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VICE PRESIDENT
NUCLEAR OPERATIONS

May 29, 1985

Mr. Harold R. Denton
Director, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
Operating License No. NPF-12
APPENDIX R REANALYSIS

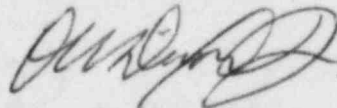
Dear Mr. Denton:

On May 4, 1984, South Carolina Electric & Gas Company (SCE&G) representatives attended the NRC Regional Appendix R Workshop in Atlanta, Georgia. As a result of information obtained at that Workshop, SCE&G initiated an Appendix R reanalysis to assure continued compliance with the NRC clarifications/interpretations of that document. SCE&G notified the Staff of its intent to conduct this reanalysis and has kept the Staff informed of progress made during the course of this effort.

Generic Letters 81-12, 83-33, and draft 85-01, and other applicable interpretive documents were used as guidance for the Appendix R reanalysis effort. Enclosures to this letter document interim results of that reanalysis.

Any questions you may have concerning this information should be directed to Mr. Hal Donnelly or Dr. James Barker at (803) 748-3892.

Very truly yours,



O. W. Dixon, Jr.

HID/OWD/mec

Enclosure

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Report on Appendix R

Reanalysis for Virgil C. Summer Nuclear Station

May 28, 1985

Enclosure to Letter

From: Mr. O. W. Dixon

Vice President

Nuclear Operations, SCE&G

TO: Mr. Harold R. Denton

Director, Office of

Nuclear Reactor Regulation

May 28, 1985

INTRODUCTION

The recent NRC interpretations on acceptable criteria, assumptions, and methodologies to be utilized in the course of a 10CFR50, Appendix R fire hazards analysis have caused SCE&G to conduct a reanalysis for Virgil C. Summer Nuclear Station. The original analysis method was to assess the relative probability of specific types of fire damage, e.g., cable to cable hot shorts and dismiss on a generic basis those types deemed to be of an insignificant hazard. The new analysis, as suggested by NRC Staff guidance, expands the realm of credible fire failures and defends individual system or equipment impacts for fires in all areas of the plant, particularly in the area of "Associated Circuits".

This new approach has several consequences. First, it requires significantly greater resources to complete an analysis of much greater complexity and sophistication. Secondly, the number of systems, pieces of equipment, and cables which must be analyzed, physically located in the plant and verified to possess adequate fire protection separation is greatly increased. SCE&G has attempted to counteract this large increase in the safe shutdown equipment/cable lists by the careful and proper use of post fire operator actions as a substitute for intrusive plant backfits. This has not been achievable in all cases. The third consequence of this new approach is the inevitable increase in deviations and plant modifications.

MODIFICATIONS

As a result of the SCE&G reanalysis in progress which documents the extent of compliance with Sections G, J, and O of Appendix R, several cases were identified where modifications are proposed to resolve Associated Circuits of Concern issues and enhance compliance to Appendix R requirements.

The proposed modifications fall into roughly three categories. The first category consists of modifications that are proposed to prevent and/or mitigate spurious equipment operation caused by fire induced conductor to conductor or cable to cable faults. The original fire hazards analysis did not consider these types of low probability fire damage as credible in the context of safe shutdown equipment/cable selection. Category two contains modifications that are proposed to facilitate or enhance local

May 28, 1985

operator actions. In order to isolate potential fire damage, so that plant operators can manipulate equipment locally, modifications are proposed to reduce the need for post fire repairs or jumper procedures to cold shutdown equipment. The third category of modifications resolve additional Associated Circuits of Concern issues which were identified during the course of the fire hazards analysis.

These proposed modifications have been identified as follows:

1. Auxiliary Spray Cable
2. Steam Generator Power Operated Relief Valves
3. Excess Letdown Isolation Valves
4. Main Steam Isolation and Bypass Valves
5. Pressurizer Power Operated Relief Valves
6. Diesel Generator Control Transfer Switch
7. Control Transfer Switches
8. Current Transformer Protection
9. Reactor Coolant Temperature Instruments
10. Power Cable Tray Separation
11. Source Range Nuclear Instruments
12. Emergency Lighting

They are described in detail in Section I.

The modifications have been reviewed with respect to a schedule of implementation. Several of the modifications require that the plant be off-line and therefore need to be scheduled during outage periods. The first such outage is the second refueling outage, scheduled for the fall of 1985. The short lead time to this outage along with the need for a controlled approach to assure plant reliability and safe operation have placed engineering and procurement constraints that preclude completion of most off-line related work during this refueling outage. SCE&G therefore will attempt to complete all work by the end of the third refueling outage, scheduled for the spring of 1987. Non-outage work will be scheduled in a timely fashion between now and the third refueling outage. Outage related work will progress as far as possible subject to constraints imposed by adherence to technical specifications and will be completed as quickly as possible taking advantage of any forced outages of sufficient duration.

SCE&G believes that the actions described in Section I will provide a high degree of confidence that no adverse effects will occur during the implementation period.

May 20, 1985

DEVIATIONS

As a result of the SCE&G reanalysis currently in progress documenting the degree of compliance with Sections G, J, and O of Appendix R, as recently clarified, three deviations were identified relating to Associated Circuits of Concern.

They are identified as follows:

1. Fire Area AB-1, Deviation to III.G.2 Separation and Automatic Suppression Requirements
2. Fire Area IB-25, Deviation to III.G.2 Separation Requirements
3. Fire Area MH-2, Deviation to III.G.2 Separation Requirements

They are described in detail in Section II.

NOTIFICATION VS

If significant changes occur during completion of the fire hazards analysis, SCE&G will submit a revised list of plant modifications and deviations along with a schedule for completion of all the proposed backfits. Additional modifications may be identified or changes to the present proposed modification list may be made as more effective alternatives are identified. Any problems which would impact completion of the proposed modifications by the end of the third refueling outage will be communicated to the Staff.

SECTION I

MODIFICATIONS

May 28, 1985

Title: Auxiliary Spray Cable

Description:

Spurious operation of the Auxiliary Spray Valve (XVT-8145-CS) could occur for several fire areas due to a hot short to the valve solenoid control cable. Opening of this valve with a charging pump operating would result in inadvertent primary plant de-pressurization.

Proposed Modification:

- A) It is proposed that the control cables for the Auxiliary Spray valve be provided with cable which includes a grounded shield (with sufficient short circuit capacity) from the Control Room to the valve, thereby preventing the possibility of an external hot short.
- B) To prevent spurious operation from a Control Room fire, a second control power disconnect, downstream from the Control Room disconnect is proposed.

Justification for Continued Operation:

Hot shorts, while extremely unlikely, must be considered during a fire hazards analysis per NRC Staff guidance. Automatic fire detection is provided for all fire areas of concern; automatic suppression is provided in areas with higher fire loading. Fires will be detected during their early stage and automatically or manually suppressed before the postulated hot shorts can occur. These features provide an adequate level of protection until the proposed modification can be completed.

Continued plant operation until completion of the proposed modification presents no additional hazards because:

- A. The purpose of the second electrical disconnect is to provide a means of achieving valve solenoid electrical isolation should the control room isolation point not be available. The only way in which this could occur is to have a major fire start in the continuously manned control room and develop with such rapidity that physical access was impossible. Such a fire in the intervening period is not credible.
- B. A post fire control wire cutting procedure is being developed which is functionally equivalent to the proposed second electrical disconnect.
- C. The purpose of the ground shield is to prevent very low probability fire induced faults from occurring, namely contact of one control conductor with a hot conductor in a second cable plus a second contact or ground for a current return path.
- D. Neither of the above modifications are required unless a CVCS pump is running and post-fire pump trip capability presently exists.

May 28, 1985

Title: Steam Generator Power Operated Relief Valves

Description:

Spurious opening of the steam generator power operated relief valves (IPV-2000-MS, IPV-2010-MS, IPV-2020-MS) via a postulated hot short to the control cables for either of two control solenoids for each valve causes excessive cooldown and RCS shrinkage.

Proposed Modification:

- A) It is proposed that the control cables for the critical solenoids of the steam PORVs be provided with cable which includes a grounded shield (with sufficient short circuit capacity) from the Control Room to the valve, and control power disconnects are to be identified within the Control Room.
- B) To prevent spurious operation from a Control Room fire which would preclude access to the control room disconnect, a second power disconnect, downstream from the Control Room disconnect is proposed.

Justification for Continued Operation:

Automatic fire detection is provided for all fire areas of concern, automatic suppression is provided in areas with higher fire loading. Fires could be detected during their early stage and automatically or manually suppressed before the postulated hot shorts can occur.

Continued plant operation until the above modifications are completed presents no undue risk because:

- A. The purpose of the second electrical disconnect is to provide a means of achieving valve solenoid electrical isolation should the control room isolation point not be available. The only way in which this could occur is to have a major fire start in the continuously manned control room and develop with such rapidity that physical access was impossible. Such a fire in the intervening period is not credible.
- B. A post fire control wire cutting procedure has been developed which is functionally equivalent to the proposed second electrical disconnect.
- C. The purpose of the ground shield is to prevent very low probability fire induced faults from occurring, namely contact of one control conductor with a hot conductor in a second cable plus a second contact or ground for a current return path.

May 28, 1985

Title: Excess Letdown Isolation Valves

Description:

For a fire in the Control Room, or Relay Room or Spreading Rooms, it is postulated that a hot short could spuriously operate both of the excess letdown isolation valves (XVT-8153-CS, XVT-8154-CS) causing loss of primary inventory. Outside of the Control Room, Relay Room, and Spreading Rooms, two independent hot shorts are required to be postulated for both valves to open. Since these valves are not pressure boundary valves this is considered incredible.

Proposed Modification:

- A) it is proposed to identify control power disconnects in the Control Room and to install control power disconnects in the Cable Spreading Room. This will ensure that the valves can be closed such that the two independent hot shorts would be required to open both valves.

Justification for Continued Operations:

Hot shorts, while extremely unlikely, must be considered during a fire hazards analysis per NRC Staff guidance. Automatic fire detection is provided for all fire areas of concern; automatic suppression is provided in areas with higher fire loading. Fires will be detected during their early stage and automatically or manually suppressed before the postulated hot shorts can occur.

In addition, an interim post-fire operating procedure has been developed which will cut selected control wiring equivalent to the electrical disconnects to be installed. The need for this wire cutting is only for a major fire in the Control Room, as the existing Control Room fuses provide an acceptable means of electrical isolation. Plant operation in the interim presents no additional risk due to the very low probability of a major fire in the Control Room in the time remaining prior to installation of the plant modification, combined with the low probability of any fire causing the precise type of damage necessary to cause this type of spurious operation.

May 28, 1985

Title: Main Steam Isolation and Bypass Valves

Description:

Spurious operation of the main steam isolation and bypass valves (XVM-2801A,B,C and XVT-2869A,B,C-MS) via fire induced hot shorts in various areas could cause loss of secondary inventory.

Proposed Modification:

- A) It is proposed that electrical disconnects be identified within the Main Control Room and that a secondary electrical disconnect be installed downstream of the Main Control Room disconnects in a separate fire area. Once either set of disconnects is opened two independent hot shorts would have to occur before the valves could spuriously open and this type of fire failure is incredible.

Justification for Continued Operations:

Hot shorts, while extremely unlikely, must be considered during a fire hazards analysis per NRC Staff guidance. Automatic fire detection is provided for all fire areas of concern and automatic suppression is provided in areas with higher fire loading. Fires will be detected during their early stage and automatically or manually suppressed before the postulated hot shorts can occur. These features provide an adequate level of protection until the proposed modification can be completed. In addition, a procedure is in place for cutting wiring which is equivalent to the disconnects which are to be installed. The need for this wire cutting is only for a major fire in the Control Room, as the existing Control Room fuses provide an acceptable means of electrical isolation. Plant operation in the interim presents no additional hazard due to the very low probability of a major fire in the Control Room in the time remaining prior to installation of the plant modification combined with the low probability of any fire causing the precise damage necessary to cause this type of spurious operation.

May 28, 1985

Title: Pressurizer Power Operated Relief Valves

Description:

Spurious operation of pressurizer power operated relief valves (IPV-444B, IPV-445A, IPV-445B) could occur based on NRC guidance which requires consideration of a hot short to the control cable for each valve. This results in a loss of Primary Inventory.

Proposed Modification:

- A) It is proposed that the control cables for all pressurizer PORVs are to be provided with cable which include a grounded shield (with sufficient short circuit capacity) from the Control Room to the valve, and control power disconnects are to be identified within the Control Room.
- B) To prevent spurious operation due to a Control Room fire which would preclude access to the Control Room power disconnect, downstream from the Control Room a second control power disconnect is proposed.

Justification for Continued Operation:

Hot shorts, while extremely unlikely, must be considered during a fire hazards analysis per NRC Staff guidance. Automatic fire detection is provided for all fire areas of concern; automatic suppression is provided in areas with higher fire loading. Fires should be detected during their early stage and automatically or manually suppressed before the postulated hot shorts can occur.

Two of the three valves already have a second control power disconnect point outside of the Control Room located at the Control Room Evacuation Panel. An interim procedure is in place for post fire wire cutting on the third valve which will be equivalent to the second disconnect point on the other two valves. The need for this wire cutting is only for a major fire in the Control Room, as the existing Control Room fuses provide an acceptable means of electrical isolation. The lack of contiguous cable shielding during interim plant operation is not significant as the purpose of the cable shielding is to prevent an extremely low probability fire induced fault from occurring, namely contact of one control conductor with a hot conductor in a second cable plus a second contact or ground for a current return path.

May 28, 1985

Title: Diesel Generator Control Transfer Switch

Description:

A postulated fire in the Cable Spreading Room CB-15 could result in hot shorts to cables for the Train "B" Diesel Generator (DGM 29B, DGM 21B, DGM 22B). This prevents the use of "B" Train Diesel Generator which is the intended power train for a fire in the Cable Spreading Room.

Proposed Modification:

- A) It is proposed to relocate two cables (DGM 21B and 22B) outside the fire area to preclude damages from the postulated fire. Cable DGM 29B is to be isolated by additional contacts from the existing control transfer switch.

Justification for Continued Operations:

The Cable Spreading Room is protected by an existing full area fire detection system and fixed automatic suppression system. The fire induced, external cable hot shorts which are required in order to fail the "B" Diesel Generator in this fire area are very unlikely, but must be considered during a fire hazards analysis per NRC Staff guidance. An interim operational procedure has been developed which will lift control leads in order to isolate this postulated fire damage and operate the Diesel Generator locally. Plant operation until installation of the proposed modification presents no additional risk as the operational procedure is functionally equivalent to the proposed modification.

Title: Control Transfer Switches

Description:

The following equipment is necessary for safe shutdown and is subject to spurious operation due to hot shorts caused by fire damage.

This equipment will be modified or jumper procedures developed to facilitate local manual operator action. The decision to jumper or modify this equipment will be made based on operator safety, system complexity, and manpower resource limitations.

Proposed Modification:

- A) It is proposed to add control transfer switches and local controls or jumper procedures for the following equipment.

Equipment Tag #	Description
XPP-43B-CS	Charging Pump "B"
XPP-45B-SW	S.W. Booster Pump "B"
XPP-1B-CC	Component Cooling Pump "B"
XPP-48B-VU	Chilled Water Pump "B"
MFN-97B-AH and MFN-97D-AH	Reactor Building Train "B" Cooling Fans
XSW-1DB-ES, U4	Switchgear, XSW-1EB Feeder
XSW-1DB-ES, U7	Switchgear, XSW-1DB1 and XSW-1DB2 Feeder
XSW-1EB-ES, U3	Switchgear, XSW-1EB1 Feeder
XSW-1DB1-ES	480V Main Breaker
XSW-1DB2-ES	480V Main Breaker
XSW-1EB1-ES	480V Main Breaker
XFN-45A-AH	Diesel Generator "B" Cooling Fans
XFN-45B-AH	Diesel Generator "B" Cooling Fans

- B) It is proposed to modify the following transfer switches.

Equipment Tag #	Description
XPP-39B-SW	S.W. Pump "B"
XEG-1B-DG	Diesel Generator "B"
XHX-1B-VU	Chiller Unit "B"

Justification for Continued Operations:

Because of the inherent design of Virgil C. Summer Nuclear Station, hot shorts are very unlikely but must be considered during a fire hazards analysis per NRC Staff guidance. Automatic fire detection is provided for all fire areas of concern; suppression is provided in areas with higher fire loading. Fires will be detected during their early stage and automatically or manually suppressed before the postulated hot shorts can occur. In addition, temporary Jumper Procedures are being developed for interim action. These jumper procedures are functionally equivalent to the proposed modification. The modifications are considered desirable as a long term solution since they provide for rapid and safe operation of the equipment when time or manpower constraints are of concern. These features provide an adequate level of protection until the proposed modification can be completed.

May 28, 1985

Title: Current Transformer Protection

Description:

A postulated fire in the Control Room or Cable Spreading Room could damage a current transformer (CT) circuit. One possible consequence could be an open circuit which in turn could possibly result in a secondary fire at the current transformer (inside switchgear). This could result in damage to Train "B" switchgear which is the intended shutdown equipment for a fire in the Control Room or Cable Spreading Room.

Proposed Modification:

- A) It is proposed to protect the Train "B" switchgear equipment with surge suppressors (thyrite) installed in parallel with the current transformer to prevent the over voltage surge which would occur in the event of an open circuit.

Justification for Continued Operations:

The probability of a fire causing Train "B" switchgear damage due to CT open circuit prior to thyrite installation is extremely low because:

- A. The only fire areas where these cables are a problem (i.e., causes failure of redundant equipment) are in the Control Room and Cable Spreading Room. The likelihood of a significant fire in either of these areas is low because the Control Room is continually manned and the Cable Spreading Room has full area automatic detection and suppression coverage.
- B. This damage will occur only if one of the two conductors open circuits without shorting together or to ground.
- C. Even if an open circuit were to occur, the two conductors are always contained within a single cable. The resulting voltage surge between the conductors would most likely cause insulation breakdown, arcing and re-welding the conductors prior to causing CT damage.
- D. The plant CTs are conservatively designed and most likely could tolerate an open circuit without causing a secondary fire.
- E. Even if the CT were to become damaged, it would not in all likelihood cause damage to the adjacent bus bars to the point where the switchgear would no longer be functional.

Given the above arguments it has been concluded that continued operation until installation of the CT overcurrent protective devices presents no additional hazard.

May 28, 1985

Title: Reactor Coolant Temperature Instruments

Description:

For fires which could potentially disable Train "B" it is intended to shutdown with control from the Control Room using steam generator "B". Loss of Train "B" power presently results in the ultimate loss of the instruments which indicate Loop "B" T_C (ITE-420-RC, ITE-420A-RC).

Proposed Modification:

- A) It is proposed to change Loop "B" T_{cold} Instrument from electrical Train "B" to electrical Train "A".

Justification for Continued Operations:

Automatic fire detection is provided for all fire areas of concern, automatic suppression is provided in areas with higher fire loading. Fires will be detected during their early stage and automatically or manually suppressed before the postulated total loss of Train "B" power can occur.

It is SCE&G's position that the specific T_{cold} instrument is not required in order to verify adequate natural circulation flow conditions. The Steam Generator Pressure Instrument is a much more accurate instrument for this purpose due to the large relative parameter changes of saturated pressure versus saturated temperature at hot standby. The NRC Staff has, in published guidance, indicated a strong preference for both T_{hot} and T_{cold} and this capability will be achieved via plant backfit. Plant operation in the interim presents no additional risk as there is an operational procedure that uses Steam Generator Pressure in lieu of Cold Leg Temperature.

May 28, 1985

Title: Power Cable Tray Separation

Description:

For a postulated fire in the south west corner of elevation 412'-0" of the intermediate building, Fire Area IB-25, (near column line intersection 7.5/G.4) cables for required equipment of both "A" and "B" Trains could be damaged.

Proposed Modification:

- A) It is proposed to wrap the one Train "A" tray (number 3088) throughout this fire area with a fire barrier material which has been tested in a one hour rated configuration.

Justification for Continued Operation:

The fire area has automatic detection and partial area suppression. An exception from providing full area suppression has been previously granted, based upon the low fire loading. The existing protection, together with the proposed modification, provides reasonable assurance that a fire would be detected and automatically or manually extinguished in its initial stage before significant damage or propagation occurred. The area is open, well lighted, and easily accessible.

In addition this location has been added as a check point for the roving fire watch. This compensatory action will continue until the modification is complete.

May 28, 1985

Title: Source Range Nuclear Instruments

Description:

For a postulated fire in the north cable chase of the Control Building at the 436'-0" elevation, all three of the available source range nuclear instruments could be disabled.

Proposed Modification:

It is proposed to make one of the following two modifications:

- A) Wrap the conduit for the cable of one of the nuclear instruments with a fire barrier material which has been tested in a one hour rated configuration.
- B) Install a power source selector switch for one nuclear instrument (which presently could be disabled by damage to its existing power source cable which passes through the area).

Justification for Continued Operation:

The area of concern has automatic detection and suppression. Fires should be detected during their early stage and automatically or manually suppressed before the postulated cable damage can occur.

In addition this location has been added as a check point for the roving fire watch. This will continue until the modification is complete.

May 28, 1985

Title: Emergency Lighting

Description:

The explicit consideration of spurious operation has greatly increased the number of pieces of equipment that are considered necessary for safe shutdown. The SCE&G approach of utilizing direct manual operation by personnel in order to reduce modifications to control circuits requires increased plant lighting to provide for access and adequate operating conditions.

Proposed Modification:

Based upon a plant walkdown of all areas required for operation under the new guidelines, it is proposed to supplement the existing emergency lighting system with additional eight hour burn time battery operated lights. These lights will be of the same character and subject to the same surveillance and control as existing emergency lights.

Justification for Continued Operation:

The existing emergency lights provide adequate coverage for access to most areas of concern including the Control Room, Control Room Evacuation Panels, major switchgear rooms and access to the radiation control areas. The proposed supplemental lighting will enhance the ability to utilize alternate access routes and to provide lighting for valve galleries which contain numerous valves which will be manually verified or repositioned. SCE&G is confident that in the interim the existing emergency lighting, supplemented by hand held lighting and an existing Central DC Powered Emergency Lighting System, will provide adequate coverage. The proposed enhancement provides a desirable increase in personnel protection and operational flexibility, but their absence does not preclude the safe shutdown of the plant.

SECTION II

DEVIATIONS

May 28, 1985

Title: Fire Area AB-1, Deviation to III.G.2 Separation and Automatic
Suppression

Area Description:

Fire Area AB-1 is the entire Auxiliary Building and is comprised of 31 separate fire zones. The Auxiliary Building is a multi-level structure with three levels below grade and three above grade. The Auxiliary Building is bound on the north and west by exterior walls; on the east by Fuel Handling, Reactor and Intermediate Buildings; and on the south by the Intermediate and Control Buildings. Walls are of reinforced concrete except for the top level which is metal siding on steel framing. The walls which separate this fire area from other fire areas satisfy the requirements for three hour rated fire barriers. The floors are also of reinforced concrete and except for unprotected openings would satisfy the requirements for three hour rated fire barriers. A more detailed description of this fire area is contained in section 4.2 of the Fire Protection Evaluation Report.

Affected Safe Shutdown Capability:

Redundant trains for the Chemical Volume Control System functions are located in this area.

Fire Area Analysis:

Fire Area AB-1 contains redundant trains for the Chemical Volume Control System function. Train "B" cables and raceways are located in Fire Zone AB-1.9 on elevation 397'. Redundant Train "A" cables and raceways are located in Fire Zones AB-1.10, AB-1.18 and AB-1.21 on elevations 412', 436' and 463', respectively. Although redundant trains are separated by a vertical distance ranging from 25 to 70 feet, a horizontal separation of 20 feet is not present. A fire detection system is installed throughout the area. Fire suppression is provided by interior manual hose stations and portable extinguishers.

Deviation:

Fire Area AB-1 does not comply with the requirements in Section III.G.2 of Appendix R to 10CFR50, in that cable and equipment of one redundant train is not enclosed in a fire barrier having a one hour rating and there is no automatic fire suppression system installed in the entire area.

Justification for the Deviation:

The "B" train cable in Fire Zone AB-1.9 is separated from redundant "A" train cables and raceways in Fire Zones AB-1.10, 1.18 and 1.19 by one to three

May 28, 1985

reinforced concrete floors which would satisfy the requirements for three hour rated barriers if not for unprotected openings. Cable trays are provided with fire stops where they penetrate the floor. Other openings are of a size and location which would not present a significant pathway for the propagation of a fire from one zone to another. In addition to this passive protection, active fire protection is provided by an automatic fire detection system located in each affected fire zone. Upon actuation, these systems alarm in the Control Room. This provides a reasonable assurance that a fire would be detected in its initial stage before significant damage or propagation occurred. The fire would then be extinguished using manual suppression equipment located throughout the fire area. An exemption from providing automatic fire suppression in these zones was previously granted based upon the low fire loading.

In conclusion, it is SCE&G's position that the existing fire protection features, both active and passive in nature for Fire Area AB-1, provide a level of fire protection consistent with the hazards identified and provide a high level of assurance that at least one train of safe shutdown equipment will remain free of fire damage. The existing fire protection features provide a level of fire protection equivalent to that of III.G.2. Modifications required to meet III.G.2 would not enhance fire protection safety above that currently provided.

May 28, 1985

Title: Fire Area MH-2, Deviation to III.G.2 Separation

Area Description:

Fire Area MH-2 is electrical manhole number 2 located in the yard approximately 100 feet east of the power block. Manhole 2 is a two compartment manhole; each compartment is designated as a separate Fire Zone (MH-2.1 and MH-2.2). The Fire Zones are separated by a 6" concrete wall with a single 4" pipe opening at the base for drainage. Access to the manhole is made by removing a 2' thick concrete manhole cover.

Affected Safe Shutdown Capability:

Redundant trains for the Service Water Pump House are located in this area.

Fire Area Analysis:

Fire Area MH-2 contains redundant trains for the Service Water Pump House. Train "A" and "B" cables are located on opposite sides of the 6" concrete dividing wall. Combustion loading consists of electrical cables; no other combustibles are present. The substantial manhole cover precludes the entry of transient combustibles to this area.

Deviation:

Fire Area MH-2 does not comply with the requirements in Section III.G.2 of Appendix R to 10CFR50, in that cables of redundant trains are not separated by a fire barrier having a three hour rating.

Justification for the Deviation:

Redundant trains are separated by a 6" concrete wall which would satisfy the requirements for a three hour rated barrier if not for the unprotected drainage pipe opening. The opening is of a size which would not present a significant pathway for the propagation of fire from one side to the other. In addition, the in situ combustible loading is low and entry of transient combustibles is precluded.

In conclusion, it is SCE&G's position that the existing fire protection features, both active and passive in nature for Fire Area MH-2, provide a level of fire protection consistent with the hazards identified and provide a high level of assurance that at least one train of safe shutdown equipment will remain free of fire damage. The existing fire protection features provide a level of fire protection equivalent to that of III.G.2. Modifications required to meet III.G.2 would not enhance fire protection safety above that currently provided.

May 28, 1985

Title: Fire Area IB-25, Deviation to III.G.2 Separation Requirements

Area Description:

Fire Area IB-25 is the general floor area of the Intermediate Building on elevation 412' and 436' and the east and west penetration access areas. This area is comprised of ten separation fire zones. Walls surrounding this area are of reinforced concrete and satisfy the requirements for three hour rated barriers where they separate this area from other fire areas. Floors and ceilings are also of reinforced concrete but do not satisfy the requirements for a three hour rated barrier due to unprotected or protected steel supports with a one hour fire resistance rating. Floor/ceiling openings between elevation 412' and 436' are unsealed in order to provide venting in case of a high energy line rupture. A more detailed description of this fire area is contained in Section 4.4 of the Fire Protection Evaluation Report.

Affected Safe Shutdown Capability:

Redundant trains for the Service Water Booster Pumps are located in this area.

Fire Area Analysis:

Fire Area IB-25 contains redundant trains for the Service Water Booster Pumps. Train "A" equipment and cables are located in Fire Zone IB-25.1. Train "B" power and control cables for the Diesel Generator which could cause loss of power to Service Water Booster Pump "B" are located in Fire Zone IB-25.10. This Fire Zone is an electric cable chase located 12 feet from the redundant Train "A" equipment. The chase is constructed of reinforced concrete which would satisfy the requirements for a three hour rated fire barrier if not for unprotected HVAC openings. Automatic detection and suppression systems are located in this Fire Zone. Automatic detection is also provided in the cable chase.

Deviation:

Fire Area IB-25 does not comply with the requirements in Section III.G.2 of Appendix R to 10CFR50, in that cable and equipment of one redundant train is not enclosed in a fire barrier having a one hour rating.

Justification for the Deviation:

The "B" train cables in Fire Zone IB-25.10 are separated from redundant "A" train cables and equipment in Fire Zone IB-25.1 by a horizontal distance of 12' and by a reinforced concrete wall which would satisfy the requirements for three hour rated barriers if not for unprotected openings. Openings are of a size and location which would not present a significant pathway for the propagation of a

May 28, 1985

fire from one zone to another. In addition to this passive protection, active fire protection is provided by an automatic fire detection and suppression system located in Fire Zone IB-25.1. Automatic detection is provided in the cable chase. These systems provide a reasonable assurance that a fire would be detected and controlled in its initial stage before significant damage or propagation occurred.

In conclusion, it is SCE&G's position that the existing fire protection features, both active and passive in nature for Fire Area IB-25, provide a level of fire protection consistent with the hazards identified and provide a high level of assurance that at least one train of safe shutdown equipment will remain free of fire damage. The existing fire protection features provide a level of fire protection equivalent to that of III.G.2. Modifications required to meet III.G.2 would not enhance fire protection safety above that currently provided.