



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-327/85-01 and 50-328/85-01

Licensee: Tennessee Valley Authority
500A Chestnut Street
Chattanooga, TN 37401

Docket Nos.: 50-327 and 50-328

License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah 1 and 2

Inspection Conducted: January 14 - 18, 1985

Inspectors:

M. D. Hunt
M. D. Hunt

3/8/85
Date Signed

P. M. Madden
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3-7-85
Date Signed

W. H. Miller, Jr.
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for Frank Jape
P. A. Taylor

3/8/85
Date Signed

Accompanying Personnel: T. E. Conlon, NRC Region II
L. S. Mellen, NRC Region II
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Approved by:

T. E. Conlon, Jr.
T. E. Conlon, Section Chief
Engineering Branch
Division of Reactor Safety

3-8-85
Date Signed

SUMMARY

Scope: This special, announced inspection entailed 222 inspector-hours on site in the area of fire protection and the licensee's actions regarding the implementation of the requirements of 10 CFR 50 Appendix R, Sections III.G, III.J, III.L and III.O.

Results: In the area inspected, seven apparent violations were found in the area of fire protection and compliance with 10 CFR 50 Appendix R.

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REPORT DETAILS

1. Licensee Employees Contacted

- *H. Abercrombie, Site Manager
- *P. Wallace, Plant Manager
- *L. Nobles, Plant Superintendent, Operations and Engineering
- *J. Krell, Plant Superintendent, Maintenance
- *J. Anthony, Operations Group Supervisor
- *R. Olsen, Modifications Manager
- *R. Alsup, Compliance Supervisor
- *C. Brimer, Site Services Manager
- *W. Wilburn, Technical Services Manager
- *M. Sedlacik, Electrical Modifications Supervisor
- *R. Thompson, Supervisor Risk Management
- *J. Wills, Licensing Engineer
- *M. Skarzinski, Electrical Maintenance Supervisor
- G. Boles, Mechanical Maintenance Engineer Supervisor
- D. Love, Mechanical Maintenance Supervisor
- *J. Sullivan, Appendix R Project Manager
- *N. Black, Site Engineering Supervisor
- *J. McCamy, Appendix R Project Team Engineer
- *M. Purcell, Appendix R, Project Team Engineer
- *F. Garrett, Senior Fire Protection Engineer - Appendix R Project Team
- *J. Tosh, Appendix R Project Team Engineer
- *J. Hutson, Electrical Engineer
- *S. Bridges, Electrical Engineer
- *G. Nicely, Electrical Engineer
- *W. Vanosdale, Senior Reactor Operator
- *D. Moore, Reactor Operator
- *D. Minnich, Auxiliary Unit Operator

Other Organization

- *J. Groth, Institute of Nuclear Power Operations (INPO)

NRC Resident Inspectors

- *E. Ford
- *L. Watson

- *Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 18, 1985, with those persons indicated in paragraph 1 above. The licensee acknowledged the following inspection findings:

- a. Violation Item (50-327, 328/85-01-01), Failure to meet the requirements of Appendix R, Section III.G with regard to maintaining one train of hot standby systems free of fire damage - paragraph 5.a.(1)
- b. Violation Item (50-327, 328/85-01-02), Failure to provide adequate breaker/fuse protection for equipment required for hot standby - paragraph 5.b.(4)
- c. Violation Item (50-327, 328/85-01-03), Failure to have procedures in effect to implement safe shutdown capability and procedures to repair damaged equipment for achieving cold shutdown conditions - paragraph 5.c.(3).
- d. Violation Item (50-327, 328/85-01-04), Oil collection system for reactor coolant pumps does not meet Appendix R, Section III.O requirements - paragraph 6.
- e. Violation Item (50-327, 328/85-01-05), Emergency lighting units do not meet Appendix R, Section III.J requirements - paragraph 7.
- f. Violation Item (50-327, 328/85-01-08), Failure to include cable fire barrier assemblies in a surveillance or maintenance inspection program - paragraph 10.
- g. Violation Item (50-327, 328/85-01-09), Failure to maintain fire barriers for three conduit in the auxiliary building - paragraph 10.
- h. Unresolved Item (50-327, 328/85-01-06), Review resolution to TVA identified Appendix R deviations pending review by NRR - paragraph 8.
- i. Inspector Followup Item (50-327, 328/85-01-07), Fire protection and raw service water pumps are not operated as a Train A-B system - paragraph 9.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items are matter about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 8.

5. Compliance with 10 CFR 50, Appendix R, Sections III.G and III.L

Operating License Section 2.C.(13).a for Unit 2 states that TVA shall maintain in effect and fully implement all provisions of the approved fire

protection plan and the NRC's Fire Protection Review in the Sequoyah Safety Evaluation Report and supplements. This license section also requires TVA to comply with Sections III.G., III.J, III.L and III.O of 10 CFR 50, Appendix R, except where NRC has approved deviations, on a schedule consistent with that required for other operating reactors.

As a result of the deficiencies identified during the July 16-20, 1984, Appendix R inspection at the Watts Bar facility, a Confirmation of Action Letter concerning the implementation of 10 CFR 50 Appendix R, Sections III.G, III.J, III.L and III.O requirements at Sequoyah Units 1 and 2 was issued by NRC Region II on August 10, 1984.

Based on the licensee's completion of the items required by the August 10, 1984, Confirmation of Action Letter, a special Appendix R team inspection was conducted to evaluate the adequacy of the licensee's performance with respect to the Appendix R reevaluation effort at Sequoyah. This inspection evaluated structures, systems, and components important to safe shutdown to determine if the existing and/or proposed plant fire protection features would provide a level of protection equivalent to the requirements of 10 CFR 50, Appendix R, Sections III.G and III.L. In addition, the scope of this inspection, based on the licensee's December 21, 1984, Appendix R reevaluation of Sequoyah, determined if the proposed fire protection features are capable of limiting potential fire damage so that one train of systems essential to achieving and maintaining hot standby from either the control room or emergency control stations will be free of fire damage.

a. Safe Shutdown Capabilities

In order to ensure safe shutdown capabilities, where cables or equipment of redundant trains of systems necessary to achieve and maintain hot standby conditions are located within the same fire area outside the primary containment, 10 CFR 50, Appendix R, Section III.G.2 requires that one train of hot standby systems be maintained free of fire damage by providing fire protection features which meet the requirements of either Sections III.G.2.a, III.G.2.b, or III.G.2.c.

On the basis of the above Appendix R criteria, the inspectors made an inspection of cabling and components associated with the auxiliary feedwater system, component cooling water system (CCS), essential raw cooling water system (ERCW), chemical volume and control system, pressurizer heater control, steam generator inventory control and onsite power distribution to determine the adequacy of the licensee's Appendix R reevaluation with regard to identifying plant areas which contain both redundant trains of hot standby systems and are not in compliance with Appendix R, Section III.G. In addition, this inspection reviewed the adequacy of the licensee's proposed additional fire protection features for those specific plant areas which do not comply with the requirements of Appendix R, Section III.G.

(1) Separation of Redundant Cabling to Safe Shutdown Systems

An inspection was made to determine if redundant cablings for safe shutdown systems, required to achieve and maintain hot standby conditions have been provided with adequate separation in accordance with Appendix R, Section III.G.2. The following areas of noncompliance were identified and reviewed against the licensee's Appendix R reevaluation to determine if these areas of noncompliance were appropriately identified.

(a) Auxiliary Building Elevation 669'-0"

In corridor 669.0-A1, cables 2PL3011B, 2PL3013B and 2PL3014B for Unit 2 CCP BB room cooler, and cables 2PP562B and 2PP564B for Unit 2 CCP BB, interact with cables 2PL3001A, 2PL3003A and 2PL3004A for Unit 2 CCP AA room cooler, and cables 2PP550A and 2PP552A for Unit 2 CCP AA. This cable interaction occurs within the corridor from column A-5 to A-15 and between column lines S and T. Thus, a postulated fire in this area could cause a loss of both redundant trains of Unit 2 charging pumps. On this basis, Reactor Coolant System (RCS) make-up capabilities and Reactor Coolant Pump (RCP) seal injection would be jeopardized. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 93.

(b) Auxiliary Building, Elevation 690'-0"

In auxiliary building common area 690.0-A-1, near column line A-2 and T, the following cables associated with the 1A and 2A component cooling system (CCS) pumps are routed at the top edge of the partial height fire barrier wall separating the component cooling system pump redundant division:

CCS Pump 1A Conduits

1PL4725A
1PL4726A
1PL4731A

CCS Pump 2A Conduits

2PL4725A
2PL4726A
2PL4731A

Therefore, a postulated exposure fire associated with either CCS Pump 1B or 2B could cause fire damage to the cabling to the above CCS Pumps 1A and 2A. In addition, the postulated fire condition could damage cables 1PL 47355 and 1PL 47365 associated with the CCS Pump C-5. Thus, if an exposure type fire were to occur on the B train side of the fire barrier separating the redundant pumps, both redundant trains of CCS pumps could be rendered inoperable. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 4.

From columns A-11 to A-13 and between column lines Q and R, Channel I reactor coolant system temperature loop cables 2PM591I, 2PM778I, 2PM686I, and 2PM871I interact with Channel II reactor coolant system temperature loop cables 2PM595II, 2PM784II, 2PM691II and 2PM876II. Therefore, a postulated exposure fire in this plant area could cause a loss of all temperature indication for all four Unit 2 reactor coolant system loops. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 59.

In addition, a postulated fire condition in this plant area will also cause a loss of cabling associated with all three channels of pressure indication for all four Unit 2 steam generators. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 51.

From column A-5 to A-13 and between column lines R and T, the following cables associated with "A" and "B" train centrifugal charging pump (CCP) room coolers, component cooling system (CCS) pumps, centrifugal charging pumps (CCP), and essential raw service water (ERCW) pumps:

<u>Cable Identifier</u>	<u>Safe Shutdown Component</u>
2PL3001A	CCP 2AA Room Cooler
2PL3003A	
2PL3011B	CCP 2BB Room Cooler
2PL3013B	
2PP550A	CCP 2AA
2PP552A	
2PP562B	CCP 2BB
2PP564B	
2PL4725A	CCS Pump 2AA
2PL4726A	
2PL4731A	
2PL4739A	CCS Pump C-5
2PL4739B	
2PL4742B	CCS Pump 2BB
2PL4743B	
2P14748B	
1PP700B	ERCW Pump L-B
1PP721B	ERCW Pump N-B
2PP700B	ERCW Pump M-B
2PP712B	ERCW Pump P-B

Therefore, a postulated exposure fire in this plant area could jeopardize both redundant trains of Unit 2 charging pump room coolers, preclude all RCS make-up and RCP seal injection capabilities and cause a loss of component cooling

water to safe shutdown systems. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 92.

Between columns A-2 and A-3 near column line T, cables 1PP 785B and 2PP785B associated with ERCW MCC 1BB and 2BB interact with component cooling system (CCS) Pumps 1A-A, C-S, 1B-B, 2B-B and 2A-A. Thus, a postulated fire in this plant area could preclude Train B ERCW water supply to component cooling system heat exchangers. This condition was identified by the licensee's Appendix R Reevaluation Interaction Study No. 102.

From columns A-2 and A-5 and between column lines R and U, the following Train B ERCW cables interact with Train A CCP cables:

<u>Cable Identifier</u>	<u>Safe Shutdown Component</u>
1PP700B	ERCW Pump L-B
1PP712B	ERCW Pump N-B
2PP700B	ERCW Pump M-B
2PP712B	ERCW Pump P-B
1PP550A	CCP 1A-A
1PP552A	
1PL6145A	CCP Aux Lube Oil Pump 1A-A
1PL6149A	
1PL3001A	CCP cooler fan and
1PL3003A	Valve FCV-67-168
1PL4725A	CCS pump 1A-A
1PL4726A	
1PL4731A	

Thus, a postulated fire in the plant area could indirectly jeopardize Unit 1 RCS makeup and RCP seal injection capabilities by causing fire damage to Train "B" ERCW to "B" Train CCS and CCP 1A-A. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 108.

In auxiliary building counting room 690.0-A-5, above the suspended ceiling and in the pipe tunnel from the Unit 1 refueling water storage tank power, cables for both redundant divisions of the ERCW pumps, and ERCW pumping station transformers interact within the conduit bank. Therefore, a postulated fire in either of these plant areas could cause a loss of all ERCW to the emergency diesel generators and component cooling system heat exchangers for both Units 1 and 2

This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 1.

(c) Auxiliary Building Elevation 714'-0"

In common area 714.0-A-1, from columns A-6 to A-10 and between column lines Q and S, the following "A" train and "B" Train safe shutdown cables interact:

<u>Cable Identifier</u>	<u>Safe Shutdown Component</u>
PP568B	ERCW to Diesel Generator
PP570B	1B-B Heat Exchanger Valve 1-FCV-67-67
PP688B	ERCW to Diesel Generator
PP690B	2B-B Heat Exchanger Valve 2-FCV-67-67
1PP700B	ERCW pump L-B
1PP704B	
1PP706B	
1PP712B	ERCW pump N-B
1PP716B	
1PP718B	
2PP700B	ERCW pump M-B
2PP704B	
2PP706B	
2PP712B	ERCW pump P-B
2PP716B	
2PP718B	
PP328A	ERCW to Diesel
PP330A	Generator 1A-A Heat Exchanger Valve 1-FCV-67-660
PP448A	ERCW to Diesel Generator
PP450A	2A-A Heat Exchanger Valve 2-FCV-67-66
1PP693A	ERCW Pump Q-A
1PP691A	
1PP681A	ERCW Pump J-A
1PP679A	
2PP679A	ERCW Pump K-A
2PP681A	
2PP691A	ERCW Pump R-A
2PP693A	
1PP475A	Diesel Generator Breaker 1912
2PP454A	Diesel Generator Breaker 1922
2PP475A	Diesel Generator 2AA Breaker Control

PP302A	Diesel Generator 1A Start/Stop
PP304A	Function
PP306A	
PP310A	
PP312A	
1PP460B	Diesel Generator Breaker 1914
1PP480B	
2PP480B	Diesel Generator Breaker 1924
PP662B	Diesel Generator 2B Start/Stop
PP664B	Function
PP666B	
PP670B	
PP672B	

Therefore, a postulated fire in this plant area could cause a loss of ERCW water supply to both redundant trains of Units 1 and 2 diesel generator heat exchangers and preclude ERCW water supply to both redundant trains of component cooling system heat exchangers. In addition, this postulated fire condition could render both redundant trains of onsite power capabilities for both units inoperable. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 16, 34, and 82.

From columns A-6 to A-14 and between column lines Q to U, a postulated fire in this area could involve cables for both Units 1 and 2 motor driven and turbine driven auxiliary feedwater pumps, their associated automatic level control valves, and wide and narrow range level indications. This could cause a loss of both redundant trains of auxiliary feedwater to the steam generators. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study Nos. 21 and 41.

From columns A-4 to A-8 and between column lines Q to R, common power cable (2PV320J) for Channel I RCS temperature loops interacts with the Channel II power cable (2PV330K). Therefore, a postulated fire in this area could cause Unit 2 RCS temperature indication for all four RCS loops to be rendered inoperable. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 42.

Near column A-12 between column lines Q and R cables associated with both Channels I and II, RCS pressure indication instrumentation interacts. Thus, a postulated fire in this area could possibly jeopardize both redundant channels of RCS pressure indication inoperable. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 43.

The area from columns A-11 to A-13, and between Q and U, contain the following "A" and "B" Train cables for safe shutdown systems:

<u>Cable Identifier</u>	<u>Safe Shutdown Component</u>
2PL3001A	CCP 2AA Room Cooler
2PL3003A	
2PL3011B	CCP 2BB Room Cooler
2PL3013B	
2PP550A	CCP 2AA
2PP552A	
2PP554A	
2PP556A	
2PP562B	CCP 2BB
2PP564B	
2PP566B	
2PP568B	
2PL4725A	CCS pump 2AA
2PL4726A	
2PL4727A	
2PL4731A	
2PL4732A	
2PL4738B	CCS pump C-S
2PL4739B	
2PL4742B	CCS pump 2BB
2PL4743B	
2PL4744B	
2PL4748B	
2PL4749B	

Therefore, a postulated fire in this plant area could jeopardize both redundant trains of Unit 2 component cooling and charging pumps. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 86.

(d) Auxiliary Building, Elevation 734'-0"

In 480V shutdown board room 1B2-B, Train "A" cable trays transverse the southwest corner of the room. The following cables are associated with these Train "A" cable trays:

<u>Cable Identifier</u>	<u>Safe Shutdown Component</u>
1PP679A	ERCW Pump J-A
1PP681A	
1PP691A	ERCW Pump Q-A
1PP693A	
2PP679A	ERCW Pump K-A

2PP681A	
2PP691A	ERCW Pump R-A
2PP693A	
PP373A	Diesel Generator Breaker 1912
PP374A	
PP468A	
PP378A	
1PP475A	
1PP478A	
1PP454A	
2PP475A	Diesel Generator 2AA Breaker Control
PP 469A	Diesel Generator Breaker 1922
2PP478A	
2PP498A	
2PP454A	Diesel Generator Breaker 1922
1B11I, 1B16I	Normal Power Feed to 480V Shutdown Boards 1A1A and 1A2A
1B12III, 1B17 III	Alternate Power Feed to 480V Shutdown boards 1A1A and 1A2A
1PL4900A	Power Feed to Vital Battery Charger I
B75A	Diesel Generator 1AA Emergency Stop

Therefore, a postulated fire in this plant area could jeopardize Unit 1 ERCW supply to the emergency diesel generators and component cooling system heat exchangers. In addition, a postulated fire in this area could render both redundant Trains of Unit 1 480V power distribution to safe shutdown systems inoperable. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study Nos. 22 and 81.

In 480V shutdown board room 2A2-A, from Columns A12 to A13 between column lines Q and R, B Train cable trays transverse this area. The following cables are associated with these Train B cable trays:

<u>Cable Identifier</u>	<u>Safe Shutdown Component</u>
2PP704B	ERCW Pump M-B
2PP706B	
2PP716B	ERCW Pump P-B
2PP718B	
1PP704B	ERCW Pump L-B
1PP706B	
1PP716B	ERCW Pump N-B

1PP718B	
2PP562B	CCP 2B-B
2PP564B	
2PP566B	
2PP568B	
2PL3013B	CCP, 2B-B Pump Room Cooler
2PP483B	Diesel Generator Breaker 1924
2PP480B	
PP377B	
PP477B	
PP460B	
2PP460B	
2PP377B	
2B25IV	Normal and Alternate Power
2B30IV	Feed to "B" Train 480V
2B26II	Shutdown Boards
2B31II	
B78B	Diesel Generator 2B-B
	Remote Control

Therefore, a postulated fire in this plant area could jeopardize Unit 2 ERCW supply to the emergency diesel generators and component cooling system heat exchangers. In addition, a postulated fire in this area could render both Unit 2 redundant trains of 480V power distribution to safe shutdown systems inoperable. This condition was identified by the licensee's Appendix R Reevaluation Interaction Study Nos. 23, 75 and 79.

In 480V shutdown board room 2A1-A, cables 2B25IV, 2B30IV, 2B26II, and 2B3.II associated with 125VDC control power normal and alternate supply to 480V shutdown boards 2B1-B and 2B2-B interact with 480V shutdown board 2A1-A. Therefore, a postulated fire in this area could render both redundant Unit 2 480V shutdown boards inoperable, causing a loss of all control power to safe shutdown systems. This condition was identified by the licensee's Appendix R Reevaluation Interaction Study No. 83.

The 6900V shutdown board room 2A-A contains cables 1PP765B, 1PP753B and 1PP762B which are the 6900V power feeds from the 1B-B 6900V shutdown board to the 480V shutdown transformer. These cables are associated with the 1B1-B and 1B2-B 480V shutdown boards and interact with 6900V shutdown boards 1A-A and 2A-A. Thus, a postulated fire condition in this room could render all Unit 1 power distribution capabilities inoperable. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 3.

In auxiliary control room 734.0-A1, cables contained in cable trays PO-A, P" and PM-A interact with cables in tray PA-B. These cables are for both redundant divisions of safe shutdown equipment having normal to auxiliary transfer switches in the auxiliary instrument rooms. In addition, cable B77A associated with 2-FCV-67-66 interacts with cable B76 associated with 1-FCV-67-67 in the same plant location. A postulated fire in this area could cause a loss of all normal to auxiliary control room Units 1 and 2 safe shutdown functions and ERCW supply to emergency diesel generator 1B-B and 2A-A heat exchangers. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study Nos. 98 and 105.

In 125V vital battery board room I 734.0-A4, cables 1B26IV, 1B31IV, 1B25II and 1B30II, which provide normal and alternative power feed to 480V shutdown board 1B1-B and 1B2-B, transverse this room along the east wall. Therefore, a postulated fire in this area could render Unit 1 "B" Train 480V shutdown boards which supply power to "B" Train safe shutdown equipment and 125V DC control power to "A" Train safe shutdown systems inoperative. This condition was identified by the licensee's Appendix R Reevaluation Study No. 107.

Along the east wall of 125V Vital Battery Board Room IV 734.0-A22, cables 2B11 III, 2B16 III, 2B12I and 2B17I, which provide normal and alternative power feed to 480V shutdown boards 2A1-A and 2A2-A, are routed. Thus, a postulated fire in this area could render Unit 2 "A" Train safe shutdown equipment and 125V DC control power to "B" train safe shutdown systems inoperative. This condition was identified by the licensee's Appendix R Reevaluation Study No. 107.

In 6.9-KV shutdown board room 734.0-A24, cables 2PP 759A, 2PP 750A, and 2PP 756A, which are the 6.9-KV power feeds from the 6.9KV shutdown board 2A-A to the 480V shutdown transformers associated with 480V shutdown boards 2A1-A and 2A2-A, are routed on the ceiling to the rear of 6.9-KV shutdown board 2B-B. A postulated fire in this area could jeopardize both redundant trains of Unit 2 power distribution capabilities to safe shutdown systems. This plant condition was identified by the licensee's Appendix R Reevaluation Study No. 2.

In 6.9-KV Shutdown Board Room 734.0-A2 from columns A3 to A4 and between column lines R and U, the following safe shutdown cables interact:

<u>Cable Identifier</u>	<u>Safe Shutdown Component</u>
1PP550A	CCP 1A-A
1PP552A	
1PP553A	
1PP554A	
1PP556A	
1PP557A	
1PP555A	CCP 1A-A Auxiliary, Lube Oil Pump
1PL6145A	
1PL6146A	
1PL6147A	
1PL6148A	
1PL3002A	
1PL3003A	CCP 1A-A Room Cooler and FCV-67-168
1PL4729A	
1PP564B	CCS Pump 1A-A
1PL6152B	CCP 1B-B
1PL6155B	CCP 1B-B Auxiliary Lube Oil Pump
1PL6156B	
1PL3013B	CCP 1B-B Room Cooler and FCV 67-170
2PL4733B	
2PL4734B	CCS Pump C-S
2PL4737B	
1PL4735S	
1PL4736S	

Thus, a postulated fire in this could render both redundant trains of Unit 1 charging pumps inoperable. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study Nos. 66 and 84.

In 480V shutdown board room 734.0-A6, cables 1B11I and 1B16I, which are the 125V DC normal control power feeds to 480V shutdown Boards 1A1-A and 1A2-A, interact with 480V shutdown board 1B1-B and associated cables. Thus, a postulated fire condition in this area could jeopardize both redundant trains of 480V power capabilities to safe shutdown equipment. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 80.

(e) Auxiliary Building Elevation 749'-0"

In 480V transformer room 749.0-A10, cables 2PL 4975A and 2PL 4978A from 480V shutdown boards 2A1-A and 2A2-A to diesel generator auxiliary boards 2A1-A and 2A2-A interact with 480V shutdown and emergency transformers 1B1-B, 1B2-B, and 1B-B and associated cables to the diesel generator auxiliary

boards 2B1-B and 2B2-B. Therefore, a postulated fire in this area could cause a loss of all Unit 2 onsite power capabilities to safe shutdown systems. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 11.

Power cables PP 710B, PP 711B, PP 590B and PP 591B to 6.9KV shutdown boards 1B-B and 2B-B interact with 480V reactor MOV board 2A and associated cables at the conduit bank near column A-11 and column line I in 480V reactor MOV board room 749.0-A16. Therefore, a postulated fire in this plant area could jeopardize the operation of all Unit 2 Train "A" safe shutdown motor operated valves and Unit 2 Train "B" safe shutdown equipment. This plant condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 14.

Cables 1PL4982B and 1PL4985B from 480V shutdown board 1B1-B and 1B2-B to the diesel generator auxiliary boards 1B1-B and 1B2-B interact with 480V shutdown and emergency transformers 1A1-A, 1A2-A and 1A-A in 480V shutdown transformer room 749.0-A7. Postulating a fire in this plant area could cause a loss of all Unit 1 onsite power capabilities to safe shutdown systems. This plant condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 10.

(f) Auxiliary Building Elevation 759'-0"

In Unit 2 control rod drive equipment room 759.0-A3, cables 2PL4975A and 2PL4978A from 480V shutdown boards 2A1-A and 2A2-A to diesel generator auxiliary boards interact with cables 2PL4982B and 2PL4985B from 480V shutdown boards 2B1-B and 2B2-B to the diesel generator boards. In addition, cables PP590B, PP591B, PP710B, 1PP820B and 2PP820B to diesel generators 1B and 2B are located in this area. Thus, a postulated fire in this area could cause a loss of HVAC, diesel fuel transfer, and ERCW support systems to emergency diesel generators 2A and 2B. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 13.

Cables 1PL4982B and 1PL4985B to diesel generator auxiliary boards 1B1-B and 1B2-B interact with Train "A" 480V cables 1PL4975A and 1PL4978A to diesel generator auxiliary boards 1A1-A and 1A2-A in Unit 1 control rod drive equipment room 759.0-A1. Therefore, a postulated fire in this plant area could cause a loss of HVAC, diesel fuel transfer, and ERCW support systems to diesel generators 1A and 1B. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study No. 12.

- (g) Auxiliary Building Between Elevations 669'-0", 690'-0" and 714'-0"

Near the unprotected north stairway opening associated with the auxiliary building common area from columns A4 to A5 and between column lines S and T on elevation 669'-0", cable 1SG 220A for DC control power to turbine driven auxiliary feedwater pump interact through this opening with cables 1PP650A, 1PP652A, 1PP662B and 1PP664B for the 1A-A and 1B-B motor driven auxiliary feedwater pumps and 1SG221B for alternate DC control power to turbine driven auxiliary feedwater pump on Elevation 690'-0". In addition, cables 1PP700B, 1PP712B, 2PP700B, and 2PP712B for ERCW pumps L-B, N-B, M-B and P-B, on elevation 690'-0, interact through this opening with cables PP328A, PP330A, PP448A and PP450A associated with diesel generator heat exchanger valves 1-FCV-67-66 and 2-FCV-67-66 on elevation 714'-0". Thus, a postulated fire on elevation 669'-0 in the area of the unprotected stairway opening could jeopardize ERCW cooling water to Units 1 and 2 diesel generators and impact the operability of both Unit 1 redundant motor driven and Turbine Driven Auxiliary Feedwater Pumps. This, condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study Nos. 6 and 104.

In the area of the unprotected south stairway opening associated with the auxiliary building common area from columns A11 to A12 and between column lines S and T on elevation 669'-0", cables 2SG220A for DC control power to turbine driven auxiliary feedwater pump interact through this opening with cables 2PP662B, 2PP664B, 2PP650A and 2PP652A for the 2A-A and 2B-B motor driven auxiliary feedwater pumps and 2SG221B for alternate DC control power to turbine driven auxiliary feedwater pump on elevation 690'-0". In addition, on elevation 669'-0", cables 2PP550A, 2PP552A, 2PP562B and 2PP564B for charging pumps 2A-A and 2B-B interact through this opening with 2PL4731A, 2PL4734B, 2PL4742B, 2PL4743B, 2PL4748B for component cooling system pumps 2A-A, 2B-B and C-S on elevation 690'-0" and cables 2PL4725A, 2PL4726A and 2PL4732A for component cooling system pump 2A-A on elevation 714'-0". Therefore, a postulated fire on elevation 669'-0" in the area of the unprotected stairway opening could impact the operability of both redundant trains of Unit 2 auxiliary feedwater capabilities, charging pumps and component cooling system pumps. This condition was identified by the licensee's Appendix R Reevaluation Cable Interaction Study Nos. 57 and 101.

Based on the results of the licensee's December 21, 1984, Appendix R reevaluation, Sequoyah Units 1 and 2 were not in compliance with 10 CFR 50 Appendix R Section III.G on August 10, 1984. It appears that if a fire were to occur in any of the plant areas identified in 5.a(1)(a) through 5.a(1)(g), redundant hot standby systems could be rendered inoperable; thus, the plants ability to achieve and maintain hot standby could not be assured. Therefore, this is identified as Violation Item 50-327, 328/85-01-01, Failure to meet the requirements of Appendix R, Section III.G, with regard to maintaining one train of hot standby systems free of fire damage.

b. Protection of Associated Circuits

The inspection was conducted to verify compliance with the associated circuit provision of 10 CFR 50 Appendix R, Sections III.G. and III.L. The emphasis was on the following areas of concern:

- Common Bus Concern
- Common Enclosure Concern
- Spurious Signal Concern

(1) Common Bus Concern

The common bus concern is found in circuits, either non-safety or safety-related, where there is a common power source with shutdown equipment and the power source is not electrically protected from the circuit of concern.

A number of circuits were examined to verify that the breaker/fuse coordination was adequate to protect the circuits of concern. The inspectors selected several components from systems required to bring the plant to a hot shutdown condition. The time-current characteristic curves for the supply bus for the components were examined. The licensee had taken the most severe fault that could be experienced on each bus that supplies power to a component required to bring the unit to hot standby as the basis for the breaker/fuse coordination study.

The method used was the most conservative approach that could be determined in that the currents were calculated for the least amount of conductor resistance with a direct fault leading to auto-ignition of the cable insulation. The circuit protection (breaker/fuse) for this condition was sized to interrupt power to the circuit prior to auto-ignition of the cable or tripping of the supply bus to clear the fault. The licensee's analysis identified power and control circuits that will require changes in over-current relay settings or down sizing of fuses or transfer of loads from one bus to another. Power and control circuits were reviewed for the following components:

- Centrifugal Charging (CC) Pump A&B
- CC Pump Suction and Discharge Valves
- Aux Feedwater (FW) Motor Driven Pumps A&B
- Aux FW Turbine Driven Pump Aux FW Pump suction and Discharge Valves
- Steam Generator Level Controls
- Onsite Electrical Power Generation and Distribution
- Reactor Coolant System PORVs and Block Valves
- Main Steam PORVs (Relief Valves)

The various circuit changes for the listed equipment were found adequate and tended toward the most conservative methods of protection.

The necessary instrumentation circuits are protected by fuses that analysis determined were adequate.

(2) The Common Enclosure Concern

A circuit whether safety-related or not, is classified as an associated circuit of concern if it shares a common enclosure (e.g., cable tray, conduit, panel or junction box) with an Appendix R "Required Circuit", and, is not adequately protected by circuit breakers, fuses or similar devices, or could allow fire propagation into the Shared Common Enclosure.

The cabling and protective devices were evaluated to verify that a fire induced fault could not overheat one of these cables to its auto ignition temperature. This is to ensure that fire involving one shutdown path would not be electrically propagated to the redundant shutdown path in another area. This is discussed in the preceding section for common bus concerns. In addition, licensee interaction studies were reviewed by the inspectors. Each of these studies identified a certain area in the plant, and the electrical cables and equipment in that area that could impact on safe plant shutdown if the area was involved in a fire. The licensee identified the systems involved and the cables and equipment affected.

The inspectors examined various areas of the plant that were involved in 18 out of the 121 interaction studies and reviewed the proposed corrective actions. Several 6.9KV and 480V power distribution boards which require circuit modifications were examined.

Additionally, various AC and DC control power distribution boards were examined. Based on this review, it appears that the licensee's reevaluation was sufficient to address the common enclosure concern of Appendix R, Section III.G.2. The reevaluation in this area identified discrepancies that will be resolved by implementation of the licensee's corrective actions.

(3) Spurious Signal Concern

A review of the licensee's spurious signal analysis was conducted to determine if the following conditions had been considered:

The false motor, control and instrument readings such as what occurred at the 1975 Browns Ferry Fire. These could be caused by fire initiated grounds, shorts or open circuits.

Spurious operation of safety-related or non-safety-related components that would adversely affect shutdown capability (e.g., RHR/RCS Isolation Valves).

The licensee's method for evaluation of fire induced spurious signals that could affect the circuits required to bring the plant to hot shutdown was reviewed. The licensee has treated the spurious signal-affected circuits and circuits that could affect the shutdown logic path through spurious actuation due to fire damage as shutdown circuits. Therefore, these circuits were evaluated for interaction between redundant shutdown paths. The circuits analyzed were control circuits that are powered from ungrounded AC or DC power sources.

The licensee intends to remove power and control voltages from several valves that could affect safe shutdown of a unit should they operate due to a fire induced spurious signal. The impact of this action in relation to the operability of the unit has been assessed by the licensee and submitted to NRC. The licensee's reevaluation and corrective action appears to adequately address the spurious signal concerns.

(4) Associated Circuit Analysis Results

The licensee had conducted a review to identify deficiencies in the implementation of 10 CFR 50, Appendix R. The results of this review were submitted to RII in the licensee's December 21, 1984 letter and enclosures. The letter identified approximately 295 auxiliary and control power circuits that require modifications in order to meet the criteria of the common bus and common enclosure requirements of Appendix R. The following is a summary of the modifications required as identified in the December 21, 1984, letter as the result of the analysis performed by the licensee.

Auxiliary power and control power circuit corrective actions -
Replace fuses for:

6.9 KV Shutdown Boards	34 circuits
480 Volt Shutdown Boards	72 circuits
480 Volt Unit Boards	5 circuits
6.9 KV Unit Boards	6 circuits
480 Volt Aux. Building Common Board	7 circuits
480 Volt Service Bldg Vent Board B1	3 circuits
125 VDC Vital Battery Boards	4 circuits

Change the load to a different circuit - 125 VDC vital battery boards - 13 circuits. Install new fuse holder and fuse in Evacuation Alarm Power Distribution Panel B-1 circuit

The following changes are required in power distribution circuits:

480V Shutdown Boards - wrap cables for three circuits, reroute cable for one circuit, install cable fuse for two circuits

480V Reactor MOV Boards - replace heaters for 11 circuits, replace three breakers

480V Reactor Vent Boards - replace 12 breakers

480V Control and Auxiliary Building Vent Boards - replace seven breakers, replace heaters in 17 circuits, replace fuses in eight circuits and install larger cable for two circuits.

480 Volt ERCW MCC Boards - reset the breakers for 5 circuits

480 Volt Chemical and Volume Control Board - replace one breaker

Auxiliary Building Common MCC - replace two breakers

CVC Distribution Panels - replace 19 breakers

480V Turbine Building MOV Boards - replace 3 breakers

208/120 V Light Boards (Vendor supplied) - replace fuse circuits

Lighting Cabinet 101 - change fuse in 1 circuit

480V control and Auxiliary Building Vent Boards (Vendor Supplied - Change fuse in 2 circuits)

Appendix R, Section III.G.2, requires that where cables or equipment including associated nonsafety circuits that could prevent operation or cause the maloperation due to hot shorts, open circuits or shorts to ground of redundant trains of systems necessary to achieve and maintain hot shutdown conditions, shall be protected in accordance with either paragraph III.G.2.a., III.G.2.b., or III.G.2.c.

Based on the licensee's December 21, 1984, Appendix R reevaluation, 295 circuits were identified as having a common power source with shutdown equipment and the power source was not properly electrically protected from the circuit of concern or protected in accordance with Appendix R, Section III.G.2. On August 10, 1984, these conditions did not meet the requirements of Appendix R and are identified as Violation Item (50-327, 328/85-01-02), Failure to provide adequate breaker/fuse protection for equipment required for hot standby.

c. Alternative Shutdown Capabilities

The inspectors reviewed personnel training and staffing, and the licensee's use of operating and surveillance instructions, as these activities relate to alternative shutdown capabilities. These areas were reviewed to determine if the requirements of Appendix R, Section III.L for "hot stand-by" conditions and subsequent cold shutdown conditions are being met.

(1) Personnel Training and Staffing

The inspectors reviewed the licensee's program for conducting training specifically in the area of plant instructions used to achieve and maintain the plant in hot standby conditions during fire situations utilizing the control room and remote shutdown stations. It was noted that on-the-job training, classroom and simulator training are being provided for both licensed and non-licensed operators. In addition to the above training, Senior Reactor Operators (SRO) and Reactor Operators (RO) are required to review abnormal and emergency operating instruction on a monthly basis with all instructions being reviewed annually. Instruction changes are also required to be reviewed and documented. Simulated training drills of AOI-27, Control Room Inaccessibility, is being conducted for each shift operating group on an annual basis. The drill consists of at least a walk-through of procedure steps and equipment check lists to enhance operator proficiency in conducting system operations at the auxiliary control room and other remote control stations used to achieve and maintain the plant in hot standby conditions for those fires which require the control room to be abandoned. The inspectors reviewed training records and held discussions with shift operating groups to verify that the above training is being implemented.

The licensee's normal shift staffing was reviewed to verify that sufficient operating personnel are available to operate equipment and systems described in AOI-27, Control Room Inaccessibility. The review indicated that adequate shift staffing is being provided to man the necessary stations in order to support plant operations, in addition to providing fire brigade members.

Within the areas inspected, no violations or deviations were identified.

(2) Review of Operating and Surveillance Procedures

The inspectors reviewed the licensee's abnormal operating instructions (AOI), general operating instructions (GOI), and system operating instructions (SOI) to verify that Appendix R, Section III.L requirements as given below have been incorporated into plant procedures:

- Achieve and maintain hot standby conditions.
- Achieve and maintain subcritical reactivity conditions in the reactor.
- Provide decay heat removal capabilities.
- Maintain reactor coolant inventory and steam generator inventory.
- Achieve and maintain cold shutdown conditions.

The inspector reviewed the following procedures:

- GOI-3, Revision 28, Plant Shutdown from Minimum Load to Cold Shutdown
- AOI-27, Revision 2, Control Room Inaccessibility
- AOI-30, Revision 2, Plant Fires
- AOI-35, Revision 3, Loss of Offsite Power
- SOI-62.1, Revision 23, Chemical and Volume Control System
- SOI-70.1, Revision 26, Component Cooling Water System
- SOI-67.1, Revision 22, Essential Raw Cooling Water System

AOI-27 is the controlling procedure that is used to bring the plant to hot standby for those fire event that affect the control room, cable spreading room or the auxiliary instrument room. A

fire in these areas could result in the need to abandon the control room. During this situation the plant systems and parameters are controlled from the auxiliary control room located adjacent to the 6.9KV switchgear room in the auxiliary building. The inspectors, in addition to the review of procedures, conducted a walkdown of AOI-27 as the licensee operators simulated a full drill of this procedure. The purpose of the procedure walk through was to verify that:

- Communications between various stations are adequate and operable.
- Identification plates installed on valves and instrumentation agree with that called for in the procedure steps.
- Lighting at stations is adequate.
- Equipment and valves to be operated can be reached and are not obstructed.
- Sound power phone headsets and procedures to be used are available and contain the latest revision.
- Steps of procedures are clear and can be accomplished.

Comments generated as a result of the reviews and walk-through of procedure were presented to the licensee for corrective action. The licensee issued a procedure change to AOI-27 and AOI-30 to address the inspectors' concerns.

It was noted during the procedure reviews that the licensee has identified deviations to the NRC (TVA letters from Domer to Adensam dated December 18, 1984 and January 11, 1985) concerning methods for monitoring system process variables. The deviations submitted concern Tcold instrumentation, condensate storage tank level indication, refueling water storage tank level indication and wide range steam generator level indication. These variables are not provided in the auxiliary control room. However, the licensee provided alternate methods and justification. This matter along with other licensee identified deviations are presented in Section 8 of this report as unresolved items pending review and approval from NRR.

The inspector noted that systems used for alternative shutdown capability are the plant normal systems. The routine plant surveillance and calibration programs are used to maintain operability of instrumentation and components associated with the auxiliary control room.

Within the areas inspected, no violations or deviations were identified.

(3) Licensee's Preparation of Additional Operating and Damage Control Procedures

Since the issuance of Region II Confirmation of Action Letter dated August 10, 1984, TVA has conducted an extensive and comprehensive review of the implementation status of Appendix R at the Sequoyah Nuclear Plant. The results of the review were submitted to the region by letter from J. A. Domer to J. P. O'Reilly dated December 21, 1984. TVA's review indicates that additional procedures will be needed to ensure that systems necessary to achieve and maintain hot standby and subsequent cold shutdown conditions do address fire events in other areas of the plant. Procedures are already in place for those fire events that affect the control room as previously noted in Section C.(2). TVA has also determined that damage control procedures will be needed to provide the necessary instructions to affect repairs to certain systems before the plant can be taken to cold shutdown (e.g., Residual Heat Removal pump cabling).

TVA's plans and current schedule for issuing these procedures is as follows:

- Develop procedure SOI 62.2, Fire Interaction Manual, to incorporate the location of cable and equipment interaction to a specific area of the plant or rooms, list the potential effects on system operation due to fire damage, then provide the corrective action to be taken to operate the system. The licensee identified 120 interactions in Enclosure (5) to TVA's December 21, 1984 letter. Many of these interactions will be resolved by requiring operating procedures. TVA's present schedule requires procedures to be issued by May 1, 1985, and subsequent training completed July 1, 1985.
- Develop damage control or casualty procedures to address repair of cabling to RHR pumps, room coolers, and various cold shutdown valves. TVA's present schedule requires casualty procedures to be issued by May 1, 1985.

Appendix R, Section III.L.3 requires that procedures shall be in effect to implement the safe shutdown capability for specific fire areas and Section III.L.5 requires that equipment and systems comprising the means to achieve and maintain cold shutdown conditions shall not be damaged by fire or the fire damage to such equipment and systems can be made operable and cold shutdown achieved within 72 hours. Materials for such repairs shall be readily available on site and procedure shall be in effect to implement such repairs.

Contrary to the above, operating procedures are not available to implement safe shutdown capability for all specific fire areas in the plant. Casualty procedure to implement repairs to systems require for cold shutdown are not available. The procedures described herein are scheduled to be issued by May 1, 1985.

This area is identified as a Violation (50-327, 328/85-01-03), Failure to have procedures in effect to implement safe shutdown capability and procedures to repair damaged equipment for achieving and maintaining cold shutdown conditions.

(4) Spurious Operation of Valves

The inspector reviewed the licensee's program to prevent spurious operation of valves which could occur due to hot shorts as a result of fire damage to valve cabling. The inspector reviewed the licensee's 50.59 evaluation as documented in ECNL6258 dated October 24, 1984, concerning system operation. The systems affected by the removal of power to electric motor operated valves include essential raw cooling water (ERCW), component cooling system, and chemical and volume control system (CVCS). The inspector concluded that having the power removed from the valves listed in ECNL6258 did not affect system normal operation, safeguards equipment operation or containment isolation requirements.

Within the areas inspected no violations or deviations were identified.

6. Compliance With 10 CFR 50, Appendix R, Section III.0, Oil Collection System

Section III.0 requires the reactor coolant pumps to be equipped with an oil collection system if the containment is not inerted during normal operations. The system is required to be designed, engineered and installed such that failure will not lead to fire during normal or design basis accident conditions, and that the system will withstand the safe shutdown earthquake. All leakage from potential pressurized and unpressurized leakage sites is to be collected and drained to a vented closed container that can hold the entire lube oil system inventory. The drain pipe is required to be sized to accommodate the largest potential oil leak. The tank vent requires a flame arrestor if the flash-point characteristics of the oil presents the hazard of fire flash-back.

A visual inspection of the Sequoyah reactor coolant pump oil collection systems was not made during this inspection since both units were operating. However, a review was made of construction drawing Nos. 47W476 Series, 47W851-1 and 48W991 Series to evaluate the design of the system. The oil collection systems consist of a series of baffles or shields arranged to deflect any oil leaks from the lubricating systems into an open collection basin beneath each reactor coolant pump motor. From each basin, a drainage pipe is provided which terminates into the auxiliary reactor building floor and equipment drain sump. The lubricating system for each pump consists of

240 gallons of oil in the upper bearing system and 26 gallons of oil in the lower bearing system with a total lubricating oil inventory of 864 gallons per containment. The drain sump has a total capacity of 200 gallons. Additional capacity for approximately 140 gallons of oil is available in the drainage piping. In the event the sump is full of water, the excess oil will overflow to the containment floor. The drain piping from the collection basin to the sump is designed such that this piping will not fail during a safe shutdown earthquake and damage nuclear safety-related equipment, but is not designed to maintain its pressure boundary integrity after the event. However, the pump motor and lubricating system are seismically qualified.

The oil collection systems do not meet the above NRC requirements in that the drain piping systems are not designed to function following a safe shutdown earthquake and the drainage tank is of inadequate size to hold the entire lube oil system inventory. The item is identified as Violation Item (50-327, 328/85-01-04) Oil collection system for reactor coolant pumps does not meet Appendix R, Section III.0 requirements. Following issuance of the NRC Region II, August 10, 1984, Confirmation of Action Letter, TVA identified this discrepancy and requested by letter dated December 18, 1984, that NRC approve this deviation from the NRC requirements.

The drain piping and sump are of sufficient capacity to hold the oil from one reactor coolant pump if the sump is not more than one-half full. Therefore, TVA has revised procedure SOI-55-IMS, Annunciator Response, to require the operator to verify that the auxiliary sump is maintained at less than 45% full in the event of a high or low level alarm in either of the upper or lower bearing oil reservoir for each reactor coolant pump. This appears an adequate interim measure pending final resolution of this discrepancy.

7. Compliance With 10 CFR 50, Appendix J, Emergency Lighting

Section III.J, requires emergency lighting units with at least an 8-hour battery power supply to be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

The existing lighting units provided at Sequoyah have a battery-power supply rating of approximately 3 3/4 hours. TVA identified a total of approximately 76 battery-powered light units installed within safe shutdown plant areas and a need for approximately 150 units. The inadequate number of lighting units provided and the deficient battery-power supply of the units installed are identified as Violation Item (50-327, 328/85-01-05), Emergency lighting units do not meet Appendix R, Section III.J requirements.

TVA Fire Protection Review of October 23, 1979, Item 6 and Appendix R review of October 1, 1981, Item B, state that fixed self-contained lighting units with 8-hour battery packs are provided in all areas that must be manned for safe shutdown operations and for access and egress to and from all fire areas in safety-related structures. These were erroneous statements.

The emergency lighting units are inspected quarterly by Maintenance Instruction 10.11, Checking and Testing of Battery Pack Emergency Lighting. This maintenance instruction was written for wet-cell type batteries whereas dry-cell type batteries are actually installed. The inspector suggested that the procedure be revised to conform to the battery units actually installed. This will be reviewed following the installation of the new battery powered units.

8. TVA Identified Deviations From 10 CFR 50 Appendix R

Following the August 10, 1984, Confirmation of Action Letter from NRC Region II to TVA concerning the Appendix R evaluation of Sequoyah, TVA conducted a detailed review of Sequoyah and identified a number of Appendix R deviations. Nineteen of these items were reported to the NRC by letters dated December 18, 1984, and January 11, 1985, and requested that these deviations be approved. This item is identified as Unresolved Item (50-327, 328/85-01-06), Review resolution to TVA identified Appendix R deviations, pending review by NRR.

9. Fire Pumps

Four 1500 gpm electric-driven pumps provide water for fire protection and the raw service water system. Two pumps are Train A pumps and the remaining two are Train B pumps. In the Train B 6.9KV board room on the 734' elevation of the auxiliary building, TVA has identified an area in which a fire could damage the power supply for three of the four pumps. The one remaining fire pump would not meet the normal service water demand plus the fire flow required for this area. To correct this problem, Procedure A01-31, Plant Fires, was revised during this inspection to reduce the non-safety-related demands on the system by eliminating the service water to the office building chillers, makeup water treatment plant and radio chemistry laboratory condensing unit.

Although the design of the fire and raw service water system contemplated that the pumps would be operated in a train mode, i.e., one A and one B pump, present operating procedures and the Technical Specification do not stipulate this requirement, and only require that any two pumps be available for service. The power/control circuits to either the two A or two B pumps are not provided with complete separation throughout the plant complex to assure that at least one pump will be available in the event of a fire or other emergency with the two opposite train pumps out of service. The inspector suggested that the operating procedures be revised to clearly specify that one A train and one B train pump be aligned to the fire protection system at all times. This is identified as Inspector Followup Item (50-327, 328/85-01-07), Fire Protection and Raw Service Water Pumps are not operated as a Train A-B System.

10. Plant Fire Protection Features

During a plant tour, an inspection was made to determine if the circuits identified in the October 23, 1979, Sequoyah Units 1 and 2 Fire Protection Review were properly protected by fire-rated barrier enclosures. The inspector noted that the "KAOWOOL" 1/2 hour fire barrier material was either missing or damaged on conduits 2 PM1001 I, 2PM2114 II and 2PM2084 I. These conduits contained cabling associated with pressurizer pressure and level indication. The failure to maintain the fire barrier material on these circuits is identified as Violation Item (50-327, 328/85-01-09), Failure to maintain fire barriers for three conduits in the auxiliary building. In addition, it was determined that the cable fire barrier assemblies were not included in the fire barrier surveillance program as required by plant Technical Specification, Section 6.8.1.f. This is identified as Violation Item (50-327, 328/85-01-08), Failure to include cable fire barrier assemblies in a surveillance or maintenance inspection program.