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

Report Nos.: 50-424/88-49 and 50-425/88-59

Licensee: Georgia Power Company
P. O. Box 4545
Atlanta, GA 30302

Docket Nos.: 50-424 and 50-425 License Nos.: NPF-68 and CPPR-109

Facility Name: Vogtle 1 and 2

Inspection Conducted: October 17-20, 1988

Inspector: G. Wiseman, Team Leader — Date Signed: 11/21/88

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SUMMARY

Scope: This routine, special inspection was conducted in the areas of fire protection and the licensee's actions regarding the implementation of the plant safe shutdown guidance provided in Standard Review Plan 9.5-1, positions C.5.b. and C.5.c and C.5.a. This inspection covered four major areas as they relate to fire protection and safe shutdown capability as denoted in NRC Manual Chapter Procedure 64100 including separation and protection of redundant cabling, equipment, and/or components required to achieve or maintain hot standby conditions; associated circuits of concern; emergency lighting and communications; and alternate shutdown procedures for a major control room fire. The review of the licensee's commitments associated with the reactor coolant pump oil collection system for Unit 2 was previously addressed in NRC Report No. 50-425/88-32.

Results: In the areas inspected, violations or deviations were not identified. Strengths and weaknesses are summarized below:

Strengths

- With few exceptions, the licensee provided timely responses to NRC requests for information and our questions during the site audit.

- Management was aware of the importance of fire protection and took steps to see that the NRC review and site audit went well, including making design Architect Engineering (A/E) representatives available as needed.

Weaknesses

The inspectors did not identify any significant programmatic weaknesses. However, the licensee staff is presently evaluating and developing justification for their position that embedded conduits provide three-hour fire barrier separation for safe shutdown cables, identified as an Unresolved Item in this report. There is potential that this review could identify a significant weakness affecting both Units 1 and 2. This will be followed up on in future NRC inspections.

One Unresolved Item was identified, Justification of Embedded Conduit for Safe Shutdown Cable Separation, Paragraph 2.a.(2).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*J. Bailey, Manager of Licensing/SCS
*E. Groover, QA Site Manager - Construction/GPC
*C. Hayes, Vogtle QA Manager/GPC
*G. Lee, Operations Supervisor/GPC
*J. Maddry, Unit 2 Fire Protection Manager/SCS
*R. Pinson, Vice President/GPC
*K. Pointer, Senior Plant Engineer/GPC
P. Rice, Vice President and Project Director/GPC
*R. Sprankle, Senior Engineer Nuclear Operations/GPC
*H. Varnadoe, Plant Engineer Supervisor/GPC

Other licensee employees contacted during this inspection included craftsmen, engineers, operators, mechanics, security force members, technicians, and administrative personnel.

Bechtel Power Company

*J. Foley
*C. Foster
*S. Gasperin
*J. Holmes
*S. Kotelsen
*E. Lamer
*M. Larson
*J. Reed

NRC Resident Inspectors

*C. Burger
*R. Schepens

*Attended exit interview

2. Compliance with NUREG 0800, Standard Review Plan 9.5.1, Positions C.5.b, Fire Protection of Safe Shutdown Capability and C.5.c, Alternative Shutdown Capability.

An inspection was conducted to determine if the proposed fire protection features for structures, systems and components important to safe shutdown at the Vogtle Unit 2 facility will be in compliance with Standard Review Plan (SRP) 9.5.1, positions C.5.b and C.5.c. The scope of this inspection determined if the proposed fire protection features as described in the

licensee's Fire Hazards Analysis (Section 9.5.1 of the Vogtle FSAR) which will be provided for reactor coolant system inventory control, steam generator inventory control, and reactor coolant system pressure control would be capable of limiting potential fire damage so that one train of these systems essential to achieving and maintaining hot standby from either the control room or emergency control stations are free from fire damage.

On the basis of the above licensee documents, licensee commitments and the SRP 9.5.1 criteria, the inspectors verified the separation provided for redundant safe shutdown components associated with satisfying the above performance goals was adequate within the fire area described in this report.

Conclusion

The safe shutdown components, both redundant functions and trains, which were reviewed, during this inspection will, upon completion of the fire protection systems and features and resolution of the Unresolved Item identified in Paragraph 2.a.(2), meet one of the following classifications:

- safe shutdown trains (equipment, components and cabling) are to be located in separate fire areas that will be separated from each other by three-hour fire rated construction;

- redundant shutdown trains will be located in the same fire area but will be separated by more than 20 feet with no intervening combustibles and with an automatic fire suppression system and smoke detection system provided in the fire area;

- cabling for both redundant safe shutdown trains are to be located in the same fire area and one of the cable raceways for one train will be enclosed within a three-hour fire rated barrier; and

- safe shutdown trains within containment will be separated from each other by either three-hour fire rated construction, noncombustible radiant energy shield, or by a horizontal distance of more than 20 feet with no intervening combustibles (FSAR contains a deviation for intervening combustibles).

a. Fire Protection of Safe Shutdown Systems/Components

Vogtle Unit 2, upon completion of construction will be divided into approximately 89 separate Unit 2 fire areas. An inspection was made of a sample of these fire areas to determine if redundant cabling, equipment, and/or components required to achieve or maintain hot standby and cold shutdown conditions are going to be provided with adequate separation and/or protection in accordance with SRP 9.5.1 position C.5.b.

Included in the review was an evaluation of the acceptability of the barrier or enclosure construction configuration as a fire rated barrier as used in the plant. Also, the review verified the adequacy of the penetration sealing systems, and fire dampers/fire doors with respect to installation and completeness, physical condition, and fire test documentation.

Within the following fire areas, the cable routing for redundant safe shutdown and the fire protection features afforded were reviewed:

(1) 2-AB-LD-A - Auxiliary Building (Fire Zones 9 and 11B), Levels D, C, B, A, 1 and 2.

The licensee's safe shutdown analysis for Fire Area 2-AB-LD-A demonstrates that for a fire in this area shutdown Train A will be available. The fire barriers which make up the fire area boundary are three-hour rated except the south wall adjoining the stairwell which is two-hour rated and exterior walls which are not rated. Penetrations through rated fire barriers will be sealed with penetrations seals, fire doors and fire dampers equivalent in fire rating to the barrier in which they are installed or a deviation has been identified in the VEGP FSAR. The fire area is provided with automatic preaction sprinkler system protection which provides total zone coverage to Fire Zone 9 and partial zone coverage to Fire Zone 11B. Fire detection is provided throughout the fire area. Fire hose stations are available for manual firefighting activities within the fire area.

The licensee's analysis identifies a number of Train A shutdown cables and N-Train cables which are routed through the area. The majority of these cables have been identified as only having spurious actuation concerns for which the licensee has identified some mitigating action or the cables are associated with equipment for which an alternate Train-A piece of equipment capable of fulfilling the same safe shutdown function is available outside the fire area. However, the licensee's analysis does identify three Train A shutdown cables associated with equipment which is required to be operable for a fire in this fire area.

An inspection was made to verify the routing of the cables associated with these three pieces of equipment:

Equipment	Cable/Raceway	Raceway Fire Zone Location
PT-0935, Containment Pressure Transmitter	23CQPS3XY/ 2CE442RX294	11B

Equipment (cont'd)	Cable/Raceway	Raceway Fire Zone Location
2PT-0408, RHR Valve Pressure Interlock	23CQPS3YY/ 2CE442RX294	11B
PT-11741, NSCW Pumps Discharge Pressure	23RV288XA/ 2CE442RX294	11B

All of these Train A shutdown cables are routed in conduit 2CE442RX294 which the licensee has proposed to enclose in a three-hour rated fire barrier. The fire barrier is a preformed conduit wrap design by TSI utilizing Thermo-lag 330 fire barrier material. The barrier design is the same as that used in Unit 1 to protect conduits containing safe shutdown related cables. This design was reviewed during the Unit 1 compliance inspection.

The fire barrier had not been installed on conduit 2CE442RX294 at the time of the inspection. The inspectors were told by the licensee that none of the Unit 2 raceway fire barriers or radiant energy shields required to comply with SRP Section 9.5.1 Position C.5.b separation requirements had been installed. This is identified as Inspector Followup Item 50-425/88-59-01, Review Three-Hour Raceway Fire Barrier and Radiant Energy Shield Installations.

Based on the review of the licensee's safe shutdown analysis and the routings of the above sampled safe shutdown related cables, it appears that, upon completion of the fire protection features for this plant area, the level of fire protection in fire area 2-AB-LD-A should maintain one train of system necessary to achieve and maintain hot standby free from fire damage.

(2) 2-AB-LD-B - Auxiliary Building (Fire Zones 13, 24, 25, 38, 40, 41, 41, 102) Levels D, C, B, A, and 1.

The licensee's safe shutdown analysis for Fire Area 2-AB-LD-B demonstrates that for a fire in rooms D11 of Fire Zone 13, C21 of Fire Zone 24, or C29 Fire Zone 40 shutdown Train A will be available. In all other zones within this fire area shutdown Train B is available. The fire barriers which makeup the fire area boundary are three-hour rated except the wall adjoining stairwell 2 which is two-hour rated and exterior walls which are not rated. Penetrations through rated fire barriers will be sealed with penetration seals, fire doors and fire dampers equivalent in fire rating to the barrier in which they are installed or a deviation has been identified in the VEGP FSAR.

The fire area is provided with automatic preaction sprinkler system protection which provides partial zone coverage to Fire Zones 13, 38 and 46 and total zone coverage to Fire Zone 25. The remaining Fire Zones, 24, 40, 41 and 192, are not provided with sprinkler protection. Fire detection is provided in all fire zones, except zones 41 and 192. Fire hose stations are available for manual firefighting activities within the fire area.

The licensees analysis for this fire area identifies a number of special operational considerations which are required due to the presence of both Train A and Train B shutdown equipment and cables within this fire area. These special considerations are discussed below:

- Redundant safe shutdown equipment PT-11741, Train A Nuclear Service Cooling Water (NSCW) cooling tower bypass interlock pressure transmitter, and PT-11742, Train B NSCW cooling tower bypass interlock pressure transmitter, have their associated instrumentation cables routed in this fire area. PT-11742 is located in room D11 of Fire Zone 13. One of these transmitters is required to remain operable for a fire in this fire area. The licensee's analysis credits spacial separation for providing the separation required by SRP Section 9.5-1 Position C.5.b. The C and D levels of Fire Area 2-AB-LD-B contain both Train A and Train B shutdown cables associated with the transmitters. On these levels, PT-11742 and its associated cables are separated by at least 70 feet horizontally from any Train B shutdown cables. Intervening combustibles in the form of non safety-related cables traverse this separation area and full area suppression is not provided. This configuration has been identified as a deviation from the requirements of SRP Section 9.5-1 Position C.5.b. in the VEGP FSAR. This deviation will be reviewed by NRR as part of the Safety Evaluation (SE) being prepared as part of Unit 2 licensing. The B level of the fire area contains only the cables associated with PT-11742.

  The inspectors reviewed the cable routings for the transmitters to verify the separation described in the licensee's analysis:

Equipment	Cable/Raceway	Raceway Fire Zone Location
PT-11741 (Train A)	24RV280XA/ 2CE442RX294	24
PT-11742 (Train B)	24RV280XB/ 2DE441RX001,	13, 24, 40
	2DE443KXJ01	40
	2DE443RX001	40

This inspection verified the separation described in the licensee's analysis. However, during this inspection it was noted that the cables for PT-11742 are run in an embedded conduit (2DE441RX001) in the wall separating Fire Area 2-AB-LD-A and 2-AB-LD-B. Pull box 2DE443KXJ01 is exposed on the Fire Area 2-AB-LD-B side of this wall and the licensee has proposed to protect the cables for PT-11742 in the box with a three hour rated barrier. The separation of the cables in the embedded conduit from the remainder of Fire Area 2-AB-LD-B is based on the licensee's position that a three-hour fire barrier is provided. The inspectors requested the licensee provide the basis for this position and documentation that verified that the depth of the conduit as embedded constitutes a three-hour fire barrier. The licensee was unable to provide any documentation to support their position on embedded conduits. Therefore, this item was identified as Unresolved Items 50-424/88-49-01 and 50-425/88-59-02, Justification of Embedded Conduit for Safe Shutdown Cable Separation. This is identified as an unresolved item for Unit 1 as well, since the same position was taken in preparing the Unit 1 safe shutdown analysis.

- The licensee's analysis shows that damage to Train B shutdown cables associated with the RHR pump 2-1555-A7-008-M1 room cooler motor and RHR room cooler temperature interlocks is possible. However, the licensee has identified a special operational consideration to start the room cooler from the remote shutdown panel. The transfer switch at the shutdown panel will effectively isolate the circuits subject to fire damage from the circuits required for fan operation.

- The cables for both Boric Acid Transfer Pumps discharge valves and the level transmitters for the Boric Acid Storage Tank could be damaged due to a fire in this area. However, the licensee's analysis provides for a redundant means of reactivity control by using the Refueling Water Storage Tank (RWST) and RCS letdown to achieve RCS boration.

  The inspectors verified that the cables associated with the outlet valves from the RWST, LV-112D and LV-112E, are not routed through Fire Area 2-AB-LD-B. The cable routings for these valves are described in Paragraph 2.a.(3).

- The cables associated with RHR Pump 2 Miniflow valve 2[illegible]-0611 (Train B) are also routed in this fire area. To mitigate the consequences of damage to these cables the licensee has identified manual operator actions to realign the valve in its correct position after tripping it's power supply.

The licensee's analysis also identified a number of Train B shutdown cables and equipment and N-Train cables which are in Fire Area 2-AB-LD-B. Damage to these cables and equipment is identified as having only spurious actuation concerns for which the licensee has identified some mitigating action.

Based on the review of the licensee's safe shutdown analysis and the routings of the above sampled safe shutdown related cables, it appears that, upon completion of the fire protection features and the resolution of the unresolved item for this plant area, the level of protection in Fire Area 2-AB-LD-B should maintain one train of systems necessary to achieve and maintain hot standby free from fire damage.

(3) 2-AB-LD-G - Auxiliary Building (Fire Zones 3, 5, 14A, 14B, 14C, 14D, 21, 22, 26A, 30, 32, 36, 48, 49 and 54), Levels D, C, B, A, 1 and 2.

The licensee's safe shutdown analysis for Fire Area 2-AB-LD-G demonstrates that for a fire in Fire Zone 14C shutdown Train A will be available and for a fire in any other zone within the fire area shutdown Train B will be available. The fire barriers which makeup the fire area boundary are three-hour rated except the walls separating the fire area from stairwell 4 and elevator 2 which are two-hour rated and exterior walls which are not rated. In addition, the floor of Fire Zone 14C and the wall separating Fire Zone 14C from Fire Zone 14D are three-hour fire rated. Penetrations through rated fire barriers will be sealed with penetrations seals, fire doors and fire dampers equivalent in fire rating to the barrier in which they are installed or a deviation has been identified in the VEGP FSAR. The fire area is provided with automatic preaction sprinkler system protection which provides partial zone coverage to Fire Zones 3, 21, 26A, 32, 48, 49 and 54 and total zone coverage to Fire Zones, 5, 14C, 14D, 30 and 36. The remaining fire zones, 14A and 14B, are not provided with sprinkler protection. Fire detection is provided throughout the fire area. Fire hose stations are available for manual firefighting activities within the fire area.

The licensee's analysis credits spacial separation for providing the separation of Fire Zone 14C from the remainder of the fire area. Fire Zone 14C is physically separated from all other fire zones within the fire area by three-hour rated fire barriers; however, a rated fire barrier is not provided between Fire Zones 14A and 14C. Since the fire area is not provided with full area suppression it does not meet the requirements of SRP Section 9.5-1 Position C.5.b for spacial separation. The licensee has identified this as a deviation from the SRP in the VEGP FSAR. This deviation will be reviewed by NRR during the preparation of the SE for Unit 2 licensing. The remainder of the fire area contains both Train A and Train B shutdown equipment and cables.

In addition, a number of N-Train cables are also routed in the fire area outside Fire Zone 14C. The majority of the Train B cables and all of the N-Train cables have been identified as only having spurious actuation concerns for which the licensee has identified some mitigating action. A number of the Train B shutdown cables are Train A shutdown related and have no Train B shutdown impact. Finally, several Train B shutdown cables associated with the level transmitter (LT-0104) for the Boric Acid Storage Tank (BAST) and Boric Acid Transfer Pump (2-1208-P6-007) are subject to fire damage due to a fire outside zone 14C. To mitigate the consequences of fire damage to this Train B shutdown equipment and cables the licensee's analysis identifies a special operational consideration for a fire outside zone 14C which may require the use of the RWST and RCS letdown to achieve RCS boration.

An inspection was made to verify that the following safe shutdown related cables would be protected in accordance with SRP 9.5-1 Position C.5.b.

Equipment	Cable/Raceway	Raceway Fire Zone Location(s)
Train A/Charging Pump Power Cable 2-1208-P6-002	2AA0213EA/ 2AE452TEAB, 2AE452TEAH, 2AE452TEAK	22 and 14D
Train B/Charging Pump Power Cable 2-1208-P6-003	2BA0313EA/ 2BE452TGCR	14C
Train A/RWST Outlet Valve LV-112D	2ABD08LA/ 2AE452TLZF, 2AE452TLAE, 2AE452TLAD, 2AE452TLAC, 2AE452TLAH, 2AE452TLAJ, 2AE452TLAK, 2AE452RL006, 2ARJB3691	22 and 14D
	2ABD08LB/ 2AE452RL466	14D
Train B/RWST Outlet Valve LV-112E	2BBD08LA/ 2BE452TLCR, 2BE452TLCS, 2BE452RL002	14C

Based on the review of the licensee's safe shutdown analysis and the routings of the above sampled safe shutdown related cables, it appears that, upon completion of the fire protection features for this plant area, the level of fire protection should maintain one train of system necessary to achieve and maintain hot standby free from fire damage.

(4) 2-CB-LC-B - Control Building (Fire Zone 80) Levels, B, A, 1, 2, 3.

The licensee's safe shutdown analysis for Fire Area 2-CB-LC-B demonstrates that for a fire in this area shutdown Train B will be available. The fire barriers which makeup for fire area boundary are three-hour rated except the north wall on Level B which adjoins Elevator 1 and exterior walls which are not rated. Penetrations through rated fire barriers will be sealed with penetration seals fire doors and fire dampers equivalent in fire rating to the barrier in which they are installed or a deviation has been identified in the VEGP FSAR. The fire area is provided with automatic preaction sprinkler system protection which provides partial coverage to Fire Zone 80. Fire hose stations are available for manual firefighting activities within the fire area.

A review of the licensee's safe shutdown analysis for this fire area found that fire damage to the Train B CBSF battery room exhaust fans and their associated discharge dampers may require the use of portable ventilation equipment to dilute hydrogen buildup in the Train B battery room. The licensee justification for allowing fire damage to this equipment is that portable ventilation will not be required for at least 48 hours. The licensee's analysis also identifies a number of Train B shutdown cables and N-Train cables which are located in this fire area. A number of these Train B shutdown cables and all of the N-Train cables are identified as having spurious operations concerns only. To mitigate the consequences of these spurious signals the licensee has identified a number of manual actions. However, the licensee's analysis does identify a number of the Train B shutdown cable associated with safe shutdown equipment which is required to remain operable for a fire in this area. The licensee has proposed to protect these cables with a three hour rated raceway fire barrier in this fire area. The licensee identified the following Train B shutdown raceways which are required to be protected.

2BE350TLAM	2DE350TXAH
2BE350RS136	2DE350TQAG
2BE350RS323	2DE350RQ210
2BE350RS077	2DE350RX142
2BE350RX286	2DE350RX145
2BE350RR218	2DE350RQ127

An inspection was made of the routing of the following Train B shutdown cables to verify they are routed in the raceways identified by the licensee:

Equipment	Cable/Raceway	Raceway Fire Zone Location
Diesel Generator 2B Gen Contral Panel	2BD1106LA/ 2BE350TLAM	80
Battery Charger 2BD1CA	2BBA04LA/ 2BE350TLAM	80
PT-11742 NSCW Pumps Discharge Pressure Train B	24RV289XA/ 2DE350RX142 2DE350OTXAH	80

In addition, each Train B raceway identified by the licensee as requiring three-hour fire barrier protection was inspected to verify that the safe shutdown related cables would be protected in accordance with SRP Section 9.5-1 Position C.5.b. This inspection found that if the fire barrier is applied to the raceways identified by the licensee the cables in these raceways will be adequately separated from the remainder of the fire area.

The raceway fire barrier had not been installed at the time of this inspection; however, the design of these barriers is the same as that utilized in Unit 1. This design was reviewed during the Unit 1 compliance inspection. The installation of the raceway fire barriers will be reviewed during a future inspection. This is another example of Inspector Followup Item 50-425/88-59-01.

Based on the review of the licensee's safe shutdown analysis and the routings of the above sampled safe shutdown related cables, it appears that, upon completion of the fire protection features for this plant area, the level of fire protection in Fire Area 2-CB-LC-B should maintain one train of systems necessary to achieve and maintain hot standby free from fire damage.

(5) 2-CB-LB-A - Control Building (Fire Zones 59, 69, 72, 93, 143) Level B

The licensee's safe shutdown analysis for Fire Area 2-CB-LB-A demonstrates that for a fire in this area shutdown Train B will be available. The fire barriers which make up the fire area boundary are three-hour rated except the walls adjoining

stairwell 4 and Elevator 1 which are two-hour rated and exterior walls which are not rated. Penetrations through rated fire barriers will be sealed with penetration seals, fire doors and fire dampers equivalent in fire rating to the barrier in which they are installed or a deviation has been identified in the VEGP FSAR. The fire area is provided with automatic preaction sprinkler system protection which provides partial coverage to zones 72, 73 and 143. The remaining fire zones, 59 and 69, are not provided with sprinkler protection. Fire detection is provided throughout the fire area. Fire hose stations are available for manual fire fighting activities within the fire area.

The licensee's analysis identified a number of Train B shutdown cables associated with the Reactor Trip Switchgear (2-1606-S6-002) which is routed through Fire Zone 69. To mitigate the consequences of damage to these cables the licensee has identified a special operational consideration whereby reactor trip may need to be ensured by tripping breaker at 480V switchgear 2NB08 and breaker at 480V switchgear 2NB09. This action will ensure reactor trip by de-energizing the rod drive motor generator sets.

An inspection was made to verify the separation of circuits associated with Train A battery chargers 2AD1CA and 2AD1CB and Train B battery chargers 2BD1CA and 2BD1CB. Only cables associated with battery charger 2AD1CB are routed through Fire Area 2-CR-LB-A as noted below:

Equipment	Cable/Raceway	Raceway Fire Zone Location
2AD1CB Battery Charger Train A	2ABE38LA/	
	2AE371TMAK,	73
	2AE371TMAC,	73
	2AE371TMAA	73
	2AE340TMAK	73
	2AE340TMAJ	73
	2AE340TMAG	73

Based on the review of the licensee's safe shutdown analysis and the routings of the above sampled safe shutdown cables, it appears that, upon completion of the fire protection features for this plant fire area, the level of fire protection in Fire Area 2-CB-LB-A should maintain one train of systems necessary to achieve and maintain hot standby free from fire damage.

(6) 2-CB-LB-D - Control Building (Fire Zones 60, 62, 65, 66, 67, 68, 70, 144) Level B

The licensee's safe shutdown analysis for Fire Area 2-CB-LB-D demonstrates that for a fire in this area shutdown Train A will be available. The fire barriers which make up the fire area boundary are three-hour rated except the wall separating the fire area from the containment building and exterior walls which are not rated. Penetrations through rated fire barriers will be sealed with penetration seals, fire doors and fire dampers equivalent in fire rating to the barrier in which they are installed. The fire area is provided with automatic preaction sprinkler system protection which provides partial zone coverage to Fire Zone 144 and total zone coverage to Fire Zones 60, 62, 65, 66, and 67. The remaining fire zones, 68 and 70, are not provided with sprinkler protection. Fire hose stations are available for manual firefighting activities within the fire area.

The licensee's analysis shows that both Train A and Train B shutdown cables as well as N-Train cables are routed through this fire area. A number of the Train A shutdown cables and all of the N-Train cables have been identified as only having spurious actuation concerns for which the licensee has identified some mitigating action. Three Train A shutdown cables associated with Steam Generator Loop 4 Wide Range Level Instrumentation (2LT-0504) and RHR Loop 1 Inlet Isolation Valve 2HV-8701B which are required to be operable for a fire in this area are also routed in this fire area. These cables are routed in conduits embedded in the floor of fire zones 65, 66 and 67. The licensee's analysis includes the assumption that embedded conduits are provided with adequate separation from the remainder of the fire area; however, the licensee does not have an evaluation to support this assumption. This is another example of Unresolved Item 50-424/88-49-01 and 50-425/88-59-02. Four pull boxes associated with these embedded conduits are exposed in the fire area. The licensee has proposed to provide a three hour fire barrier to separate the following pull boxes from the remainder of the fire area:

2CE340KXH02	2CE361KXH01
2CE340KPH02	2CE361KPH01

As part of their safe shutdown cable separation review, the inspectors selected cables associated with the Diesel General 2A and 2B Control Panels for inspection. The separation of these cables was verified to meet the separation requirements of SRP 9.5-1 Position C.5.b through field walkdown of the cable routings. The cable for the 2A Diesel Generator Control Panel is not routed in Fire Area 2-CB-LB-D. The cable for the Diesel Generator 2B Control Panel are routed through

Fire Area 2-CB-LB-D in the following raceways:

Equipment	Cable/Raceway	Fire Zone Location
Diesel Generator 2B Control Panel	2BD1106LA/	
	2BE350TMAK	62
	2BE350TMAL	67
	2BE340TMAF	67
	2BE340TMAH	67
	2BE340TMAJ	67
	2BE361TMAB	67
	2BE361TMAF	67,66
	2BE361TMAE	66
	2BE361TMAD	66
	8C3RLD65	66, 65, 144
	8C3TLAB	144

Based on the review of the licensee's analysis and the routings of the above sampled safe shutdown related cables, it appears that, upon completion of the fire protection features for this plant area and the resolution of the Unresolved Item identified, the level of fire protection if Fire Area 2-CB-LB-D should maintain one train of systems necessary to achieve and maintain hot standby free from fire damage.

(7) 2-CB-LA-A - Control Building (Fire Zone 101), Level A

The licensee's safe shutdown analysis for Fire Area 2-CB-LA-A demonstrates that for a fire in this area shutdown Train A will be available. The fire barriers which make up the fire area boundary are three-hour rated except the exterior ceiling which is not rated. Penetrations through rated fire barriers will be sealed with penetration seals, fire doors and fire dampers equivalent in fire rating to the fire barrier in which they are installed. The fire area is provided with automatic preaction sprinkler system protection which provides partial coverage to the area. Fire detection is provided throughout the fire area. Fire hose stations are available for manual firefighting activities within the fire area.

The licensee's analysis identifies a number of Train A shutdown cables and Train A Steam Generator Pressure Transmitters which are located in this area. The cables associated with these pressure transmitters and fire damage to these transmitters is identified as only having spurious operations concerns for which the licensee has identified mitigating actions. The remaining Train A shutdown cables are associated with the Main Feedwater Isolation Bypass Valves, 2HY-15197A and 2HY-15198, and Steam Generator 2 and 3 Feedwater Isolation Valves, 2HY-5228 A, B, C, D and 2HY-5229 A, B, C, D. Damage to these cables may result in

the need to accomplish main feedwater isolation by using Train B shutdown circuits which would not be damaged by a fire in this area. The licensee has identified the use of these Train B shutdown circuits as a special operational consideration for a fire in this Train A shutdown fire area. The inspectors verified that these Train B shutdown circuits are not routed through Fire Area 2-CB-LA-A.

Based on this review it appears that upon completion of the fire protection features for this plant area, the level of fire protection in Fire Area 2-CB-LB-D should maintain one train of systems necessary to achieve and maintain hot standby free from fire damage.

(8) 2-CB-LA-K - Control Building (Fire Zone 95 and 169) Level A

The licensee's safe shutdown analysis for Fire Area 2-CB-LA-K demonstrates that for a fire in this area shutdown Train B will be available. The fire barriers which make up the fire area boundary are three-hour rated. Penetrations through rated fire barriers will be sealed with penetration seals, fire doors and fire dampers equivalent in fire rating to the fire barrier in which they are installed. The fire area is provided with automatic preaction sprinkler system protection which provides partial zone coverage to Fire Zone 95. Fire Zone 169 is not provided with sprinkler protection. Fire detection is provided throughout the fire area. Fire hose stations are available for manual firefighting activities within the fire area.

The licensees analysis identifies a number of N-Train cables routed through this area. All of these N-Train cables are identified as being Train A related and have no impact on Train B safe shutdown or the cables have spurious actuation concerns only. The licensee has identified mitigating actions for each of the spurious actuation concerns. In addition, the analysis identified a Train B shutdown cable associated with Control Room Emergency Lighting routed through the fire area. The emergency lighting is required to be operable for a fire in this area.

An inspection was made to verify the routing of the Train B shutdown cable associated with the Control Room Emergency Lighting. Within Fire Area 2-CB-LA-K this cable is routed in the following raceway:

Equipment	Cable/Raceway	Raceway Fire Zone Location
Control Room Emergency Lighting Power Feeder	2BB 23LA/ 2BE352RL369	169

The licensee's analysis identifies 2BE352RL369 as required to be protected by a three hour rated raceway fire barrier. The inspectors found that if three hour fire barrier protection is provided for this raceway the Train B shutdown cable will be separated from the remainder of the fire area in accordance with SRP 9.5-1 Position C.5.b.

The raceway fire barrier had not been installed at the time of the inspection; however, the design of these barriers is the same as that utilized in Unit 1. The design was reviewed during the Unit 1 compliance inspection. The installation of the raceway fire barriers will be reviewed during a future inspection. This is another example of Inspector Followup Item 50-425/88-59-01.

Based on the review of the licensee's safe shutdown analysis and the routing of the above sampled safe shutdown related cable, it appears that, upon completion of the fire protection features for this plant area, the level of fire protection in Fire Area 2-CB-LA-K should maintain one train of system's necessary to achieve and maintain hot standby free from fire damage.

(9) 2-CB-LA-M - Control Building (Fire Zone 96) Level A.

The licensee's safe shutdown analysis for Fire Area 2-CB-LA-M demonstrates that for a fire in this area shutdown Train B will be available. The fire barriers which make up the fire area boundary are three-hour rated. Penetrations through rated fire barriers will be sealed with penetration seals, fire doors and fire dampers equivalent in fire rating to the barrier in which they are installed. A Halon 1301 automatic suppression system is installed in the fire area; however, at the time of the inspection this system had failed to satisfactorily pass the preoperational acceptance test. There are three Halon suppression systems in Unit 2 and at the time of this inspection only the system protecting the Train A Shutdown Room (Room 76) had passed the preoperational test. Therefore, this is identified as Inspector Followup Item 50-425/88-59-03, Review of Halon System Discharge Test Data. Fire detection is provided throughout the fire area. Fire hose stations are available for manual firefighting activities within the fire area.

The licensee's analysis identifies a number of N-Train cables routed in the area which are of spurious actuation concern. For each spurious actuation concern the licensee has identified an action to mitigate the concern.

The inspectors verified that no Train B shutdown cables were routed in this fire area by review of the licensee's analysis, plant raceway drawings and by reviewing a sample of the raceways in the area to ensure Train B cables were not routed in the area.

Based on the review of the licensee's safe shutdown analysis and cables in the area, it appears that, upon completion of the fire protection features for this plant area, the level of fire protection in Fire Area 2-CB-LA-M should maintain one train of systems necessary to achieve and maintain hot standby free from fire damage.

(10) 2-CB-LA-X - Control Building (Fire Zone 94) Level A

The licensee's safe shutdown analysis for Fire Area 2-CB-LA-X demonstrates that for a fire in this area shutdown Train B will be available. The fire barriers which makeup the fire area boundary are three-hour rated except the north wall adjoining elevator 1 which is two-hour rated. Penetrations through rated fire barriers will be sealed with penetration seals, fire doors and fire dampers equivalent in fire rating to the barrier in which they are installed. Automatic suppression is not provided in the fire area. Fire detection is provided throughout the fire area. Fire hose stations are available for manual firefighting activities within the fire area.

The licensee's analysis identifies a number of N-Train cables and B-Train shutdown cables which are routed through the area. The N-Train cables have been identified as only having spurious actuation concerns for which the licensee has identified some mitigating action. The Train B shutdown cables are associated with Neutron Flux Detector RE13135B which is required to be operable for a fire in this area.

An inspection was made to verify the routing of the cables associated with this detector. The cables are routed in the following raceways within Fire Area 2-CB-LA-X.

Equipment	Cable/Raceway	Raceway Fire Zone Location
Neutron Flux Detector	22R13135BXG, 22R13135BX4,	94
RE13135B	22R13135BXJ, 22R13135BXK, 22R13135BXL/ 2BE342RX135	

All of these Train B shutdown cables are routed in conduit 2BE342RX135 which the licensee has proposed to enclose in a three-hour rated fire barrier. The inspectors found that if three hour rated fire barrier protection is provided for this raceway, the Train B shutdown cables will be separated from the remainder of the fire area in accordance with SRP 9.5-1 Position C.5.b.

The raceway fire barrier had not been installed at the time of the inspection; however, the design of these barriers is the same as that utilized in Unit 1. The design was reviewed during the Unit 1 compliance inspection. The installation of the raceway fire barrier will be reviewed during a future inspection. This is another example of Inspector Followup Item 50-425/88-59-01.

Based on the review of the licensee's safe shutdown analysis and the routings of the above sampled safe shutdown related cables, it appears that, upon completion of the fire protection features for this plant area, the level of fire protection in Fire Area 2-CB-LA-X should maintain one train of systems necessary to achieve and maintain hot standby free of fire damage.

During the review of the fire protection features provided in the above fire areas the inspectors noted a discrepancy between section 9.5.1.2.3.2 of the VEGP FSAR and the as-built configuration of the Unit 2 fire detection system. This section of the FSAR states that some detectors have been wired in parallel on detector circuits in such a way that the detectors are not supervised in accordance with National Fire Protection Association (NFPA) code requirements. However, the inspectors found that this design deficiency had been corrected in the Unit 2 fire detection system design. The licensee committed to clarify the statement in the FSAR to state that the code deviation only applied to Unit 1. This is identified as Inspector Followup Item 50-425/88-59-04, FSAR Change to Clarify Statement Regarding Parallel Wiring of Fire Detectors.

3. Associated Circuits of Concern

a. General

An inspection was made of associated circuits as defined in Generic Letter (GL) 81-12 of February 20, 1981, and Supplement to GL-81-12 issued in the Spring of 1982. An analysis of these associated circuits of concern was performed for the Vogtle Electric Generating Plant in accordance with NRC Generic Letter 81-12 and subsequent NRC clarification. Associated circuits of concern are defined as those circuits that have a physical separation less than that required by Standard Review Plan 9.5.1, Position C.5.6, and have one of the following:

(1) A common power source (common bus) with the shutdown equipment and the power source is not electrically protected from the circuit of concern by coordinated breakers, fuses, or similar devices; or

(2) A connection to circuits of equipment where spurious operation (spurious signal) would adversely affect the shutdown capability; or

(3) A common enclosure with the shutdown cables, and

(Type 1) are not electrically protected by circuit breakers, fuses, or similar devices, or

(Type 2) will allow propagation of the fire into the enclosure.

b. Associated Circuits by Common Power Supply (Common Bus)

Circuits and cables associated by common power supply are non-safe shutdown cables where fire-induced failure would cause the loss of a power source (bus, distribution panel, or MCC) that is necessary to support safe shutdown. This problem could exist for power, control, or instrumentation circuits. The problem of associated circuits of concern by common power supply is resolved by ensuring adequate electrical coordination between the safe shutdown power source supply breaker and the component feeder breaker or fuses.

The inspectors reviewed Bechtel Calculation X3CT08, Rev. 5, which includes a coordination study for the safe shutdown buses, and concluded that the concern of associated circuits by common power supply is resolved with the exception of the batteries A, B, C, and D breakers and one Main Control Board Termination Cabinet (2BCPT08).

The breaker coordination curve for the C train battery breaker (2CD01) and the curve for Motor Control Center (MCC) 2C1M feeder breaker (2CD111) overlap between current flows of approximately 1400 to 1800 amps and 8500 to 36000 amps. (Note, the maximum fault current is less than 15000 amps). The AE has proposed to change the long time delay band setting for Breaker (2CD01) from the minimum to the intermediate range and change the short time delay band setting for Breaker 2CD111 from the maximum to the intermediate range. These new settings will provide adequate coordination. A similar condition exists in the D Train batteries between breaker 2DD101 and 2DD108. The changes described for the C train battery Breakers will be made. The coordination curves for the Train A and B feeder breakers (2AD105 and 2BD105) for DC distribution panels 2AD11 and 2BD11 over lap slightly with the largest breaker (125 amp) in each panel. The circuits from these 125 amp breakers are protected such that shutdown separation is accomplished. The adequacy of cable separation from these breakers was verified for each 125 amp breaker load for the various fire zones that the cables transverse. However, good engineering practice indicates that coordination should be improved by adjustment of the long time delay band on the feeder breakers.

An Engineering Action Item No. EAI-B-5167-PK was issued for the above listed battery related breaker adjustments to be reviewed by the licensee's Protective Relaying engineering group.

The followup of these circuit breaker adjustments is identified as an Inspector Followup Item, 50-425/88-59-05, Verify that Corrective Actions for Batteries A, B, C and D Circuit Breakers are Complete.

Review of the coordination curves for the Main Control Board Termination Cabinet 2BCPT08 which is used for safe shutdown (SSD) identified that the feeder breaker to fuse coordination for this panel was accomplished by the use of a particular 3 amp fuse (FNM-3). Other SSD panels contain a 3 amp fuse (FNQ) which is the same physical size supplied by the same vendor and are similar in appearance. The panel 2BCPT08 had the designated FNM-3 type fuses while adjoining panels had both types of fuses installed. Not all circuits from these panels had been energized leaving several fuse holders empty. The inspector expressed a concern that the installation of the fuses having the proper operating characteristics to insure coordination with the panel feeder breaker was being accomplisned. The engineering drawings only identify fuses by size (amperage rating) and not by particular characteristic. The licensee agreed to review this situation and determine what actions have been or need to be taken to insure that the proper type fuses are installed to meet the breaker coordination scheme. This licensee action will be reviewed further and is identified as an Inspector Followup Item (IFI) 50-425/88-59-06, Verify Proper Fuses by Model and Size are Installed in All Panels and Circuits.

c. Associated Circuits Causing Spurious Operation (Spurious Signals)

Circuits associated because of spurious operation are those that can, by fire-included failures cause safe shutdown equipment or non-safe shutdown equipment to maloperate in a way that defeats the function of safe shutdown systems or equipment. Examples include the uncontrolled opening or closing of valves, or of circuit breakers, due to fire-induced damage to non-safe shutdown instrument and control circuits that affect the control circuit interlocks of the safe shutdown components.

The inspectors reviewed plant-specific design features, control circuits, and the licensee's safe shutdown analysis to determine that the concern of possible spurious operations is resolved. Particular attention was given to Hi/Low pressure interface valves that are part of the Residual Heat Removal System and similar systems.

The licensee's A-E has identified the reactor coolant system effluent lines that present High/Low pressure interface concerns. These are listed below.

RCS Effluent Line Description	Line Size	Normally Closed Series Valves	
		Number	Fail Position
(1) Train A RHR pump suction	12"	2	as is
(2) Train B RHR pump suction	12"	2	as is
(3) Train A pressurizer PORV	3"	1	closed
(4) Train B pressurizer PORV	3"	1	closed
(5) Train A RPV head vent path	1"	3	closed
(6) Train B RPV head vent path	1"	3	closed
(7) Normal letdown path	3"	0	------
(8) Excess letdown path	1"	3	closed

The breakers for the RHR pump suction valves are locked in the tripped position with the valves closed during normal operation. In addition, there exists an interlock to preclude the opening of these valves while the RCS pressure is greater that the RHR design pressure.

Since High/Low pressure interface situations require full evaluation for cable to cable hot shorts (Generic Letter 86/10 paragraph 5.3.1) the licensee furnished additional analysis data.

The RHR suction line from Hot Leg 1 to the Train A RHR pump has two motor operated valves (MOV) in series. One is powered from a Train A motor control center (MCC). The other is powered from an inverter supplied C Train MCC and the power cable is installed in single conduit for the entire length from the MCC to the valve. The conduit would preclude a possible phase to phase short that would cause a spurious operation. Likewise the suction line to the Train B RHR pump from Hot Leg 4 contains a B train valve and a D train valve with the D train valve power cables installed in conduit.

The pressurizer PORV for Trains A and B are backed up by fail-as-is MOVs. The PORVs close on loss/removal of power. To meet the intent of G/L 86-10 cable-to-cable hot short scenario, the licensee has identified the cables that carry DC voltage and share cable trays with the PORV DC power cables in the various fire areas. When an abnormal/alarm condition is annunciated on the fire alarm computer. The area in alarm is indicated. The procedure No. 17103-C, Annunciator Response Procedures for Fire Alarm Computer will be used to identify the DC circuit breakers to be opened to prevent spurious operation of the PORVs due to cable to cable hot shorts. This procedure is still being revised/developed and does not list the DC breakers that require operation in the various areas.

The licensee advised that these circuit breakers will be identified and included in the appropriate table in Procedure No. 17103-C. This is identified as an Inspector Followup Item, 50-425/88-59-07, Review Procedure 17103-C to Insure that Additional PORV DC Circuit Breaker Operations are Identified.

Item Nos. 5, 6, and 8 in the above table would be considered small line leaks and an engineering evaluation shows that the safety injection system can adequately provide makeup for losses in the RCS inventory should a valve in a 1" line spuriously open.

Item No. 7 in the above table was evaluated and it was determined that the normal letdown path flow is limited by orifices. Two normally open, fail-closed, air operated valves serve as the containment isolation valves. Two additional, normally open fail-closed, pneumatic operated valves in series with the two containment isolation valves close automatically when low pressurizer level occurs.

The inspector questioned the possibility of a spurious signal causing a run back of a diesel generator speed controller during a fire in the main control room. This question was also posed during an Appendix R inspection of Unit 1. The mechanical run back is set to stop when the frequency falls to 57 Hz. on the Unit 1 diesel generators. However, there was at the time of this inspection no information to indicate that a similar action had been taken for the Unit 2 diesel generator speed controllers. This is identified as an Inspector Identified Item 50-425/88-59-08, Verify That the D/G Frequency Setpoint is Set at 57 Hz.

The licensee's evaluation and findings regarding the effect of spurious closure of the VCT outlet valve (LV-0112B or LV-0112C0) revealed that damage could occur to the centrifugal charging pumps within ten sec. when both pumps are started in the event of LOP. With this concern in mind the licensee had requested to be allowed to realign the centrifugal charging pump suction to the Refueling Water Storage Tank (RWST) before abandoning the main control room. In view of the fact that all licensees are evaluated on the basis of only tripping the reactor prior to control room abandonment, this action was not considered as part of this inspection. Since the question of realigning the centrifugal charging pump prior to abandoning the control room is under review by NRC for Unit 1 and the situation being the same for both Vogtle Units 1 and 2 as well as other Westinghouse PWRs this item is identified as an Unresolved Item 50-425/88-59-09, Review Single Failure Criteria for the VCT Outlet Valves.

d. Associated Circuits by Common Enclosure

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 a "Required Circuit", and, is not adequately protected by circuit breakers, fuses, or similar devices, or could allow fire propagation into the Shared Common Enclosure.

At the Vogtle Electric Generating Plant, the concern was answered satisfactorily when a sample of circuits selected were all found to be electrically protected. Fire stops are designed to be installed whenever a cable penetrates the boundary of a fire area. IEEE383 qualified cable is installed in areas where safe shutdown cables are routed. The inspection of cable separations and fire stops is discussed in the review of fire areas section of this report.

e. Double Fusing for the Alternate Shutdown Panel

IE Information Notice 85-09, "Isolation Transfer Switches and Post-Fire Shutdown Capability" identifies a potential problem concerning fuses in control circuits associated with the alternate shutdown panel. Control circuits for equipment controlled from the alternate shutdown panel typically have wires that inter-connect field devices, devices at the alternate shutdown panel, and devices in the main control room. Even though isolation transfer switches at the alternate shutdown panel will isolate interconnections with the control room, a system of double fusing must be utilized to ensure that a fire in the control room cannot disable control from the alternate shutdown panel. Review of various safe shutdown equipment schematics verified that the double fusing had been designed and reflected in the schematics. During previous inspections the inspectors had visually verified that the additional fuses had been installed in the various required circuits.

4. Compliance with NUREG 0800, SRP 9.5-1, Position C.5.g., Lighting and Communication

a. Emergency Lighting

Emergency lighting units equipped with at least an 8-hour battery power supply are required to be provided in all areas required for operation of safe shutdown equipment and in access and egree routes thereto.

The inspectors reviewed the design and installation of the 8-hour lighting units to be provided for Vogtle Unit 2. The lighting units reviewed are shown on design Lighting and Communications drawings noted as follows: 2X3DH8F4, Reactor Make-Up and Refueling Water Storage Tanks; 2X3DH8C4, Auxiliary Feedwater Pumphouse; 2X3DH8D3, Diesel Generator Building; 2X3DG341 through 2X3DG390, Control Building; 2X3DG441 through 2X3DG460, Auxiliary Building.

Emergency DC lighting is provided in the control room complex and for access and egress routes located on the the exterior of the main plant structures. The lighting from the control room is supplied from the normal plant emergency power supplies. This DC lighting consists of separated and protected redundant lighting circuits powered from the onsite diesel generators. The lighting for the

exterior routes is supplied from the security lighting system. The licensee has identified these deviations and provided justifications to NRC/NRR. These are presently under NRC review and will be addressed in the Unit 2 SER.

The lighting units being installed are two lamp Holophane Models, M-19-2A-X-SE1S-PT, with an emergency load rating of 8-hours at 36 Watts D.C. Lamp size provided is 18 watt PAR 36 sealed beams.

The inspectors performed a walkdown examination of the design and installation of emergency lighting Units for Unit 2 based upon the licensee drawings noted above, the post-fire alternate shutdown procedure utilizing the alternative shutdown system, Abnormal Operating Procedure AOP 18038-2, Operation from Remote Shutdown Panels, Revision 0, and the Bechtel fire event safe shutdown evaluation, Control/Repair Station Listing, Revision 2, dated October 3, 1988. This was to verify that the emergency lighting units were situated such that the steps outlined in the procedure and could be performed by the operator.

As a result of the emergency lighting walkdown, it appears that marginal emergency lighting conditions existed in the following locations:

(1) No 8-hour battery powered lighting unit was provided for the Refueling Water Storage Tank (RWST) level indicator LI-0990C in Room 101 of the RWST Building. The unit indicated on the design drawing would be obstructed and not effectively illuminate the level instrument.

(2) The lighting unit provided for the manual operation of valve HV-3009 located in the Auxiliary Building Room 159 was mounted below and behind the valve's access platform such that this obstruction eliminated its effectiveness to illuminate the required shutdown equipment.

(3) The lighting units provided for the access and egress path to be Remote Shutdown Panel rooms in corridor R-A18 of the control building provide marginal lighting levels for the operator to navigate through the corridor to reach the required rooms.

(4) Procedure 17103-C, Annunciator Response Procedures for Fire Alarm Computer will be used by the licensee to identify specific alternative shutdown operator actions to mitigate the consequences of spurious signals, and/or accomplish safe shutdown manual alignments for fire events outside the Main Control Room. At the time of this inspection, this procedure was still being revised/developed. The final revision may require additional emergency lighting be installed for these identified manual actions which have not been reviewed by the NRC. This will be reviewed during a future NRC inspection.

The licensee stated that these items will be addressed during the future performance of Preoperational Test 2-3QD-01 which includes an operation walk through of all areas to verify safe movement on all operator routes and equipment visibility utilizing emergency lighting. The inspectors' review of Sections 6.11 and 6.14 of the test procedure verified that this statement is accurate.

However, the above items collectively are identified as Inspector Followup Item 425/88-59-10, Review of Identified Marginal Emergency lighting for Safe Shutdown.

The inspectors also expressed concern that VEGP procedure AOP 18038-2 in several places provides for operator actions for local control or verification of plant equipment that is not identified on the safe shutdown station (SSD) equipment list (FSAR Table 9.5-1 or the Bechtel SSD Control Station listing which assures that the listed equipment/station is available for various fire events. The licensee stated that a commitment will be assigned to the alternate shutdown procedures (18038 1/2 and 17103-C to ensure that the operator actions are consistent with the safe shutdown evaluation control station listings such that all documents agree. This is identified as Inspector Followup Item 425/88-59-11), Review of Licensee's Actions for Discrepancies Between AOP Safe Shutdown Controls and Safe Shutdown Station and Equipment Lists. These items will be reviewed during subsequent NRC inspections.

b. Fixed Emergency Communications

Fixed emergency communications systems independent of the normal plant communication system are required to be provided at preselected shutdown control stations.

The licensee has identified the locations within the plant in which a fixed independent communication station is required. These locations as identified by the Fire Event Safe Shutdown Evaluation Control Station Listing, Revision 2, October 3, 1988, include selected rooms containing the remote shutdown panels, diesel generator panels, switchgear and motor control centers, atmospheric relief valve local hand pump stations, pressure gauges, tank level gauges, and manual valves.

A review of the above noted lighting and communication drawings indicated that an independent dedicated sound powered telephone system was to be provided in each of the identified locations. The inspectors noted that this system was provided as an isolation switch in the corridor/lobby outside the control room which isolated the dedicated system from the remainder of the system in the event of a control room fire. During the plant tours, the inspectors verified that the system had been installed for theses areas. The inspectors reviewed Acceptance Test Procedure 2-4QF-02, Section 6.2, In-Plant

Communication System/Sound-Powered Phones. This test procedure should assure that all the sound powered phone stations and the control room isolation switch will be functional if required for service and is to be completed prior to fuel load.

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

5. Alternative Shutdown Capability

Review of Plant Procedures

AOP 18038-2, Revision 1, Operation from Remote Shutdown Panels was issued and approved October 11, 1988, for Unit 2. This procedure provides detailed instructions concerning the evacuation of the main control room due to a major fire and operating selected plant systems and components of the remote shutdown panels. Both train A and B safe shutdown systems and components can be isolated from the main control room either locally or at the shutdown panels. Train B remote shutdown panels and components are the preferred system to use for a control room fire.

Based on the review of the above procedure, the licensee has incorporated systems, components and operator actions to accomplish the performance goals for alternate shutdown identified in BTP-CMEB 9.5-1, section C.5.c.

6. Exit Interview

The inspection scope and results were summarized on October 20, 1988, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results listed below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

IFI 50-425/88-59-01,	Review Three Hour Raceway Fire Barrier and Radiant Energy Shield Installation
UNR 50-424/88-49-01, 50-425/88-59-02,	Justification of Embedded Conduit for Safe Shutdown Cable Separation
IFI 50-424/88-59-03,	Review of Halon System Discharge Test Data
IFI 50-425/88-59-04,	FSAR Change to Clarify Statement Regarding Parallel Wiring of Fire Detectors
IFI 50-425/88-59-05	Verify that Corrective Actions for Batteries A, B, C, and D Circuit Breakers are Complete
IFI 50-425/88-59-06	Verify Proper Fuses by Model and Size are Installed in all Panels and Circuits

IFI 50-425/88-59-07	Review Procedure 17103-C to Insure that Additional PORV DC Circuit Breakers Operations are Identified
IFI 50-425/88-59-08	Verify that the DG Frequency Setpoint is Set at 57 Hz
UNR 50-425/88-59-09	Review Single Failure Criteria for the VCT Outlet Valves
IFI 50-425/88-59-10	Review of Identified Marginal Emergency Lighting for Safe Shutdown
IFI 50-425/88-59-11	Review of Licensees Actions for Discrepancies Between AOP Safe Shutdown Controls and Equipment Lists