NOTICE OF VIOLATION
AND
PROPOSED IMPOSITION OF CIVIL PENALTY

Tennessee Valley Authority
Sequoyah Nuclear Plant

Docket Nos. 50-327 and 50-328
License Nos. DPR-77 and DPR-79
EA 96-269

During an NRC inspection conducted during the period July 8 through August 22, 1996, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions," NUREG-1600, the NRC proposes to impose a civil penalty pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (Act), 42 U.S.C. 2282, and 10 CFR 2.205. The particular violations and associated civil penalty are set forth below:

A. Technical Specification (TS) 6.8.1.f provides that written procedures shall be established, implemented and maintained covering the Fire Protection Program.

Tennessee Valley Authority's (TVA) Nuclear Quality Assurance Plan (NAQP), TVA-NQA-PL89-A provides a complete description of the quality assurance program for operation of the Sequoyah Nuclear Plant (Sequoyah). NAQP TVA-NQA-PL89-A, Section 5.0 identifies the programs and features to which the NAQP applies. Section 5.0.B.6 lists fire protection as one of these programs.

NAQP, TVA-NQA-PL89-A, Section 10.2.2.B, Corrective Action for Adverse Conditions, requires, in part, that the TVA nuclear organizations and onsite non-TVA nuclear service organizations performing quality-related activities at nuclear facilities promptly identify and resolve adverse conditions.

Contrary to the above, adverse conditions related to the fire protection program were not promptly identified and/or resolved, in that:

1. Quality Assurance (QA) audits of the fire protection program, dated October 9, 1992, August 1, 1994, January 24, 1995, and July 14, 1995, identified discrepancies associated with inadequate implementation of the Sequoyah fire protection program, and corrective actions had not been implemented and/or completed to adequately address these discrepancies. Specifically,

   a. Inadequate installation of emergency lighting and an inadequate program for preventive maintenance of the installed lighting units was identified during the 1992 QA audit; however, as of August 22, 1996, field testing of installed lighting and preventive maintenance procedure revisions to resolve this issue had not been completed.

   b. Lack of a restoration program for approximately 1500 degraded fire barrier penetration seals was identified

during the QA 1994 audit; however, as of August 22, 1996, no date had been proposed for the completion of any required modifications.

c. Inadequate procedures for the evaluation and control of transient combustibles was identified during the 1994 QA audit; however, as of August 22, 1996, the applicable procedures had been revised but had not been effectively implemented. The issue associated with the storage of combustible materials was scheduled to be resolved by November 1996.

d. Inadequate design control of fire barrier penetration seals was identified during the 1994 QA audit. As of August 22, 1996, this issue had not been fully resolved and was scheduled for completion in late 1997.

e. Changes made to the plant without following the design change process (i.e., inadequate controls over plant modifications which affect the fire protection program) were identified during the 1995 QA audit. As of August 22, 1996, this issue was scheduled to be resolved by 1997.

f. Lack of testing of the backup fire suppression system for the cable spreading room since 1982 was identified by the 1995 QA audit. As corrective action, TVA planned to install a blind flange in this system and remove it from service; however, as of August 22, 1996, the design change package was scheduled to be issued September 15, 1996, but no schedule date was provided for completion of this modification.

2. From initial plant licensing until September 21, 1993, 326 fire barrier penetrations in Units 1 and 2 which provided fire rated separation between redundant safety related components were not functional as required by TS 3.7.12, Fire Barrier Penetrations. Specifically, on September 21, 1993, TVA determined that a number of fire dampers in Units 1 and 2 were not installed in accordance with the vendor's recommendations and were not functional. The required compensatory measures, which included an hourly fire watch, were implemented for these areas on September 21, 1993, and continue; however, as of August 22, 1996, final resolution of this issue was not scheduled until 1997.

3. TVA's 1994 QA audit identified problems with the control of combustible and transient fire loads in the Elevation 669 Spare Room, yet two specific violations of transient fire load procedural requirements, contained in Procedure SSP-12.15, Fire Protection Plan, Appendix E, Procedure SSP-9.3, Plant

Modifications and Design Change Controls, and/or SSP-12.4, Temporary Alterations Control Program, continued as of July 8-12, 1996. Specifically:

a. Transient Fire Load (TFL) Permit TFL-95-0254 was issued for the storage of 1100 pounds of clothing and 400 pounds of rubber/plastic radiation protective clothing on Elevation 690 between column lines A4 and A6 in the Auxiliary Building. This TFL permit expired on December 31, 1995, and a new permit had not been issued nor had an appropriate engineering analysis been performed, as required. This material was stored directly beneath electrical raceways containing safe shutdown related cables.

b. The following permits issued for the spare room on Elevation 669 were issued for longer than six months, had not received approval by the Site Fire Protection Engineer, and had not received an engineering analysis to justify the change in occupancy:

(1). Permit TFL-95-0033 (high fire load), issued February 5, 1995, and extended to December 31, 1996;

(2). Permits TLC-96-0003 (no fire load indicated) issued January 1, 1996, with expiration date of December 31, 1996;

(3). Permit TFL-96-004 (medium fire load), issued January 1, 1996, with expiration date of December 31, 1996; and

(4). Permit TFL-96-0005 (no fire load indicated) issued January 1, 1996, with expiration date of December 31, 1996. (01013)

B. TS 3.7.3, Carbon Dioxide (CO_2) Systems, requires that the computer room low pressure CO_2 system shall be operable whenever equipment protected by the CO_2 system is required to be OPERABLE. The computers in this room are required to support plant operations.

Contrary to the above, from May 1990 until December 18, 1995, the computer room low pressure CO_2 system was not operable when the computers within this room were required to be operable to support plant operations. Specifically, in May 1990, the heating ventilation air conditioning system for the Control Building was modified by the installation of duct penetrations which were not arranged with dampers to close and isolate the room upon actuation of the CO_2 system. The computer room CO_2 system was placed out of service in December 1995 and, as of August 22, 1996 remained out of service with an hourly fire watch patrol implemented to meet the compensatory requirements of the TS. (01023)

C. TS 4.7.12.a, Fire Barrier Penetrations, Surveillance Requirements, provides that each of the required fire barrier penetrations shall be verified to be functional at least once per 18-months.

Contrary to the above, all fire barrier penetrations were not verified to be functional at least once per 18 months, in that the Auxiliary Building penetrations in high radiation areas were not included in the 18-month surveillances performed in March 1994 and August 1995. (01033)

D. TS 4.7.11.4.c.2 states that each of the fire hose stations shown in Table 3.7-5 shall be demonstrated operable at least once per three years by conducting a hose hydrostatic test at a pressure of 150 pounds per square inch gauge (psig) or at least 50 psig above maximum fire main operating pressure, whichever is greater. The hose stations installed in the reactor buildings are included in Table 3.7-5.

Contrary to the above, between November 10, 1990, and February 15, 1996, the fire hoses installed in the hose stations in the reactor buildings were not demonstrated operable at least once per three years by conduct of hose hydrostatic tests, as required. (01043)

This is a Severity Level III Problem (Supplement I).
Civil Penalty - $50,000

Pursuant to the provisions of 10 CFR 2.201, the Tennessee Valley Authority (Licensee) is hereby required to submit a written statement or explanation to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, within 30 days of the date of this Notice of Violation and Proposed Imposition of Civil Penalty (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each alleged violation: (1) admission or denial of the alleged violation, (2) the reasons for the violation if admitted, and if denied, the reasons why, (3) the corrective steps that have been taken and the results achieved, (4) the corrective steps that will be taken to avoid further violations, and (5) the date when full compliance will be achieved. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked or why such other action as may be proper should not be taken. Consideration may be given to extending the response time for good cause shown. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Within the same time as provided for the response required above under 10 CFR 2.201, the Licensee may pay the civil penalty by letter addressed to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, with

a check, draft, money order, or electronic transfer payable to the Treasurer of the United States in the amount of the civil penalty proposed above, or may protest imposition of the civil penalty in whole or in part, by a written answer addressed to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission. Should the Licensee fail to answer within the time specified, an order imposing the civil penalty will be issued. Should the Licensee elect to file an answer in accordance with 10 CFR 2.205 protesting the civil penalty, in whole or in part, such answer should be clearly marked as an "Answer to a Notice of Violation" and may: (1) deny the violations listed in this Notice, in whole or in part, (2) demonstrate extenuating circumstances, (3) show error in this Notice, or (4) show other reasons why the penalty should not be imposed. In addition to protesting the civil penalty in whole or in part, such answer may request remission or mitigation of the penalty.

Any written answer in accordance with 10 CFR 2.205 should be set forth separately from the statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate parts of the 10 CFR 2.201 reply by specific reference (e.g., citing page and paragraph numbers) to avoid repetition. The attention of the Licensee is directed to the other provisions of 10 CFR 2.205, regarding the procedure for imposing a civil penalty.

Upon failure to pay any civil penalty due which subsequently has been determined in accordance with the applicable provisions of 10 CFR 2.205, this matter may be referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Act, 42 U.S.C. 2282c.

The response noted above (Reply to Notice of Violation, letter with payment of civil penalties, and Answer to a Notice of Violation) should be addressed to: Mr. James Lieberman, Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852-2738, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region II and a copy to the NRC Resident Inspector at the Sequoyah Nuclear Plant.

Because your response will be placed in the NRC Public Document Room (PDR), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding

confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Dated at Atlanta, Georgia
this 19th day of November 1996

LIST OF PREDECISIONAL ENFORCEMENT CONFERENCE ATTENDEES
OCTOBER 24, 1996

Tennessee Valley Authority (TVA)

R. Adney, Vice President, Sequoyah Nuclear Plant (SQN)
M. Medford, Vice President, Engineering and Technical Support
R. Baron, General Manager, Nuclear Assurance and Licensing
E. Vigluicci, Senior Attorney, Office of General Counsel
J. Rupert, Engineering and Services Support Manager, SQN
W. Lagergren, Operations Manager, SQN
R. Shell, Manager, Licensing, SQN
M. Lorek, Mechanical Engineering Manager, SQN
M. Fecht, Nuclear Assurance and Licensing Manager, SQN
J. Lasey, Fire Protection Manager, SQN
K. Meade, Acting, Industry Affairs Manager, SQN
M. Salley, Senior Engineer, TVA-Nuclear

Nuclear Regulatory Commission

S. Ebneter, Regional Administrator, Region II (RII)
J. Johnson, Deputy Director, Division of Reactor Projects (DRP), RII
A. Gibson, Director, Division of Reactor Safety (DRS), RII
C. Evans, Regional Counsel
M. Satorius, Deputy Director, Office of Enforcement*
F. Hebdon, Director, Projects Directorate II-3, Office of Nuclear Reactor Regulation (NRR)
L. Marsh, Chief, Plant Systems Branch (PSB), NRR
R. Hernan, Project Manager, NRR
M. Lesser, Chief, Projects Branch 6, DRP, RII
P. Fredrickson, Chief, Special Inspection Branch, DRS, RII
P. Madden, Senior Fire Protection Engineer, PSB, NRR
W. Miller, Reactor Inspector, DRS, RII
A. Boland, Enforcement Specialist, Enforcement and Investigations Coordination Staff, RII

* Participated by Telephone

Enclosure 2

PREDECISIONAL ENFORCEMENT CONFERENCE AGENDA

SEQUOYAH
OCTOBER 24, 1996, AT 8:00 A.M.
NRC REGION II OFFICE, ATLANTA, GEORGIA

I. OPENING REMARKS AND INTRODUCTIONS
S. Ebneter, Regional Administrator

II. NRC ENFORCEMENT POLICY
A. Boland, Enforcement Specialist
Enforcement and Investigation Coordination Staff

III. SUMMARY OF THE ISSUES
S. Ebneter, Regional Administrator

IV. STATEMENT OF CONCERNS / APPARENT VIOLATIONS
A. Gibson, Director
Division of Reactor Safety

V. LICENSEE PRESENTATION
R. Adney, Site Vice President
Sequoyah Nuclear Plant
Tennessee Valley Authority

VI. BREAK / NRC CAUCUS

VII. NRC FOLLOWUP QUESTIONS

VIII. CLOSING REMARKS
S. Ebneter, Regional Administrator

Enclosure 3

SUMMARY OF ISSUES TO BE DISCUSSED

1. Failure to promptly identify and/or resolve adverse conditions related to the fire protection program.

2. Inoperable CO_2 system due to HVAC modifications.

3. Fire barriers in high radiation areas were not inspected in 1994 and 1995.

4. Fire hose stations in Reactor Buildings were not equipped with fire hose which had been hydrostatically tested within the past three years.

NOTE: The apparent violations discussed in this predecisional enforcement conference are subject to further review and are subject to change prior to any resulting enforcement decision.

ISSUES TO BE DISCUSSED

1. Technical Specification, Section 6.8.1.f, states that written procedures shall be established, implemented and maintained covering the Fire Protection Program implementation.

   TVA's Nuclear Quality Assurance Plan (NAQP), TVA-NQA-PL89-A provides a complete description of the quality assurance program for operation of the Sequoyah Nuclear Plant. NAQP TVA-NQA-PL89-A, Section 5.0 identifies the programs and features for which the NAQP applies. Section 5.0.B.6 lists fire protection as one of these programs.

   NAQP, TVA-NQA-PL89-A, Section 10.2.2.B, Corrective Action for Adverse Conditions, states: TVA nuclear organizations and onsite non-TVA nuclear service organizations performing quality-related activities at nuclear facilities shall promptly identify and resolve adverse conditions.

   The licensee failed to promptly identify and/or resolve adverse conditions related to the fire protection program in that:

   (1) Quality Assurance audits of the fire protection program, specifically, QA audits of October 9, 1992, August 1, 1994, January 24, 1995, and July 14, 1995, identified fire protection discrepancies associated with inadequate implementation of the Sequoyah fire protection program and as of August 22, 1996, corrective action had not been implemented to adequately address these discrepancies as follows:

      a. Inadequate emergency lighting installation and an inadequate preventive maintenance program for the installed lighting units identified by the 1992 audit. At the end of this inspection, field testing and preventive maintenance procedure revisions to resolve this issue were in progress.

      b. No restoration program for approximately 1500 degraded fire barrier penetration seals identified during the 1994 audit. At the conclusion of this inspection, engineering design data input was scheduled for early 1997. As of August 22, 1996, no date had been proposed for

completion of required modifications.

c. Inadequate procedures for the evaluation and control of transient combustibles identified during the 1994 audit. At the conclusion of this inspection, procedures had been revised but had not been effectively implemented. The issue associated with the storage of combustibles materials in the plant were proposed to be resolved by November 1996.

d. Inadequate design control over fire barrier penetration seals identified during the 1994 audit. Resolution of this issue is scheduled for late 1997.

e. Changes being made to plant without following design change process, i.e. inadequate controls over plant changes which affect the fire protection program, were identified during the 1995 audit. This issue was scheduled to be resolved by 1997.

f. No testing of the backup cable spreading room fire suppression system for the cable spreading room since 1982 was identified by the 1995 audit. TVA planed to install a blind flange in this system and remove it from service. The design change package was scheduled to be issued September 15, 1996. No schedule date was provided for completion of this plant change.

(2) From initial plant licensing until September 21, 1993, 326 fire barrier penetrations in Units 1 and 2 which provided fire rated separation between redundant safety related components were not functional as required by Technical Specification 3.7.12, Fire Barrier Penetrations. Specifically, on September 21, 1993, TVA determined that a number of fire dampers in Units 1 and 2 were not installed in accordance with the vendor's recommendations and were not functional. The required compensatory measures which included a hourly fire watch were implemented for these areas on September 21, 1993. Final resolution is not scheduled until 1998.

(3) Although previous TVA audits had identified problems with the control of combustible and transient fire loads in the plant in the elevation 669 spare room, continued violations of transient fire load procedural requirement were identified by the NRC inspector on July 8-12, 1996, in that:

a. Transient Fire Load (TFL) Permit TFL-95-0254 was issued for the storage of 1100 pounds of clothing and 400 pounds of rubber/plastic radiation protective clothing on elevation 690 between column lines A4 and A6 in the Auxiliary Building. This TFL permit expired December 31, 1995 and a new permit had not been issued and an appropriate engineering analysis had not been performed. This material was stored directly beneath electrical raceways containing safe shutdown related cables.

b. The following permits were issued for a spare room on elevation 669, were issued for longer than 6 months, did not receive approval by the Site Fire Protection Engineer, or had not received an engineering analysis to justify the change in occupancy: Permit TFL-95-0033 (high fire load), issued February 5, 1995 and extended to December 31, 1996; Permits TLC-96-0003 (no fire load indicated) issued January 1, 1996 with expiration date of December 31, 1996; Permit TFL-96-004 (medium fire load), issued January 1, 1996 with expiration date of December 31, 1996; and Permit TFL-96-0005 (no fire load indicated) issued January 1, 1996 with expiration date of December 31, 1996.

2. Technical Specification 3.7.3, carbon dioxide (CO_2) Systems, states that the Computer Room low pressure CO_2 system shall be operable whenever equipment protected by the CO_2 system is required to be OPERABLE.

From May 1990 until December 18, 1995, the computer room low pressure CO_2 system was inoperable. In May 1990, the heating ventilation air conditioning (HVAC) system for the Control Building had been modified by the installation of duct penetrations which were not arranged with dampers to close and isolate the room upon actuation of the CO_2 system. The Computer Room CO_2 system was placed out of

service in December 1995 and remains out of service with a hourly fire watch patrol implemented to meet the compensatory requirements of the TS.

3. Technical Specification 4.7.12.a, Fire Barrier Penetrations, Surveillance Requirements, states that each of the required fire barrier penetrations shall be verified to be functional at least once per 18 months.

   The licensee failed to verify Auxiliary Building fire barrier penetrations in high radiation areas were functional at least once per 18 months. The Auxiliary Building penetrations in high radiation areas were not included in the 18 month surveillances performed in August 1995 and March 1994.

4. Technical Specification 6.8.1.f states that written procedures shall be established, implemented and maintained covering fire protection program implementation.

   Technical Specification 4.7.11.4.c.2 states that each of the fire hose stations shown in Table 3.7-5 shall be demonstrated operable at least once per 3 years by conducting a hose hydrostatic test at a pressure of 150 psig or at least 50 psig above maximum fire main operating pressure, whichever is greater. The hose stations installed in the Reactor Buildings are listed in Table 3.7-5.

   Between November 10, 1990 and February 15, 1996, TVA's surveillance procedures 1/2-SI-FPU-026-191.R, Fire Hose Inspections, for the reactor building fire hose stations were inadequate in that these procedures did not assure that the fire hose for these locations had been hydrostatically tested as required by TS Section 4.7.11.4.c.2 resulting in several fire hose stations being provided with fire hose that had not been hydrostatically tested within the required time.

NOTE: The apparent violations discussed in this predecisional enforcement conference are subject to further review and are subject to change prior to any resulting enforcement decision.

Tennessee Valley Authority

Sequoyah Nuclear Plant

NRC/TVA Meeting

Predecisional Enforcement Conference

Fire Protection Issues

October 24, 1996

NRC/TVA Meeting
Predecisional Enforcement Conference
Fire Protection Issues
October 24, 1996
Agenda

Introduction	R. J. Adney
Fire Protection History	J. R. Rupert
Current Fire Protection Status	M. J. Lorek
Fire Protection Apparent Violations	W. R. Lagergren
QA Observations	M. J. Fecht
Regulatory Perspective	R. H. Shell
Closing	R. J. Adney

Sequoyah Nuclear Plant

Introduction

Sequoyah Nuclear Plant
Introduction

- TVA understands the significance of the fire protection issues and corrective actions and agrees that fire protection violations did occur
- SQN's recent history started with a four-phase Fire Protection Improvement Plan in 1991 (61 of 63 items complete)
- Several fire protection equipment upgrade projects are ongoing
- Despite SQN's progress in the fire protection area, QA and NRC have noted some continuing deficiencies in program implementation
- SQN management now understands that delays in responsiveness were due to inadequate management involvement in fire protection (i.e., lack of ownership)
- Corrective actions were taken that involved both organizational and personnel changes before NRC expressed current concerns
- SQN management relies on Quality Assurance to be intrusive
- Senior management will closely monitor the Fire Protection Program
- SQN is committed to timely completion of all fire protection issues

Sequoyah Nuclear Plant

Fire Protection History

Sequoyah Nuclear Plant
Fire Protection History

- By 1988, programmatic Appendix R issues at SQN had been resolved
- In 1991, SQN developed a four-phase Fire Protection Improvement Plan (FPIP)
- Purpose of the plan was primarily to address Engineering items such as:
  - Evaluating the hydraulic performance of the Fire Protection System
  - Updating the Fire Hazard Analysis
  - Completion of the Fire Protection Report
  - Upgrading the Fire Protection System
  - 61 of 63 items complete
- Several organizations were responsible for different aspects of fire protection activities
- Original schedule was to complete this improvement plan by 1994
- After the FPIP began, both units at SQN were shut down in order to repair large amounts of piping on the balance of plant due to erosion/corrosion concerns

Sequoyah Nuclear Plant
Fire Protection History

- Resources were temporarily re-prioritized to other design activities associated with the restart of the units
- Management determined that safety was not compromised by this decision
  - The evaluation of the hydraulic performance of the Fire Protection System was completed. Testing and analysis indicated that all technical specification requirements were met
  - The results also concluded there was more margin in the system than SQN previously believed
  - NRC was provided updates on schedule changes
- Independent of the FPIP, deficiencies were discovered during both site and corporate QA audits (1992 - 1995)
  - Deficiencies spread over several organizations
  - QA did not appropriately pursue the collective significance of fire protection issues

Sequoyah Nuclear Plant
Fire Protection History

- In May 1996, a corporate QA audit in fire protection escalated the issue that some long-term issues and previous audit findings (1992-1995) have not been effective or timely
- SQN management combined this escalation with the results of prior NRC inspections and LERs, and concluded it was due to inadequate prior management involvement
- In June 1996, after top management involvement, an integrated schedule was developed to track SQN fire protection issues
- To help implement enhanced management involvement, the responsibility for the Fire Protection Program was centralized within the Operations area
  - Technical Support to Operations
  - Fire Protection now responsible for own surveillance instructions
  - One layer of management removed

Sequoyah Nuclear Plant
Fire Protection History

- A new Fire Protection Manager was also assigned in order to improve the implementation of actions within the fire protection organization
- Management is reviewing the Fire Protection Program on a weekly basis
- TVA self-assessment of the Fire Protection Program was performed utilizing experienced fire protection personnel from corporate, BFN, WBN, and an independent consultant
- Self-assessment concluded the first steps have been taken to correct immediate problems; continued management attention is required
- Current data from the new organization shows positive trends

Sequoyah Nuclear Plant

Current Fire Protection Status

Sequoyah Nuclear Plant
Current Fire Protection Status

- Limited number of major fire protection projects/enhancements remain
- Upgraded Fire Protection Water Supply System
  - TVA originally concerned with system performance
  - Subsequent analysis and testing proved system adequate
  - New HPFP water supply system will consist of two fire pumps and two 300,000-gallon potable water tanks
  - Implementation scheduled for completion in 1997
- Penetration seals
  - All of the approximately 24,500 penetrations have been walked down and photographed
  - No design installation issues
  - 23,000 penetrations resolved by documentation comparison to tested configurations
  - High probability the remaining 1500 will be resolved similarly
  - Final resolution is scheduled for 1997

Sequoyah Nuclear Plant
Current Fire Protection Status

- Fire dampers
  - Original scope of 326 dampers has been reduced to 8
  - Preliminary design review of remaining 8 dampers concluded an evaluation could be performed to support continued use
  - A conservative decision was made to modify the dampers
  - Implementation has been rescheduled for completion from 1998 to 1997
- Carbon dioxide dampers for computer room
  - Implementation scheduled for the Spring '97 Unit 1 Cycle 8 outage
  - Will be performed in conjunction with computer upgrade project
- QA audit findings
  - Remaining findings will be closed in 1997
- Thermo-Lag resolution
  - Qualification testing now completed (WBN and SQN specific)
  - Extensive modification will result
  - Separate meeting scheduled for 11/04/96 to discuss Thermo-Lag issues

Sequoyah Nuclear Plant

Fire Protection Apparent Violations

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Criterion XVI

10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires, in part, that measures be established to assure that conditions adverse to quality such as failures, deficiencies, and nonconformances are promptly identified and corrected.

Example 1 - Transient Fire Load Program

For two areas on Elevation 669 (spare room) and Elevation 690 (protective clothing storage area) of the auxiliary building, requirements for control of transient fire loads were not met. The failure to promptly identify and resolve adverse conditions, specifically the storage of combustible materials within the plant, is identified as an example of an apparent violation.

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

TVA Position

- TVA agrees there was a noncompliance with the Fire Protection Program
- No actual safety significance
- Minimal potential safety significance
  - Elev 690
    - Detection
    - Suppression
    - Fire watch in area
  - Elev 669
    - No safe shutdown cables
    - Room compartmentalized
    - Fire watch in area

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Root Cause

- The management of and management expectations relative to the Transient Fire Load Program have been ineffective
  - Procedure was inadequately revised; this allowed transient fire loads to remain in the plant for an extended period of time
  - Program implementation problems were not corrected

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Corrective Actions

- A new Fire Protection Manager has been assigned to ensure fire protection requirements are appropriately implemented and ensure personnel accountability
- The subject procedure has been revised to ensure transient fire loads do not remain in the plant for an extended period of time
- All combustible material was removed from the two areas in the auxiliary building (Note: One area had fire detection added and now meets NFPA Code requirements)
- SQN has presently reviewed additional plant areas and will incorporate these areas into Engineering documents as permanent combustible storage areas. This action is scheduled to complete in November 1996

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Example 2 - Quality Assurance Audits of the Fire Protection Program

The failure to promptly identify and resolve adverse conditions identified during Quality Assurance audits of the Fire Protection Program, specifically six findings from the audits of October 9, 1992, August 1, 1994, and July 14, 1995, is identified as an example of an apparent violation.

TVA Position

- TVA agrees that some corrective actions were not fully effective or could have been more timely
- No actual safety significance
- Minimal potential safety significance
  - Detection, suppression, personnel detection, compartmentation available
  - Defense-in-Depth Fire Protection Philosophy

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Root Cause

- Inadequate management involvement
  - Resulted in lack of ownership of Fire Protection Program
  - Resulted in failure to see collective significance of individual issues

Corrective Actions

- A new site management team has established clear performance expectations
- Ownership of the Fire Protection Program has been centralized within the Operations department
- A new Fire Protection Manager has been appointed. This manager reports directly to the Operations Manager

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

- TVA conducted a self-assessment of the present Fire Protection Program to evaluate the effectiveness and implementation of the program
  - Results concluded corrective actions appear to be appropriate
  - Additional management attention and support must be maintained
- The Fire Protection Manager briefs senior plant management on a weekly basis relative to fire protection issues and performance indicators

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Example 3 - LER 327/93027, Degraded Fire Dampers

Technical specification (TS) 3.7.12 requires all fire barrier penetrations (including fire dampers) to be functional at all times in fire zone boundaries protecting safety-related areas. Fire dampers were installed in the various walls to provide a fire-rated separation from redundant safety-related components. The fire dampers at SQN had been inspected by the licensee a number of times during construction and preoperational and surveillance testing activities. These inspections failed to identify that the dampers were not installed in accordance with vendor's requirements. The failure to promptly identify and resolve the adverse conditions associated with the fire dampers is identified as another example of the violation.

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

TVA Position

- TVA identified this condition in LER 327/93027
- Subsequent review showed damper configuration approved by NRC in 1979
- This did not change our decision to enhance 8 dampers
- TVA will revise LER to document this position
- No actual safety significance
- Minimal potential safety significance
  - Dampers would have actuated
  - Detection and suppression were available

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Corrective Action

- Detailed evaluations of 318 fire dampers have been performed and determined that the fire dampers are adequate
- Eight additional dampers will be modified to clearly demonstrate design requirements
- Modification of the eight remaining dampers has been rescheduled from 1998 to 1997

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Technical Specification 4.7.11.4.c.2

LER 327/96002, Fire Protection Hose Stations

TS 4.7.11.4.c.2 requires, in part, that each of the fire hose stations shown in Table 3.7-5 (of the TSs) shall be demonstrated operable at least once per three years by conducting a hose hydrostatic test

Between November 19, 1990 and February 15, 1996, TVA's surveillance instructions for procedures 1/2-SI-FPU-026-191.R for the reactor building fire hose stations were inadequate in that these procedures did not assure that the fire hoses for these locations would be hydrostatically tested as required by TSs. This issue is identified as an apparent violation.

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

TVA Position

- TVA agrees there was a noncompliance with TS 4.7.11.4.c.2
- TVA originally identified this condition in LER 327/96002
- No actual safety significance
- No potential safety significance
  - Hoses subsequently passed hydro test and would have performed intended function

Root Cause

- Improper procedure revision and review
  - Procedure revision in 1990 deleted the requirement to verify new hoses were within TS frequency
  - This was based on the NFPA Code that did not require a new hose to be hydrostatically tested
  - Personnel failed to verify that the new NFPA Code requirements also satisfied TS requirements
  - Reviewers failed to catch error

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Corrective Action

- The appropriate fire hoses were replaced
- The subject procedure was revised to require verification of hydrostatic testing prior to installation of replacement hoses
- The appropriate personnel were trained on this event and their responsibility with regard to procedure revisions

Sequoyah Nuclear Plant
Fire Protection Apparent Violations
Technical Specification 4.7.12
LER 327/96003, Inadequate Fire Barrier Inspection

TS 3.7.12 requires all fire barrier penetrations to be functional at all times in fire zone boundaries protecting safety-related areas. TS 4.7.12 requires each fire barrier penetration to be verified functional at least once per 18 months.

The failure to verify that all of the fire barrier penetrations were functional is identified as an apparent violation.

TVA Position

- TVA agrees there was a noncompliance with TS 4.7.12
- TVA originally identified this condition in LER 327/96003
- No actual safety significance
- No potential safety significance
  - Fire barriers would have performed their intended function

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Root Cause

- Personnel error during performance of the surveillance requirement (SR)
  - The fire barriers in question were located in a high radiation area
  - Personnel incorrectly assumed that since the area was radiologically restricted, the visual inspection was not required
  - The personnel who performed this surveillance were from the modification organization, not the fire protection organization

Corrective Action

- The subject fire barrier penetrations have been visually verified to be functional
- Appropriate disciplinary actions have been taken with the involved individuals
- Organizational restructuring has placed responsibility for performing this surveillance with the Fire Protection Manager

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Technical Specification 3.7.11.3

Computer Room Carbon Dioxide Dampers

TS 3.7.11.3 requires the computer room low pressure CO_2 system to be operable whenever equipment protected by the CO_2 system is required to be operable. The failure to maintain the CO_2 for the computer room operable is identified as an apparent violation.

TVA Position

- TVA agrees there was a noncompliance with TS 3.7.11.3
- TVA originally identified this condition in LER 327/95018
- No actual safety significance
- Minimal potential safety significance
  - CO_2 system would have actuated
  - Detection available
  - No safety-related equipment in room
  - Fire compartmentalized

Sequoyah Nuclear Plant
Fire Protection Apparent Violations

Root Cause

- Inadequate system design
  - HVAC was added to the computer room to provide additional air flow to the room
  - A personnel error occurred in the design of the system in that carbon dioxide dampers were not added to the new HVAC duct work

Corrective Action

- The design control process was reviewed. This review determined that previous enhancements to the site procedure would have prevented this error
- The plant will be modified to provide complete isolation of the computer room during the upcoming refueling outage
- Appropriate compensatory measures (fire watch) are in place
- A process is in place to prevent carbon dioxide actuation in the computer room

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QA Observations

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QA Observations

- Review performed of QA audits from 1992-1996
- Review concluded only one QA implementation issue related to Fire Protection Improvement Plan
- QA failed to aggressively pursue resolution of fire protection issues from 1992-1995
  - Issues were not appropriately pursued
  - Audit and trend reports sent inconsistent messages
- Reviewed other program areas to identify if QA did not aggressively pursue resolution of issues
  - Review concluded that, based on indicators evaluated, there were no other areas with similar problems
- QA corrective actions
  - Established management expectations
    - Escalation of issues
    - Collective significance
    - Ownership of QA-identified issues
    - Timeliness of resolution
    - Ensure trend and QA reports consistent

Sequoyah Nuclear Plant

Regulatory Perspective

Sequoyah Nuclear Plant
Regulatory Perspective

TVA's review of the regulatory requirements concludes the following:

- SQN's Fire Protection Program meets all Appendix R, technical specifications, and other regulatory requirements
- Program implementation problems have occurred
- No actual and minimal potential safety significance
  - A review of each issue indicates that multiple redundant systems, components, or administrative processes were available even with the noted degradation to mitigate the consequences as the result of a fire
  - Aggregate effect has been considered
    - Engineering judgment shows Defense-in-Depth Fire Protection Philosophy adequately mitigates the consequences of a fire

Sequoyah Nuclear Plant
Regulatory Perspective

- Regulatory significance
  - TVA understands the regulatory significance of these issues
  - Appropriate corrective actions were taken for all issues
    - Comprehensive corrective actions address root cause
- Consistent with the NRC Enforcement Policy and past NRC practice, the four LERs should be closed to non-cited violations
- The transient fire load and QA audit finding issues should be combined as two examples of a Severity Level IV, Criterion XVI violation
- SQN developed corrective actions before enforcement was initiated
- No regulatory purpose for escalated enforcement

Sequoyah Nuclear Plant

Closing

Sequoyah Nuclear Plant
Closing

- TVA understands the significance relative to long-standing fire protection issues
- TVA recognized some deficiencies early this year in program implementation and made both organizational and personnel changes to correct these deficiencies
- Actions were not changed as a result of NRC inspection or potential for escalated enforcement
- SQN management is responsive to Quality Assurance findings
- Self-assessment confirmed corrective actions are on the right track
- Minimal actual or potential safety significance to the subject issues
- The upgrade of the Fire Protection System will provide SQN with both operational and maintenance benefits
- Management is committed to timely resolution of all fire protection issues
  - Integrated schedule in place
  - SQN working to that schedule