UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

May 3, 2002

Tennessee Valley Authority
ATTN: Mr. J. A. Scalice
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT - NRC INSPECTION REPORT 50-327/02-03 AND 50-328/02-03

Dear Mr. Scalice:

On March 29, 2002, the Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at the Sequoyah Nuclear Plant. The enclosed report documents the results of this inspection which were discussed on March 29 and April 24, 2002, with Mr. Dennis Koehl and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green). These issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. The first violation involved a failure to ensure a redundant train for normal letdown isolation would be maintained free of fire damage. The second violation involved the failure to properly establish the plant fire procedure such that actions necessary to mitigate the consequences of a severe fire could be effectively performed.

If you deny these Non-Cited Violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Sequoyah Nuclear Plant.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Document

system (ADAMS). ADAMS is accessible from the NRC web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Charles R. Ogle, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos. 50-327, 50-328
License Nos. DPR-77, DPR-79

Enclosure: NRC Inspection Report 50-327/02-03,
50-328/02-03 w/Attachment

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-327, 50-328
License Nos:	DPR-77, DPR-79
Report No:	50-327/02-03, 50-328/02-03
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Sequoyah Nuclear Plant, Units 1 & 2
Location:	Sequoyah Access Road Soddy-Daisy, TN 37379
Dates:	March 25 - 29, 2002
Inspectors:	E. Brown, Resident Inspector, Brunswick (Lead Inspector) P. Fillion, Reactor Inspector, Region II M. Thomas, Senior Reactor Inspector, Region II G. Wiseman, Senior Reactor Inspector, Region II
Accompanying Personnel:	C. Payne, Fire Protection Team Leader
Approved by:	Charles R. Ogle, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS
Sequoyah Nuclear Plant, Units 1and 2

IR 05000327-02-03 and IR 05000328-02-03 on 03/25-29/2002,Tennesee Valley Authority, Sequoyah Nuclear Plant Units 1 and 2, triennial baseline inspection of the fire protection program.

The inspection was conducted by a Brunswick resident inspector, and three regional reactor inspectors. The inspection identified two Non-Cited Violations which were determined to be of very low safety significance (Green). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process." Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power plants is described at its Reactor Oversight Process website.

Inspector Identified Findings

Cornerstone: Mitigating Systems

- Green. A Non-Cited Violation of Title 10 to the Code of Federal Regulations Part 50 Appendix R (Appendix R), III.G.2, was identified for failure to ensure, in the event of a severe fire, that one of the redundant trains of a system necessary to achieve and maintain hot shutdown conditions would be free of fire damage. Electrical cables for redundant charging flow isolation valves 1-FCV-62-90 and 1-FCV-62-91 were located in fire area FAA-029 without adequate spatial separation or fire barriers.

  The finding had a credible impact on safety in that fire damage to the unprotected cables could prevent closure of the valves from the main control room and challenge the operators' ability to establish adequate injection flow to the reactor coolant pump seals. This finding was determined to be of very low safety significance because the ignition frequency was relatively low, fire detection and suppression systems were not degraded, and there were no components in this area whose failure would result in an accident initiator (i.e., loss of offsite power, loss of main feedwater). The finding only affected the mitigating systems cornerstone. (Section 1R05.02)

- Green. A Non-Cited Violation of Technical Specification 6.8.1.a, was identified for inadequate procedure guidance related to the transition from Abnormal Operating Procedure (AOP) AOP-N.01, Plant Fires, to AOP-C.04, Shutdown From Auxiliary Control Room, in the event of a severe fire.

  This finding had a credible impact on safety in that the inadequate guidance in procedure AOP-N.01 could delay entry into AOP-C.04 and could challenge the operators' ability to perform certain critical safe shutdown functions within the times specified in the licensee's safe shutdown calculation for Appendix R. This finding was determined to be of very low safety significance because it did not affect fire detection, fire suppression, or fire barriers. (Section 1R05.05)

Licensee identified Findings

- Two violations of very low safety significance, which were identified by the licensee, were reviewed by the inspection team. Corrective actions taken or planned by the licensee appeared reasonable. (Section 4OA7)

Report Details

2. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems

1R05 FIRE PROTECTION

.01 Systems Required To Achieve and Maintain Post-Fire Safe Shutdown (SSD)

a. Inspection Scope

The team evaluated the licensee's fire protection program against applicable requirements, including the Sequoyah Nuclear (SQN) Units 1 and 2 fire protection License Conditions 2.C(16) and 2.C(13) respectively; Title 10 of the Code of Federal Regulations Part 50 (10 CFR 50) Appendix R, III.G, III.J, III.O, and III.L; Appendix A of Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1; 10 CFR 50.48; related NRC Safety Evaluation Reports (SERs); NUREGS and the Technical Specifications (TS).

The team used the licensee's Individual Plant Examination for External Events (IPEEE) and in-plant walk downs to select four risk significant fire areas for inspection. The four selected fire areas were:

Fire Area FAA-029, Auxiliary Building, Elevation 690: Auxiliary Building Corridor

This fire area included rooms 690.0-A1, A9, A10, A13, A14, A17, A18, A22, A23, A23a, A24, A27, A30 and A31. This area was classified as a 10 CFR Part 50 Appendix R (Appendix R), III.G.2 area and contained both trains of motor-driven auxiliary feedwater pumps, as well as the cables for both trains of essential raw cooling water (ERCW). In addition, all five component cooling water pumps are within the fire area. A significant fire in this area would require shutdown of either unit from the main control room (MCR).

Fire Area FAA-067, Auxiliary Building, Elevation 734: 6.9 kilovolt (kV) Shutdown Board Rooms

This fire area included rooms 734.0-A2 and A9. This fire area included both units' train 'A' auxiliary electric power switchgear. This area was classified as an Appendix R, III.G.2 area. A significant fire in this fire area would require shutdown of either or both unit(s) from the MCR.

Fire Area FAC-009, Control Building, Elevation 685: Unit 1 Auxiliary Instrument Room

This fire area included controls to important safe shutdown (SSD) equipment from outside the MCR. This area was classified as a Appendix R, III.G.3 area. A significant fire in this area would require evacuation of the MCR and alternative shutdown (ASD) from the Auxiliary Control Room (ACR) using the remote shutdown panel (RSDP).

Fire Area FAC-20, Control Building, Elevation 732: Relay Room

This fire area included high voltage electrical relay equipment for offsite power and was located adjacent to the MCR complex. A significant fire in this area may result in a fire induced loss of offsite power (LOOP). This area was classified as an Appendix R, III.G.3 area. A fire in this area would require evacuation of the MCR and ASD from the RSDP using the ACR.

The team reviewed the IPEEE, Fire Hazards Analysis (FHA), Sequoyah Fire Protection Report (FPR), associated procedures, and plant drawings to identify those systems credited for SSD of the facility in the event of a fire in the four selected fire areas. The inspection included review of the post-fire SSD capability and of the fire protection features to ensure that at least one post-fire SSD success path was maintained free of fire damage.

For a selected sample of SSD systems, components, and plant monitoring instruments, the team reviewed the FPR, the FHA, applicable fire protection SERs and NUREGS, and system flow diagrams to evaluate the completeness and adequacy of the FPR and the systems relied upon to mitigate fires in the four selected fire areas.

The team inspected the capability to shutdown for the scenario where a fire in fire area FAC-20 could initiate a LOOP. The team inspected the control circuits and associated circuit analysis for the diesel generators to determine whether any devices in the control circuit were located in fire area FAC-20. In a similar manner, the control circuits for the 6.9kV shutdown board were reviewed to determine whether a fire in fire area FAC-20 could interfere with opening of the offsite breaker or closing the emergency diesel generator (EDG) breaker.

b. Findings

No findings of significance were identified.

.02 Fire Protection of Safe Shutdown Capability

a. Inspection Scope

The team reviewed the licensee's FPR for fire areas FAA-029 and FAA-067 to determine whether redundant trains of components or circuits required for SSD were located in the same fire area. From those components, the team selected the power cables for centrifugal charging pumps (CCP) 1A and 1B, and the power and control cables to the charging flow isolation valves 1-FCV-62-90 and 1-FCV-62-91. The team reviewed the cables to verify that adequate spatial separation or proper fire barrier protection features were installed in accordance with the design requirements of Appendix R. The team examined cable routing, raceway drawings, the actual configuration of the circuits, fire barriers, fire detection, and fire suppression equipment for conformance to applicable NRC requirements and National Fire Protection Association (NFPA) standards. In addition, the team walked down these fire areas to verify that the licensee's documentation reflected the as-built configuration.

Team members also walked down the four selected fire areas to compare the associated fire fighting pre-plans and drawings with as-built plant conditions. This was done to verify that fire fighting pre-plans and drawings were consistent with the fire protection features and potential fire conditions described in the FPR. Additionally, the team reviewed engineering evaluations associated with the Auxiliary Building floor and equipment drain sump capacity to verify that those actions required for ASD would not be inhibited by fire suppression activities or leakage from fire suppression systems. The team reviewed fire brigade response, training, and drill program procedures; fire brigade drill critiques; and drill records for the operating shifts from 1999 through 2001. The reviews were performed to determine whether the drills had been conducted in high fire risk plant areas and whether fire brigade personnel qualifications, drill response, and performance met the requirements of the licensee's approved fire protection program.

The team reviewed selected portions of the FHA and fire prevention/combustible hazards procedures to determine if the conditions established in the fire protection licensing basis documents were satisfied. The team performed walk downs of the four selected fire areas to observe whether the licensee limited fire hazards in a manner consistent with these procedures. Fire brigade response and emergency/incident reports from 1999 through 2001, as well as Problem Evaluation Reports (PERs) resulting from fire, smoke, sparks, arcing, and equipment overheating incidents were reviewed. This review was conducted to assess the effectiveness of the fire prevention program and to identify any maintenance or material condition problems related to fire incidents. Additionally, design control procedures were reviewed to verify that plant changes were adequately reviewed for the potential impact on the fire protection program, SSD equipment, and procedures as required by SQN License Conditions 2.C(16) and 2.C(13).

The team walked down the primary fire brigade staging and dress-out areas to assess the condition of fire fighting and smoke control equipment. Fire brigade personal protective equipment located in the fire brigade house, dress-out area and lockers in the fire brigade staging area were reviewed to evaluate equipment accessibility and functionality. The team observed whether emergency exit lighting was provided for personnel evacuation pathways to the outside exits as identified in the NFPA 101, Life Safety Code. This review also included examination of whether backup emergency lighting was provided for access pathways to and within the fire brigade staging and dress-out areas in support of fire brigade operations should power fail during a fire emergency. The fire brigade self-contained breathing apparatuses (SCBAs) were reviewed for adequacy as well as the availability of supplemental breathing air tanks.

The team reviewed the reactor coolant pump (RCP) oil collection system enclosure drawings to verify compliance with Appendix R, III.O. The team evaluated operator response procedures to determine if sufficient procedural guidance was provided to identify an oil leak from the RCP lubrication system and take appropriate action.

b. Findings

A Non-Cited Violation (Green) of 10 CFR Part 50 Appendix R, III.G.2, was identified for failure to ensure, in the event of a severe fire, that one of the redundant trains of a system necessary to achieve and maintain hot shutdown conditions would be free of fire

damage. Electrical cables for redundant charging flow isolation valves 1-FCV-62-90 and 1-FCV-62-91 were located in fire area FAA-029 without adequate spatial separation or fire barriers.

For fire area FAA-029, the FHA indicated that reactor coolant system (RCS) inventory control was achieved through isolation of normal charging and letdown while maintaining RCP seal flow cooling. Through review of associated system drawings and SSD procedures AOP-N.01 and AOP-N.08, the team noted that the step to achieve charging flow isolation while continuing RCP seal flow cooling was to close either valve 1-FCV-62-90 or 1-FCV-62-91 from the MCR. These valves were installed in series and powered from redundant power sources. The FHA indicated that power and control cables for both valves were routed closer than 20 feet specified in Appendix R, III.G.2.b. Conduit drawings 1(2)-45N824-7 and 1(2)-45N824-16 depicted the routing for these cables. During a walk down of the cable routing, the team verified that there was a location where the cables for 1-FCV-62-90 and 1-FCV-62-91 were unprotected and separated by approximately 16 feet. The team noted that, in lieu of protecting the 1-FCV-62-90 and 1-FCV-62-91 cables in accordance with Appendix R, to permit operation from the MCR, the licensee incorporated steps in the shutdown procedure AOP-N.08 to manually manipulate local valves 1-62-537 or 1-62-539.

This finding had more than minor significance because both charging flow isolation valves could be damaged by a credible fire in fire area FAA-029, which in turn, could affect the RCP seal injection flow and seal integrity. The finding had a credible impact on safety in that fire damage to the unprotected cables could prevent closure of the valves from the MCR and challenge the operators' ability to establish adequate flow to the RCP seals. Based on review of NRC Manual Chapter 0609, Appendix F, "Determining Potential Risk Significance of Fire Protection and Post-Fire Safe Shutdown Inspection Findings," the finding was determined to be of very low significance. The ignition frequency for the sub-area in question was taken from the SQN IPEEE as 1.85E-3 per year. The team observed that fire detection and suppression was installed throughout fire area FAA-029. Manual suppression capability and the automatic suppression system were deemed to be in the normal operating state by the team. The fire mitigation frequency was conservatively calculated to be once per 10^5 years. The missing barrier condition existed for greater than 30 days. Based on these factors, the finding was processed using the Phase 2 transient worksheet and subsequently characterized by the Significance Determination Process (SDP) as having very low risk significance (Green). This was because the ignition frequency was relatively low, fire detection and suppression systems were not degraded, and there were no components in this area whose failure would result in an accident initiator (LOOP or loss of main feedwater, etc.). The finding only affected the mitigating systems cornerstone.

The failure to protect cables with an adequate fire barrier or to provide 20 feet of separation between redundant charging flow isolation valves is a violation of 10 CFR 50 Appendix R, III.G.2.b. This violation is being treated as a Non-Cited Violation and is identified as NCV 50-327/02-03-01, Failure to Provide Adequate Protection for Cables to Redundant SSD Components. The licensee documented the violation in PER 02-03645.

.03 Post-Fire SSD Circuit Analysis

a. Inspection Scope

The team reviewed selected cables of equipment required to achieve and maintain hot shutdown conditions in the event of fire in the four selected fire areas to verify that the cables had been properly identified and either adequately protected from the potentially adverse effects of fire damage or analyzed to show that fire-induced faults would not prevent safe shutdown. The team selected power, control, and instrumentation circuits indicated to be credited for SSD in the licensee's FHA and walked down the routing of the circuits. The circuits selected for review were:

Fire Area FAA-067: 1-L068-335, Pressurizer level indication

Fire Area FAC-009: FI-3-163C, Auxiliary feedwater flow to steam generator 1

Fire Area FAC-20: Diesel generator start button

Additionally, the team reviewed selected electrical coordination studies to verify that fire induced faults on energized non-shutdown circuits would not prevent the success of the SSD functions. Specifically, the team reviewed overcurrent protection devices related to the control circuit for CCP 1A from its power source at 125 volt (V) Vital Battery Board 1 to the circuit breaker close and trip circuits. The manufacturer's time-current characteristics were checked; and installed devices were examined and compared to design information. The team reviewed the coordination of overcurrent devices on the alternating current (AC) system. From the licensee's FHA, the team reviewed those buses identified in the FPR for a fire located in fire area FAA-029. Phase faults and ground faults on the 6.9kV system were considered, and a review of the 6.9kV system coordination was performed for a phase fault on a cable emanating from 480V Shutdown Board 1A1-A, Reactor Motor-Operated Valve (MOV) board 1A1-A and ERCW Motor Control Center (MCC) 1A-A. To the extent possible installed devices were examined and compared to design documents.

b. Findings

No findings of significance were identified.

.04 ASD Capability

a. Inspection Scope

The team reviewed the licensee's procedures for fire response and ASD capability for the four selected fire areas to verify conformance with applicable requirements (see Section 1R05.01 above). This review included the licensee's ASD methodology to determine the adequacy of the identified components and systems to achieve and maintain safe shutdown. The review also evaluated that the methodology addressed achieving and maintaining hot and cold shutdown from outside the MCR, with and without off-site power available. The team also reviewed the licensee's procedures for

consistency with the calculations and assumptions supporting the operator actions identified in the ASD methodology.

The team selected several circuits where the control or instrumentation devices were determined to be located at the RSDP or other local panels. The team reviewed relevant drawings to determine whether isolation devices were appropriately designed into the following circuits:

Control circuit for the centrifugal charging pump

AFW flow to the steam generator FI-3-163C

Volume control tank (VCT) outlet isolation valve LCV-62-132

CCP flow to RCS coolant loop FCV-62-85

Source range flux monitor XI-92-5

The team evaluated if hot and cold shutdown could be maintained from outside the MCR without offsite power through a review of selected EDG electrical components.

b. Findings

No findings of significance were identified.

.05 Operational Implementation of ASD Capability

a. Inspection Scope

The team reviewed the operational implementation of post-fire safe shutdown capability for a fire in the four selected fire areas to determine if: (1) the training program for licensed and non-licensed personnel included alternative or dedicated SSD capability; (2) personnel required to achieve and maintain the plant in hot standby from outside the MCR could be provided from normal onsite staff, exclusive of the fire brigade; (3) adequate procedures existed for use during ASD; and (4) the licensee periodically performed operability testing of the RSDP instrumentation as well as transfer and control functions. The team observed the contents of selected SSD lockers to verify that materials needed to support implementation of operator actions specified in the ASD procedures for hot standby were available and properly maintained. Fire brigade staffing was reviewed to verify that it met the requirements of the licensee's fire protection program. Training requirements were reviewed for the fire brigade members and related support personnel such as incident commander, reactor operator, senior reactor operator, and auxiliary operators to verify compliance with the licensee's fire protection program. Lesson plans and job performance measures (JPMs) were reviewed to determine whether ASD activities were included in the training program.

Post-fire SSD procedures for the four selected fire areas were reviewed to determine if adequate staffing and appropriate guidance was provided for the operators to identify protected equipment and instrumentation. Additionally, recovery actions were reviewed

to determine if manpower needs for restoration and area accessibility were considered. Specific procedures reviewed included AOP-N.01, Plant Fires, Revision (Rev) 14; AOP-N.08, Appendix R Fire Safe Shutdown, Rev 0; and AOP-C.04, Shutdown From Auxiliary Control Room, Rev 4. Selected procedure sections were walked down to verify that the procedures could be performed within the times specified in the supporting calculations, given the minimum required staffing level of operators, concurrent with a LOOP. Additionally, the team walked down the designated pathways and reviewed the licensee's smoke control procedures, ventilation systems, and the availability of SCBAs to verify that environmental conditions, such as smoke and heat, would not prevent operators from performing the procedures.

b. Findings

A Non-Cited Violation (Green) of Technical Specification 6.8.1.a, was identified for inadequate procedural guidance related to the transition from AOP-N.01, to SSD procedure AOP-C.04, in the event of a severe fire.

The team performed a walk down of procedures AOP-N.01, AOP-N.08, and AOP-C.04 with operations personnel. For a fire in the Control Building, the team identified that AOP-N.01 failed to specify those conditions which would require evacuation of the MCR and entry into AOP-C.04. The team noted other observations during the procedure reviews and walk downs which could challenge operator performance of safe shutdown activities. The following are examples of the types of observations identified:

- During an inspection team walk down of the SSD procedures AOP-N.01, AOP-N.08, and AOP-C.04, the onshift crew exhibited unfamiliarity with all three of the SSD procedures.

- The validation method for the latest revisions to AOP-N.01 and AOP-C.04 lacked thoroughness. The licensee had performed a tabletop review of a field validation despite significant procedural changes. These changes included a new SSD methodology which added new locations for some procedural steps.

- Time requirements specified in calculation SQN-SQS4-0127 for performing certain critical safe shutdown functions were not incorporated into AOP-C.04.

- AOP-C.04, Checklist 5 required more than 1.5 hours to complete. The checklist appeared to contain various unnecessary items. The team noted that an additional field validation of AOP-C.04, Checklists 5 and 6 was performed the week of March 11, 2002. However, this validation verified accuracy of component identifiers and tags, but did not evaluate timeliness of critical SSD actions.

- AOP-C.04 and AOP-N.08 were inconsistent in specifying time critical actions such as assuring seal injection flow to the RCPs. The team noted that AOP-C.04 specified as soon as possible and AOP-N.08 specified 15 minutes.

The licensee documented these and other team observations in PERs 02-03552 and 02-03543.

This finding had a credible impact on safety in that the inadequate guidance in procedure AOP-N.01 could delay entry into AOP-C.04. This delay could challenge the operators' ability to perform certain critical safe shutdown functions within the times specified in licensee calculation SQN-SQS4-0127, Equipment Required for Safe Shutdown Per 10 CFR 50 Appendix R, Rev 21. This finding affected the mitigating systems cornerstone and was determined to be of very low safety significance (Green) using Attachment F to the SDP, because it did not adversely affect fire detection, fire suppression, or fire barriers.

TS 6.8.1.a requires that written procedures shall be established, implemented, and maintained covering the activities in Appendix "A" of Regulatory Guide (RG) 1.33, Rev 2. RG 1.33, Section 6.v, requires procedures for emergencies such as plant fires. The failure to adequately establish guidance in AOP-N.01, Plant Fires, for transition into AOP-C.04 in the event of a severe fire is a violation. This violation is being treated as a Non-Cited Violation and is identified as NCV 50-327, 328/02-03-02, Inadequate Procedure Guidance for Implementing Abnormal Operating Procedures for Plant Fires. The licensee documented the violation in PER 02-03550.

.06 Communications for Performance of ASD Capability

a. Inspection Scope

The team reviewed the licensee's communications systems' separation analysis to verify the availability of the communication systems to support plant personnel in the performance of ASD functions and fire brigade duties. Walk downs were performed of sections of AOP-C.04 to evaluate the ability of plant communication systems to support plant personnel in the performance of ASD functions. The team reviewed redundant ASD communications systems to assess whether the licensee's portable radio channel features would continue to operate should the radio repeaters for the primary communications system be unavailable. The team also examined whether sound powered phone jacks were present at the locations identified in the ASD procedure as designated by the Updated Final Safety Analysis Report (UFSAR). This review included examination of the sound powered phone periodic test and inventory surveillance records to assess whether the surveillance test program was sufficient to verify proper operation.

b. Findings

No findings of significance were identified.

.07 Emergency Lighting for Performance of ASD Capability

a. Inspection Scope

The team walked down the selected fire areas to observe whether battery pack emergency lighting units (ELUs) were installed to allow operation of ASD equipment if

normal lighting was lost. In some cases, the installed ELUs were tested to demonstrate functionality. The locations and identification numbers on the ELUs were compared to design documents to confirm the as-built configuration. The team also reviewed licensee periodic tests to verify that the ELUs were being maintained in an operable manner.

b. Findings

No findings of significance were identified.

.08 Cold Shutdown Repairs

a. Inspection Scope

The team randomly selected a component, from the section of the FHA that listed repairs that may be needed to achieve cold shutdown, and evaluated the likelihood the repair would be successful. The component chosen was the residual heat removal system isolation valve 1-FCV-074-001 specified for fire area FAA-029. The review considered the level of difficulty of the repair, as compared to expected skills of the person assigned to perform the task, adequacy of relevant procedures, and the availability of necessary materials.

b. Findings

No findings of significance were identified.

.09 Fire Barriers and Fire Area/Zone/Room Penetration Seals

a. Inspection Scope

The team walked down the selected fire areas to evaluate the adequacy of the fire resistance of barrier enclosure walls, ceilings, floors, and structural steel support protection. This evaluation also included fire barrier penetration seals, fire doors, fire dampers, and the electrical raceway fire barrier systems to ensure that at least one train of SSD equipment would be maintained free of fire damage. The team observed the material condition and configuration of the installed fire barrier features, as well as, reviewed construction details and supporting fire endurance tests for the installed fire barrier features. The team compared the observed fire barrier penetration seal configurations to the design drawings and tested configurations. The team also compared the penetration seal ratings with the ratings of the barriers in which they were installed.

The team reviewed ASD procedures, selected fire fighting pre-plan procedures, and heating ventilation and air conditioning (HVAC) systems to verify that access to remote shutdown equipment and operator manual actions would not be inhibited by smoke migration from one area to adjacent plant areas used to accomplish SSD. In addition, the team reviewed licensing documentation, engineering evaluations of Generic Letter 86-10 fire barrier features, and NFPA code deviations to verify that the fire barrier installations met design requirements and license commitments.

b. Findings

No findings of significance were identified.

.10 Fire Protection Systems, Features, and Equipment

a. Inspection Scope

The team reviewed flow diagrams, cable routing information, periodic test procedures, engineering evaluations for NFPA code deviations, and operational valve lineup procedures associated with the fire pumps and fire protection water supply system. The review evaluated whether the common fire protection water delivery and supply components could be damaged or inhibited by fire-induced failures of electrical power supplies or control circuits. Additionally, team members walked down the fire protection water supply system in selected areas to assess the adequacy of the system material condition, consistency of as-built configuration with engineering drawings, and operability of the system in accordance with applicable administrative procedures and NFPA standards.

The team examined the adequacy of installed fire protection features in accordance with the separation and design requirements in Appendix R, III.G.2. The team walked down accessible portions of the fire detection and alarm systems in the four selected fire areas to evaluate the engineering design and operation of the installed configurations. The team also reviewed engineering drawings for fire detector spacing and locations in the four selected fire areas for consistency with the licensee's FPR and the requirements in NFPA 72E, Standard on Automatic Fire Detectors, 1974 Edition. Team members walked down the selected fire areas with sprinklers to assure proper placement and spacing of the sprinkler heads and the lack of sprinkler head obstructions. The team examined design calculations to verify that the required fire hose water flow and sprinkler system density for each protected area were available. The team reviewed a sample of manual fire hose lengths to determine whether they could reach the SSD equipment. Additionally, the team observed placement of the fire hoses and extinguishers to assess consistency with the fire fighting pre-plans.

The team reviewed the adequacy of the design and installation of the carbon dioxide (CO_2) fire suppression system for fire area FAC-009. This review included CO_2 fire suppression system controls to assure accessibility and functionality of the system, as well as associated ventilation system fire dampers. The team also examined licensee design calculations, vendor certifications, and pre-operational test data to verify the required quantity of CO_2 for the area was available. Additionally, the team reviewed engineering drawings, schematics, flow diagrams, and evaluations associated with the area floor drain system to determine whether systems and operator actions required for ASD would be inhibited by potential leakage from CO_2 fire suppression activities.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The team reviewed several licensee identified PERs which dealt with maintaining one redundant train of systems, structures, or components (SSCs) free from fire damage in accordance with Appendix R, III.G.2. The review was performed to determine if the risk associated with the adverse conditions was properly assessed and if compensatory measures adequately considered IPEEE risk insights.

b. Findings

No findings of significance were identified.

.12 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed a sample of licensee identified PERs related to fire protection and protection of SSCs for SSD in accordance with Appendix R, III.G, III.J. and III.O to determine if items were captured in the licensee's corrective action program in accordance with SPP-3.1, Corrective Action Program, Rev 4. The items selected were reviewed for classification and whether the corrective actions adequately resolved the issues. The team reviewed self-assessments and audits related to the fire protection and SSD programs to assess whether the licensee was performing comprehensive audits of these programs in accordance with the requirements set forth in Appendix A of BTP APCSB 9.5-1.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Meetings

Exit Meeting Summary

The team presented the inspection results to Mr. Dennis Koehl, Plant Manager, and other members of licensee management and staff at the conclusion of the inspection on March 29, 2002, and on April 24, 2002. The licensee acknowledged the findings presented. No proprietary information is included in this report.

40A7 Licensee Identified Violations

The following findings of very low significance were identified by the licensee and are violations of NRC requirements which met the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as NCVs.

NCV Tracking Number	Requirement Licensee Failed to Meet
50-327,328/02-03-03	10 CFR 50 Appendix R, III.J states that emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto. The licensee identified during a self-assessment that the need for emergency lighting for valves 1(2)FCV-63-001 had not been provided. Manual operation of these valves is required in the event of a severe fire in accordance with licensee's shutdown procedures. The failure to provide adequate illumination of manual actions required for safe shutdown is identified as a Non-Cited Violation of 10 CFR 50 Appendix R, III.J. The licensee documented the violation in PER 02-00550 (Green).
50-327,328/02-03-04	10 CFR 50 Appendix R, III.G. 2. states that except as provided for in paragraph G.3 of this section, where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided: (a) separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. (b) separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or (c) enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area. The licensee identified during a self-assessment, that as a result of inadequate protection of control and/or power cables, a spurious closure signal to the VCT level control valves was credible. The power cables for the refueling water storage tank (RWST) suction valves were in the same fire area and

were not protected. The licensee identified an unacceptable interaction such that the suction from the VCT and RWST could be lost. The licensee's failure to provide adequate protection to prevent the operation or the maloperation of cables or equipment necessary to achieve and maintain hot shutdown is identified as a Non-Cited Violation of 10 CFR 50 Appendix R, III.G.2. The licensee documented the violation in PER 02-00576 (Green).

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Bajraszewski, Licensing Engineer
J. Beasley, Site Quality Manager
J. Bible, Maintenance and Modifications Manager
P. Boulden, Engineer
D. Craven, TPS-TOM Service Manager
T. Davis, Fire Protection Supervisor, Watts Bar
B. Dukes, Engineer
R. Egli, Fire Protection Systems Engineer
K. Frazier, Systems Engineer
E. Freeman, Operations Manager
R. Gladney, Electrical Design Manager
J. Gomez, Lead Electrical Engineer, Watts Bar
R. Goodman, Training Manager
O. Hayes, Operations Support Superintendent
P. Johnson, Fire Operations
D. Koehl, Plant Manager
D. Lundy, Engineering Manager
J. Patrick, Senior Specialist
J. Pierce, Engineer
D. Porter, Operations
R. Proffitt, Nuclear Engineer
J. Reynolds, Nuclear Assurance
R. Rogers, Engineering Design Manager
P. Salas, Licensing and Industrial Affairs Manager
B. Simril, Fire Protection Specialist
J. Smith, Licensing Manager
J. Thomas, Mechanical/Nuclear Engineering Supervisor
E. Turner, Electrical Engineering Design
J. Wilkes, Operations Superintendent

NRC

C. Payne, Team Leader, RII
R. Tellson, Resident Inspector

ITEMS OPENED, CLOSED, and DISCUSSED

Opened and Closed

50-327/02-03-01	NCV	Failure to Provide Adequate Protection for Cables to Redundant SSD Components (Section 1R05.02)
50-327, 328/02-03-02	NCV	Inadequate Procedure Guidance for Implementing Abnormal Operating Procedures for Plant Fires (Section 1R05.05)
50-327, 328/02-03-03	NCV	Inadequate Emergency Lighting for the RWST Suction Valve (Section 4OA7)
50-327, 328/02-03-04	NCV	Failure to Provide Adequate Protection for Cables to the VCT Suction Valves (Section 4OA7)

Closed

None

Discussed

None

LIST OF ACRONYMS

AC	-	Alternating Current
ACR	-	Auxiliary Control Room
AOP	-	Abnormal Operating Procedure
APCSB	-	Auxiliary and Power Conversion Systems Branch
ASD	-	Alternative Shutdown
BTP	-	Branch Technical Position
CCP	-	Centrifugal Charging Pump
CFR	-	Code of Federal Regulations
EDG	-	Emergency Diesel Generators
ELU	-	Emergency Lighting Unit
ERCW	-	Essential Raw Cooling Water
FHA	-	Fire Hazards Analysis
FPR	-	Fire Protection Report
HVAC	-	Heating, Ventilation, and Air Conditioning
IPEEE	-	Individual Plant Examination for External Events
kV	-	Kilovolt
LOOP	-	Loss of Offsite Power
JPM	-	Job Performance Measure
MCC	-	Motor Control Center
MCR	-	Main Control Room
MOV	-	Motor Operated Valve
NCV	-	Non-Cited Violation
NFPA	-	National Fire Protection Association
NRC	-	Nuclear Regulatory Commission
PER	-	Problem Evaluation Report
RCP	-	Reactor Coolant Pump
RCS	-	Reactor Coolant System
RG	-	Regulatory Guide
RSDP	-	Remote Shutdown Panel
RWST	-	Refueling Water Storage Tank
SCBA	-	Self-Contained Breathing Apparatus
SDP	-	Significance Determination Process
SER	-	Safety Evaluation Report
SSA	-	Safe Shutdown Analysis
SSC	-	Systems, Structures, or Components
SSD	-	Safe Shutdown
SQN	-	Sequoyah Nuclear Plant
TS	-	Technical Specifications
UFSAR	-	Updated Final Safety Analysis Report
V	-	Volt
VCT	-	Volume Control Tank

LIST OF DOCUMENTS REVIEWED

Procedures:

0-AR-M-29, Annunciator Response Fire Detection System, Rev 8
0-PI-OPS-000-708.0, 10CFR50 Appendix R Compliance Verification, Rev 3
0-PI-FPU-317-299.W, Attachment 4, Operations Fire Protection Weekly Inspection, Rev 10
0-SI-FPU-031-001.R, Visual Inspection Fire Dampers, Rev 2
0-SI-FPU-410-703.0, Inspection of FPR Required Fire Doors, Rev 0
0-SI-234.6, Functional Test of Fire Protection Report Required Detectors, Rev 32
1-AR-M5-B, Annunciator Response CVCS Seal Water and RCP, Rev 28
1-SO-77-4, System Operating Instruction for Auxiliary Reactor Building Floor and Equipment
1-PI-OPS-000-010.A, Verification of Remote Shutdown Transfer Switches, Rev 0, Completed 11/13/2001
AOP-C.04, Shutdown From Auxiliary Control Room, Rev 4
AOP-N.01, Plant Fires, Rev 14
AOP-N.08, Appendix R Fire Safe Shutdown, Rev 0
FPI-0102, Appendix C Active Permits (Impairments), dated March 26, 2002
SPP-9.3, Plant Modifications and Engineering Change Control, Rev 6
SPP-10.7, Housekeeping/Temporary Equipment Control, Rev 0S2
SSP-10.10, Control of Transient Combustibles, Rev 1
SSP-10.11, Control of Ignition Sources, Rev 1
SMI-0-317-18, Special Maintenance Instruction - Appendix R - Casualty Procedures, Rev 6
Pre-Fire Plan No. AUX-0-690-00, Auxiliary Building, Elevation 690'- 0, Rev 1
Pre-Fire Plan No. AUX-0-690-01, Auxiliary Building, Elevation 690'- 0, Rev 1
Pre-Fire Plan No. AUX-0-690-02, Auxiliary Building, Elevation 690'- 0, Rev 5
Pre-Fire Plan No. AUX-0-734-00, Auxiliary Building, Elevation 734'- 0, Rev 2
Pre-Fire Plan No. AUX-0-734-01, Auxiliary Building, Elevation 734'- 0, Rev 4
Pre-Fire Plan No. AUX-0-734-02, Auxiliary Building, Elevation 734'- 0, Rev 3
Pre-Fire Plan No. AUX-0-734-03, Auxiliary Building, Elevation 734'- 0, Rev 4
Pre-Fire Plan No. CON-0-685-00, Control Building, Elevation 685'- 0, Rev 3
Pre-Fire Plan No. CON-0-732-00, Control Building, Elevation 732'- 0, Rev 4

Job Performance Measures (JPMs) and Lesson Plans:

Lesson Plan OPL273C0202, Appendix R Fires (AOP-N.01, AOP-N.08, AOP-C.04), Rev 0

PERS, Audits, and Self-Assessments:

Fire Protection and Loss Prevention Program Audit (Biennial\Triennial) No. SSA0101
Fire Protection and Loss Prevention Program Audit (Annual) No. SSA0001
Fire Protection and Loss Prevention Program Audit (Triennial) No. SSA9802
Self Assessment Report, SQN-OPS-01-007
Self Assessment Report, SQN-OPS-09-001, Rev 1
PER 00-011423, Sequoyah Does not Perform Periodic Functional Testing on Alternate Shutdown Transfer Switches and Controls, dated 12/15/2000
PER 01-009956, Handswitches Had to be Cycled to Pass Continuity Checks During Performance of Procedure 0-PI-OPS-000-010.A, dated 11/2/2001

PER 01-010214, Discrepancies During Performance of Procedure 1-PI-OPS-000-010.A, dated 11/8/2001

Calculations

SQN-26-D054/EPM-ABB-IMPFHA, Sequoyah Fire Hazards Analysis Calculation, Rev 31
SQN-SQS4-0127, Equipment Required for Safe Shutdown Per 10 CFR 50 Appendix R, Rev 1
SQN-APPR-1, Analysis of AC/DC Instrument and Control (I&C) Power Systems to Identify Associated Circuits - 10 CFR 50, Appendix R, Sheets (Shts) 16A, 16B, 16C, 17, 37, 46, 54, 76 & 79C of 131, Appendix R Common Power Supply Analysis, Rev 7 [Coordination 125 VDC Vital Battery Board I, II, III & IV]
SQN-APS-003,480V APS Class 1E Load Coordination Study, Time-Current Curve # 2, Sht C-6, Rev 15 [480 V shutdown boards]
SQN-APS-003,480V APS Class 1E Load Coordination Study, Time-Current Curve # 3, Sht C-7, Rev 12 [480 V reactor mov boards]
SQN-APS-003,480V APS Class 1E Load Coordination Study, Time-Current Curve # 8, Sht C-13, Rev 28 [480 V ERCW PMP STA MCCs]

Drawing Numbers

1-45E890-104-1, 10 CFR 50 Appendix R RCS Pressure Control Operational & Spurious CA Keys 1,2,4,5,6&9, Rev 4 [conduit and tray plan for charging pump cables in FAA-029]
1-45E890-103-1, 10 CFR 50 Appendix R RCS Inventory Control Operational & Spurious CA Keys 1, 2, 4, 5, 6 & 9, Rev 3 [Routing of pressurizer level circuits]
1-45E890-103-2, 10 CFR 50 Appendix R RCS Inventory Control Operational & Spurious CA Keys 1, 2, 4, 5, 6 & 9, Rev 1 [Routing of pressurizer level circuits]
1-45E890-102-2, 10 CFR 50 Appendix R RCS Inventory Control Operational & Spurious CA Keys 1, 2, 4, 5, 6 & 9, Rev 1 [Routing of pressurizer level circuits]
1-47W809-1, Unit 1 Chemical and Volume Control System Flow Diagram, Rev 64
1-47W811-1, Unit 1 Safety Injection System Flow Diagram, Rev 57
1-47W610-3-3, Mechanical Control Diagram Auxiliary Feedwater System, Rev 17
1-47W610-92-1, Mechanical Control Diagram Neutron Monitoring System, Rev 3
2-47W809-1, Unit 2 Chemical and Volume Control System Flow Diagram, Rev 64
2-47W811-1, Unit 2 Safety Injection System Flow Diagram, Rev 48
1(2)-47W810-1, Units 1 and 2 Residual Heat Removal System Flow Diagram, Rev 39
1(2)-47W813-1, Units 1 and 2 Reactor Coolant System Flow Diagram, Rev 49
1(2)-45N767-1, Wiring Diagrams 6900 V Diesel Generators Schematic Diagrams Sht-1 Rev 26
1(2)-45N767-2, Wiring Diagrams 6900 V Diesel Generators Schematic Diagrams Sht-2 Rev 31
1(2)-45N767-3, Wiring Diagrams 6900 V Diesel Generators Schematic Diagrams Sht-3 Rev 23
1(2)-45N767-4, Wiring Diagrams 6900 V Diesel Generators Schematic Diagrams Sht-4 Rev 20
1(2)-45N767-5, Wiring Diagrams 6900 V Diesel Generators Schematic Diagrams Sht-5 Rev 15
1(2)-45N765-1, Wiring Diagrams 6900 V Shutdown Aux Power Schematic Diagram Sht-1, Rev 14 [6900 V Shutdown board 1A-A normal feeder breaker 1718]
1(2)-45N765-2, Wiring Diagrams 6900 V Shutdown Aux Power Schematic Diagram Sht-2, Rev 16 [6900 V Shutdown board 1A-A emergency feeder breaker 1912]

1(2)-45N824-7, Conduit & Grounding Floor Elevation 690.0 Ceiling Plan, Rev 2 [conduit plan for 62-90 & 91 valve cables]
1(2)-45N824-16, Conduit & Grounding Floor Elevation 690.0 Details - Sht-4, Rev 0 [conduit plan for 62-90 valve cables]

1(2)-45N826-8, Conduit & Grounding Floor Elevations 706.0 & 714.0 Ceiling Plan, Rev 2 [Routing of pressurizer level circuits]
1(2)-45N812-5, Conduit & Grounding Floor 685.0 Details - Sht 3, Rev 1 [Routing of cables for diesel generator start button]
1(2)-45N765-16, Wiring Diagrams 6900 V Shutdown Aux Power Schematic Diagram Sht-16, Rev 17 [Centrifugal charging pumps]
1(2)-15E500-1, Key Diagram Station Aux Power System, Rev 22
1(2)-45N779-11, Wiring Diagrams480V Shutdown Aux Power Schematic Diagram Sht-11, Rev 24 [MOV LCV-62-132]
1(2)-45N662-1, Wiring Diagrams Chemical & Volume Cont Sys Schematic Diagram Sht-1, Rev 10 [AOV LCV-62-85]
1(2)-47A381-111, Mechanical Heating & Ventilation & Air Conditioning Dampers, Rev 3
1(2)-47A381-113, Mechanical Heating & Ventilation & Air Conditioning Dampers, Rev 2
1(2)-47W494 series, Fire Protection Fire Cells, Rev 6
1(2)-47W600-250, Mechanical Instruments and Controls Fire Detectors, Rev 5
1(2)-47W600-254, Mechanical Instruments and Controls Fire Detectors, Rev 2
1(2)-47W610 series, Control Diagram High Pressure Fire Protection System, Rev 21
1(2)-47W611 series, Logic Diagram Fire Detection System, Rev 12
1(2)-47W849-1, Flow Diagram Hydrogen System for Generator Cooling, Rev 31
1(2)-47W850-2, Flow Diagram Fire Protection, Rev 25
1(2)-47W850-6A, Connectivity Diagram Fire Protection System, Rev 0
1(2)-47W866-2, Flow Diagram Heating & Ventilation Air Flow, Rev 11
1(2)-47W866-4, Flow Diagram Heating & Ventilation Air Flow, Rev 32
1(2)-47W880-26, Conduit and Grounding Cable Tray Fire Stop, Rev 2
1(2)-48W990-1, Miscellaneous Steel Fire Protection Reactor Coolant Pump Hood, Rev 3
1(2)-48W991-1, Miscellaneous Steel Fire Protection Reactor Coolant Pump, Rev 6
1(2)-47W920-8, Mechanical Heating & Ventilation & Air Conditioning, Rev 3

Other Documents Reviewed:

Bussman Mfg. Div. Time-current Characteristic Curve No. 50980, dated 2/4/99, for KLC and KTN-R fuses
Bussman Mfg. Div. Form 236, dated 10/17/70, Total Clearing Time-Current Characteristic Curves for FRN Fusetron Fuses
Westinghouse Electric Corporation, Application Data 29-261, Circuit Breaker Types EB, EHB FB, Mark 75 HFB [Time-Current Characteristic]
Gould Inc. Class L Form 480 Amp-Trap Fuse Total Clearing Time Data 200 - 600 Amp A4BY
ITE Corp Publication IB-18.1.7-2, page 3, Ground Protection Systems [cover GR-5 relay]
Various “Integrated Cable & Raceway Design System” Sheets
Various cable block diagrams prepared as part of the Fire Hazards Analysis
Various drawings associated with DCN MO1443A showing routing of cables for pressurizer level circuits

Relay Information Setting and Test Record Overcurrent and Ground Relays:
Sht No. 1817, dated 6/19/92 [for relays in CSS transformer C neutral]
Sht No. 1986, dated 11/21/82 [for relays at breaker 1418]
Sht No. 7911, dated 1/8/90 [for relays at breaker 1622]
Sht No. 760279R1, dated 8/24/98 [for relays at breaker 1714]

Sht No. 774579R2, dated 11/30/01 [for reactor coolant pump 2]
Sht No. 7609, dated 11/27/79 [for relays at breaker 1718]
Sht No. 178793R1, dated 11/30/01 [for essential raw cooling water pump J-A]
Fire Protection Report, Part V, Table V-1, 8 Hour Emergency Lighting Units, Rev 9
Factory Mutual Research, Tests on Sprinklers, dated April, 29, 1983
Memorandum, TVA to NRC, Final Closeout Regarding Resolution of Thermo-Lag 330-1 Fire Barrier Upgrades, dated June 30, 1999
NRC Integrated Inspection Report No. 50-327, 328/97-03, dated May 12, 1997
NRC Integrated Inspection Report No. 50-327, 328/98-07, dated August 4, 1998

Correspondence:

Memorandum To: W.S. Raughley, Chief Electrical Engineering Branch, From R.L. Morley,Chief, Central Laboratories Branch, on the subject of “Peak Let Through Test” [for limitron KLC-15 fuse]

Applicable Codes and Standards

NFPA 12, Carbon Dioxide Extinguishing Systems, 1973 Edition
NFPA 13, Standard for the Installation of Sprinkler Systems, 1975 Edition
NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 1974 Edition
NFPA 20, Standard for the Installation of Centrifugal Fire Pumps, 1993 Edition
NFPA 30, Flammable and Combustible Liquids Code, 1973 Edition
NFPA 72D, Standard for the Installation, Maintenance, and Use of Proprietary Protection Signaling Systems, 1975 Edition
NFPA 72E, Standard on Automatic Fire Detectors, 1974 Edition
NFPA 80, Standard on Fire Doors and Windows, 1981 Edition
NFPA 101, Life Safety Code, 1996 Edition
NUREG-1552, Supplement 1, Fire Barrier Penetration Seals in Nuclear Power Plants, dated January 1999

PERs Written During This Inspection

PER 02-02866, Incorrect Categorization of Fire Protection PERs
PER 02-03510, Availability of Sound Powered Phones
PER 02-03527, Lack of Adequate Relay Coordination for the Common Service Station Transformer
PER 02-03530, Lack of Procedural Steps for Cold Shutdown Repair
PER 02-03543, Shift Incident Commander Training on AOP-N.08
PER 02-03550, Deficiencies in AOP-C.04 Procedure Validation

PER 02-03552, OnShift Familiarity with Plant Fire and Appendix R Procedures
PER 02-03564, Fire Equipment Area Emergency Lighting
PER 02-03565, Cardox Floor Drain Loop Seal PM
PER 02-03566, Fire Fighting Effects on the Performance of Electrical Equipment Manipulation
PER 02-03645, Potential NRC Violation for Inadequate Cable Separation