD

NONCONFORMANCE  
CORRECTIVE  
CONSTRUCTION  
TUBING

1 CONCERNS FOR CATEGORY OP SUBCATEGORY 30901



Applicable ECSP Report No.: 309.01 SQN

- ### CORRECTIVE ACTION

- ## VERIFICATION AND CLOSEOUT

- DATE \_\_\_\_\_