UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 13, 1985

Docket No. 50-219
LS05-85-02-006

MEMORANDUM FOR: John A. Zwolinski, Chief
Operating Reactors Branch #5
Division of Licensing

FROM: Jack N. Donohew, Project Manager
Operating Reactors Branch #5
Division of Licensing

SUBJECT: MEETING WITH GPU NUCLEAR ON JANUARY 22, 1985, ON APPENDIX R AND THE REMOTE SHUTDOWN PANEL

Re: Oyster Creek Nuclear Generating Station

On Tuesday, January 22, 1985, a meeting was held with GPU Nuclear to discuss the number of systems needed for safe shutdown, the exemptions to Appendix R requested by the licensee by letter dated September 16, 1983, and the staff approved remote shutdown panel for Oyster Creek. Attachment 1 is the list of those attending the meeting.

Attachment 2 is the agenda used during the meeting and the four handouts prepared by the licensee. The four handouts contain:

(1) overview and revision summary of GPU Nuclear's current approach to safely shut down the plant during a fire.
(2) summary of Appendix R changes in scope for shutdown from outside the control room (Table 1).
(3) summary of Appendix R changes in scope for shutdown due to fires outside the control room/cable spreading rooms complex (Table 2).
(4) status of Oyster Creek Appendix R exemption request (Table 3).

The purpose of this meeting was to provide the licensee with the opportunity to discuss, with the staff, its new approach to meeting NRC requirements for the remote shutdown panel. The licensee stated that previous submittals regarding the remote shutdown panel met the NRC requirements and in many cases went beyond the Appendix R requirements.

The licensee's new position is based on receiving credit for the following actions in the control room following a fire:

1. reactor scram
2. trip feedwater pumps
3. trip recirculation pumps
4. close MSIVs

and relying on the isolation condenser and the electromagnetic relief valves in the automatic depressurization systems in conjunction with core spray to safely shut down the reactor. The licensee stated that it was not necessary to protect the immediate restoration of AC power.

The licensee stated that the submittal to revise its commitments on the remote shutdown panel will be submitted by March 31, 1985. The licensee requested that the staff review be completed by the end of June 1985 for the licensee to meet the implementation schedule for the panel. The licensee has a schedular exemption to have the panel installed by the end of the next refueling outage which is presently scheduled to begin December 1985. The staff stated that it believed the requested schedule could be met if the licensee's submittal was submitted March 31, 1985.

The licensee also stated that the March 31, 1985, submittal would include a resubmittal of exemptions to Appendix R for Oyster Creek. The licensee stated that the staff's review of the previously submitted exemptions should stop until receipt of the new submittal.

The licensee briefly discussed two changes to the Oyster Creek Appendix A Technical Specifications that they also plan to include in the March 31, 1985, submittal:

1) eliminate the restriction on the drywell-suppression chamber differential pressure, TS 3.5.A.9, because of modifications made during the last outage which ended October 1984.

2) bypass the isolation condenser high flow reactor trip in TS Table 3.1.1 when the remote shutdown panel is used.

The staff stated that the licensee must propose changes to the TSs to change the restriction on differential pressure or to add the bypass to the trip.

Jack N. Donohew, Project Manager
Operating Reactors Branch #5
Division of Licensing

cc: M. Laggart, GPU Nuclear
J. Holonich
S. Watson
R. Goel
J. Wilson
D. Kubicki

SEO1
DSW use 51

DISTRIBUTION

Docket	NRC PDR	ACRS	JZwolinski
ORB Reading	Local PDR	NSIC	EJordan
CJamerson	OELD	JDonohew	PFMcKee

DL:ORB#5	DL:ORB#5	DL:ORB#5
CJamerson:jb	JDonohew	JZwolinski
2/13/85	2/13/85	2/13/85

cc
G. F. Trowbridge, Esquire
Shaw, Pittman, Potts and Trowbridge
1800 M Street, N.W.
Washington, D.C. 20036

J.B. Liberman, Esquire
Bishop, Liberman, Cook, et al.
1155 Sixth Avenue
New York, New York 10036

Dr. Thomas E. Murley
Regional Administrator
Nuclear Regulatory Commission
Region I Office
631 Park Avenue
King of Prussia, Pennsylvania 19406

BWR Licensing Manager
GPU Nuclear
100 Interpace Parkway
Parsippany, New Jersey 07054

Deputy Attorney General
State of New Jersey
Department of Law and Public Safety
36 West State Street - CN 112
Trenton, New Jersey 08625

Mayor
Lacey Township
818 West Lacey Road
Forked River, New Jersey 08731

U.S. Environmental Protection Agency
Region II Office
ATTN: Regional Radiation Representative
26 Federal Plaza
New York, New York 10007

D. G. Holland
Licensing Manager
Oyster Creek Nuclear Generating Station
Post Office Box 388
Forked River, New Jersey 08731

Resident Inspector
c/o U.S. NRC
Post Office Box 445
Forked River, New Jersey 08731

Commissioner
New Jersey Department of Energy
101 Commerce Street
Newark, New Jersey 07102

Eugene Fisher, Assistant Director
Division of Environmental Quality
Department of Environmental Protection
380 Scotch Road
Trenton, New Jersey 08628

P. B. Fiedler
Vice President & Director
Oyster Creek Nuclear Generating Station
Post office Box 388
Forked River, New Jersey 08731

Attachment 1

MEETING WITH GPU NUCLEAR CONCERNING APPENDIX R

AND THE SAFE SHUTDOWN PANEL ON

TUESDAY, JANUARY 22, 1985

Individual	Company
J. Donohew, Jr.	NRC/DL
M. Laggart	GPU Nuclear
G. Busch	"*
J. Tarpinian	"*
R. Ashby, Jr.	"
A. Baig	"
H. Huss	"*
F. Barbieri	"
A. Rone	"
N. Trikouros	"
J. Holonich	NRC/ASB
S. Watson	Bechtel
R. Goel	NRC/ASB
J. Wilson	NRC/ASB
D. Kubicki	NRC/CHEB

*Consultant to GPU Nuclear

Attachment 2

AGENDA

I.	Introduction	Mike Laggart
II.	Safe Shutdown Approach A. Remote Shutdown (Table I) B. Shutdown by Fire Area (Table II)	Abdule Baig
III.	Technical Specification Changes A. Eliminate Delta P B. Bypass Iso Condenser High Flow Trip	George Busch
IV.	Exemption Status (Table III)	Fred Barbieri
V.	Summary	Mike Laggart
VI	Working Discussion	

OBJECTIVE OF OVERVIEW

TO PROVIDE A GENERAL UNDERSTANDING OF GPUN'S CURRENT APPROACH TO SAFELY SHUTDOWN THE PLANT DURING A FIRE, AND THE SALIENT FEATURES OF SCOPE CHANGES ASSOCIATED WITH THE NEW APPROACH.

ORIGINAL APPROACH (JULY, 1982 SUBMITTAL)

- INDUSTRY EXPERIENCE
- PROTECT ONE TRAIN OF SHUTDOWN EQUIPMENT/ASSOCIATED CIRCUITS
- REDUNDANCY FOR KEY FUNCTIONS/VARIABLES
- NO CREDIT FOR OPERATOR ACTIONS
  - DELAYED, SCRAM/ISOLATION OF VESSEL/FEEDWATER TRIP/RECIRC PUMP TRIP FROM THE RSP
- EMRV ISOLATION FROM RSP

CURRENT APPROACH

- INDUSTRY EXPERIENCE
  - OPERATOR ACTIONS (FIRE PROTECTION FEATURES/SEPARATION, ETC.)
  - SPURIOUS ACTUATIONS
  - NEUTRON MONITORING
  - DRYWELL COOLING
- CONSERVATION OF Rx COOLANT INVENTORY
  - RESTORATION OF ON-SITE AC POWER
  - INITIATION OF RCS MAKE-UP
- IN-DEPTH REVIEWS OF ORIGINALLY PROPOSED MODIFICATIONS
- COLD SHUTDOWN PATHS

SALIENT SCOPE CHANGES

- NUMBER OF CIRCUITS TO BE PROTECTED
- MOTOR CONTROL CENTERS (ISC CONDENSER/DW COOLING)
- 480V SWITCHGEAR ROOM EXPANSION
- PROTECTION OF COMPONENTS
- PARTIAL BARRIERS (COLD SHUTDOWN)
- ADS/EMRV CONTROL CABINETS
- IRM POWER DISTRIBUTION PANEL

GPU NUCLEAR CORPORATION

OYSTER CREEK NUCLEAR GENERATING STATION

APPENDIX R

SCOPE REVISION SUMMARY

BURNS AND ROE, INC.
ORADELL, NEW JERSEY

TABLE OF CONTENTS

GPU Nuclear Corporation

Oyster Creek Nuclear Generating Station

Appendix R

Scope Revision Summary

1.0 INTRODUCTION

This document provides a summary of various analyses and evaluations conducted in order to justify the revised GPU Nuclear approach to comply with 10 CFR50, Appendix R. The Remarks/Reasons/Justification Column writeups included on the Scope Revision Matrices (Tables 1 and 2) have been expanded to more fully explain our stated position for the scope revisions.

2.0 SAFE SHUTDOWN SYSTEMS

2.1 Reactor Scram and Reactivity Control

2.1.1 Scram Control Logic

The reactor can be manually scrammed from several different locations in the control room prior to evacuation. This may be accomplished by any one of the following:

- Depressing both manual scram pushbuttons on Panel 4F.
- Removing the reactor protection system control power fuses.

- Placing the Mode Selector Switch into "SHUTDOWN" on Panel 4F.

The following statements provide the basis for not protecting the reactor scram circuits and manually scramming the reactor from the control room (Reference 1).

- Reactor scram circuits are normally energized until a reactor scram is initiated. At this time, power is interrupted and the scram discharge volume (SDV) vent and drain pilot valves, the scram pilot air valves and the backup scram pilot valves are deenergized to scram the reactor.

- To achieve a reactor scram either the scram pilot air valves or the backup scram pilot valves are required to be deenergized.

- All reactor scram circuitry is contained in conduit except for the backup scram valve circuitry.

- No other circuits are contained within conduits containing scram circuits.

- The effects of fire induced open circuit or hot short on the reactor scram circuits in conduit

would be to interrupt power and initiate a scram.

- Scram failure due to stuck rods or rod withdrawal as a result of fire induced failures is not considered a credible event.

A plant walkthrough showed that manual reactor scram, MSIV closure, feed pump trip and reactor recirculation pump trip can be accomplished from the control room within 2 minutes prior to evacuation (Reference 2).

Therefore, no circuit modifications or protection is required.

2.1.2 Reactor Recirculation Pump Trip

All five reactor recirculation pumps will be tripped in the control room prior to evacuation. This may be accomplished by either one of the following:

(a) Place the 5 pump control switches on panel 3F in the PULL-TO-LOCK position.

(b) Trip 4160V busses 1A and 1B from panel 8F by placing the breaker switches in the PULL-TO-LOCK position. (By tripping these busses the reactor feedwater pumps will also be tripped. Refer to paragraph 2.1.7.1).

Based on the low combustible loadings, fire detection systems and fire suppression systems in the cable spreading rooms and the control room panels, it can be assumed that the circuits and control switches needed to trip these pumps will be free from fire damage before evacuation of the control room. Detailed circuit analysis proves that these breakers will not spuriously reclose due to fire induced electrical faults (Reference 3).

A plant walkthrough showed that manual reactor scram, MSIV closure, feedpump trip and reactor recirculation pump trip can be accomplished from the control room within 2 minutes prior to evacuation. (Reference 2).

Therefore, no circuit modifications or protection is required.

2.1.3 Reactivity Monitoring

No neutron flux monitoring is required to be provided or protected for an Appendix R fire scenario. The reactor can be manually scrammed from the control room by any one of several diverse means (See paragraph 2.1.1). Scram can be verified using the full core rod position display or the average power range monitors (APRMs). Once

the control rods are inserted in a BWR, the reactor is shutdown and can not go critical upon cooldown. SECY-83-269 and IE Information Notice No. 84-09 do not list neutron monitoring as needed to achieve safe shutdown for a BWR.

Therefore, the reactivity monitoring requirement of Appendix R is satisfied by achieving a successful scram.

2.1.4 Reactor Isolation

2.1.4.1 Main Steam System

a. Main Steam Isolation Valves (MSIVs)

There are four normally open MSIVs, two on each main steam line. All four valves will be tripped closed from the control room Panel 11F prior to evacuation. At least one valve on each steam line must remain closed to assure vessel isolation (from the Main Steam lines).

Detailed circuit analysis shows that each pair of series valves is fed from a separate and redundant train of power supply. Thus, failure to

close at least one of the two series isolation valves in each main steam line could only result from coincident fire induced hot shorts causing spurious energizing of the pilot solenoid valves in each redundant train (Reference 4).

Also, based the low combustible loadings, fire detection systems and fire suppression systems in the cable spreading rooms and the control room panels, it can be assumed that the circuits and control switches needed to close at least one valve per steam line will be free from fire damage.

A plant walkthrough showed that manual reactor scram, MSIV closure, feed pump trip and reactor recirculation pump trip can be accomplished within 2 minutes from the control room prior to evacuation.

b. Main Steam Drain Valves

Following a plant startup, the inner main steam drain valves will be admi-

nistratively closed and the circuit breakers supplying power to these valves will be opened and padlocked. This will prevent any reactor coolant inventory loss through the main steam drain system (Reference 5). Therefore, no circuit modification or protection is required.

2.1.4.2 Core Spray System

The check valve in series with the parallel valves in each core spray loop will limit the amount of reactor coolant inventory loss. Analysis shows that closing the parallel valves manually within 3 hours from the event will not result in significant coolant loss. Therefore, no circuit modifications or protection is required for these valves (Reference 6). Refer to paragraph 2.1.7.2 for additional discussion on this system.

2.1.4.3 Reactor Cleanup System

The check valve (V-16-62) in series with the outer containment isolation valve

(V-16-61) on the discharge of the cleanup system to the reactor will limit reactor coolant inventory loss to allow manual closing within 6 hours of the outer containment isclation valve if it spuriously opens due to fire. (Reference 7).

In addition, the inlet isolation valves to the cleanup system from the reactor are being evaluated to assure that they will not spuriously open due to a fire induced electrical failure in such a manner so as to cause any reactor coolant inventory loss. Multiple hot shorts in the same system is not considered a credible event (Reference 10).

2.1.4.4 Shutdown Cooling System

Since the SDCS piping and RCS piping are designed for the same pressure, there will be no high pressure/low pressure interface problems in case of spuriously opening the SDCS containment isolation valves. However, the SDCS design temperature is lower than that of the RCS. Therefore, it was important to verify

that the SDCS isolation valves do not open simultaneously due to spurious actuation hence establishing a flow and exposing the SDCS to higher temperatures. An evaluation was performed and it was concluded that no flow in SDCS is spuriously possible and accordingly no changes to the system are required (Reference 11).

In addition, since the reactor recirculation pumps are tripped no driving force to establish system flow is available.

2.1.4.5 Isolation Condenser Vent System

Reactor coolant inventory loss through both isolation condensers vent valves has been evaluated. Due to circuit logic modifications, the vent valves associated with condenser NE01-B will close automatically and will be prevented from spurious opening when the valve control circuits for tnis condenser are transferred to the Remote Shutdown Panel (References 4 and 8).

However, the vent valves on Condenser NE01-A may remain open or may spuriously open (if they were closed). Analysis shows that these valves can be manually closed within 6 hours with a reactor coolant inventory loss of approximately 756 gallons (Reference 8). The impact of this loss on the reactor coolant inventory is currently being evaluated.

2.1.4.6 Scram Discharge Volume Vent and Drain Valves

The SDV vent and drain valves are being evaluated for potential loss of reactor coolant inventory due to a spurious opening. Pending the results of this study, if reactor coolant inventory loss through these valves is a concern, spurious opening will be prevented by control logic circuit modifications or circuit protection.

2.1.5 Reactor Vessel Level & Pressure Monitoring

Redundant narrow range vessel water level instrumentation as a backup to RE05/19B is not required in order to comply with the criteria given in

Appendix R. However, redundant vessel level instrumentation will be provided on the RSP. The specific instrument channels to be used are currently being evaluated and will be finalized during detail design.

Therefore, protection (or rerouting) of the circuits associated with the redundant narrow range level loop is not required.

2.1.6 Reactor Coolant Makeup

Emphasis has been placed on reducing/eliminating reactor coolant loss by assuring successful reactor isolation, as opposed to providing redundant sources of coolant makeup.

The Control Rod Drive (CRD) Hydraulic System can be used to provide reactor coolant makeup. An Appendix R reactor water inventory analysis has been conducted and indicates that without makeup, the core mixture level could be below the top of active fuel (TAF) in 3 hours and 24 minutes (Reference 9). This assumes successful scram, isolation of the reactor vessel and initiation of the isolation condenser system.

Alternate local control of only one CRD pump will be retained on the remote shutdown panel. The

other CRD pump was originally provided on the remote shutdown panel for redundancy. Since redundancy is not an Appendix R criteria, alternate control is not required. Pump flow and pressure will be monitored locally on mechanical indicators. The pump overload alarm is not required, since non-fire induced failures need not be considered for an Appendix R scenario.

A chain operated CRD pump test bypass valve (V-15-30) must be opened to allow a direct flowpath from pump NC08-B into the reactor vessel, rather than through the normal flowpath consisting of strainers, control valves and branch flowpaths.

2.1.7 Reactor Water Level Control

2.1.7.1 Feedwater Trip

All three reactor feedwater pumps will be tripped in the control room prior to evacuation. This may be accomplished by either one of the following:

(a) Place 3 control switches on panels 5F/6F in the PULL-TO-LOCK position.

(b) Trip 4160V busses 1A and 1B from panel 8F by placing the breaker

switches in the PULL-TO-LOCK position. (By tripping these busses the reactor recirculation pumps will also be tripped).

The justification for tripping these pumps from the control room and not modifying or protecting these circuits is the same as that given in paragraph 2.1.2 for the reactor recirculation pumps.

2.1.7.2 Core Spray System

The core spray system must be secured to assure that the reactor vessel level will not cause flooding of the isolation condenser steam lines. This could occur if the core spray system is operating, one or more of the parallel valves is open, and reactor pressure is below the core spray system discharge pressure (due to proper functioning of the isolation condenser system). A spurious actuation study is currently being performed to determine if this scenario is possible.

Therefore, no modification or protection is required for the core spray circuits is being considered.

2.1.7.3 Reactor Recirculation Loop Valves

The following statements provide the basis for not modifying or protecting the reactor recirculation valves circuitry:

- Five loop flowpaths are required to be open during normal power operation per plant Technical Specifications.
- Spurious isolation of more than one loop due to multiple fire induced hot shorts is highly unlikely, since the valve circuits in each loop are electrically independent.
- Only two loops are required to be open to achieve shutdown per Technical Specifications.

Therefore, no circuit modifications or protection is required for these valve circuits.

2.1.8 Decay Heat Removal

2.1.8.1 Isolation Condenser B

(a) The valve control logic circuits for isolation condenser NE01B will be

modified to allow control of the condenser from the remote shutdown panel. The transfer and control logic will isolate both steam line valves and both condensate line valves from the control room and cable spreading rooms. This logic change will also defeat the high flow protection system interlocks, since concurrent non-fire induced system failures are not assumed to occur (Reference 13). The dc operated condensate line valve (V-14-35) will be provided with a control switch and indicating lights on the remote shutdown panel. The remaining three valves will have their power sources relocated to existing MCC's such that these power sources are not in the same fire zone as the isolation condenser A valve power sources.

Tnese remaining three valves, which are open during normal power operation, will be given a maintained open signal via the transfer logic scheme. Therefore, no control switches at the

remote shutdown panel are required (Reference 4).

(b) As a result of the above transfer and control logic changes, the tube side vent line valves (V-14-1 and V-14-19) associated with isolation condenser B will be closed and can not spuriously open. Therefore, no local controls are required (Reference 8).

(c) The shell side vent line radiation monitors are not required for isolation condenser system operation. No component failures, such as reactor coolant leakage into the shell side of the condenser, is assumed to occur concurrent with an Appendix R event.

2.1.8.2 Isolation Condenser A

Spurious initiation of isolation condenser NE01-A has been considered. The Appendix R reactor water level analysis (Reference 9) shows no adverse impact on maintaining the core mixture water level above TAF, nor on the ability to achieve safe shutdown. Paragraph 2.1.6, Reactor

Coolant Makeup, describes this scenario further.

Therefore, no controls or circuit modifications or protection is required for condensate line valve V-14-36.

2.1.9 Drywell Cooling

2.1.9.1 Drywell Coolers

The drywell cooling units are not required to be operational for an Appendix R shutdown event. An Appendix R drywell temperature study confirms that containment integrity will not be challenged throughout the 72 hour hot shutdown period (Reference 9).

Since drywell cooling is not required, then the support services are also not needed. Therefore, the reactor building closed cooling water (RBCCW) drywell iso-

lation valves, and both the RBCCW and service water (SW) discharge pressure indication on the remote shutdown panel can be eliminated.

2.1.9.2 Reactor Building Closed Cooling Water System (RBCCW)

(a) Control Room/Cable Spread Room Fires

Although RBCCW is not required to support drywell cooling, it is required in order to support the shutdown cooling system. Therefore, local alternate controls for both RBCCW pumps will be retained near their power distribution centers. Local pump discharge pressure gages can be used to check pump operation.

(b) Fires Outside Control Room/Cable Spread Rooms

Since RBCCW is a cold shutdown system repairs can be made to support operation of the required equipment. If damage is extensive, an alternate decay heat removal path using the EMRVs, Core Spray, Containment Spray

and the Emergency Service Water systems, shall be relied upon for cold shutdown. An exemption will be requested from the requirement to satisfy the technical specification definition of cold shutdown that pertains to reactor coolant venting.

2.1.9.3 Service Water System (SW)

One service water pump is adequate to supply cooling water to the RBCCW heat exchangers, which in turn supply cooling water to the shutdown cooling heat exchangers. Therefore, local alternate control for one SW pump will be retained. The other SW pump is not needed and is deleted from the Appendix R modifications. A local pump discharge pressure gage can be used to check pump operation.

In addition, for a fire at the intake structure which could disable the service water system, the alternate cold shutdown path using an emergency service water pump will be assured as discussed in Section 2.1.9.4 of this scope revision summary.

2.1.9.4 Emergency Service Water System

The emergency service water system can be used as part of the alternate path for hot and cold shutdown. One emergency service water pump is required to supply cooling water to the containment spray heat exchangers. The power feeder circuit to one emergency service water pump will be protected at the intake structure. This will assure that one path of emergency service water is available for cold shutdown for a fire at the intake structure.

2.1.10 Miscellaneous Instrumentation

(a) The drywell temperature analysis shows that the temperature rise is acceptable without the drywell cooling system operating. This analysis also shows that the level instrument reference legs will not flash (Reference 9).

The reactor fuel zone level and narrow range level instruments are compensated for changes in reference leg temperature.

Therefore, drywell temperature need not be monitored.

(b) Torus level and temperature were omitted from the last fire hazard analysis revision because this instrumentation was used to support the backup path as provided by the EMRV/Core Spray/Containment Spray systems. This instrumentation will be returned to the Appendix R evaluation.

(c) Failure of the electromatic relief valves (EMRV) is not required to be assumed coincident with an Appendix R event. The EMRV control circuits will be modified and protected in order to prevent spurious opening due to fire induced electrical failures (Refer to paragraph 2.1.12).

Therefore, EMRV discharge piping temperature indication is not required.

2.1.11 Residual Heat Removal (Cooldown/Cold Shutdown)

In order to support the shutdown cooling system which will be used to achieve cold shutdown, the RBCCW and service water systems are required. Refer to paragraphs 2.1.9.2 and 2.1.9.3 for a discussion on the modifications required for these two systems.

2.1.12 Automatic Depressurization System (ADS)/EMRV Control

The EMRV control logic circuits will be revised to prevent spurious opening of these valves due to a fire induced electrical failure (Reference 4).

The ADS/EMRV circuits are presently being evaluated to address spurious operation due to fire induced electrical failures in all fire zones.

2.1.13 Electrical Power System

2.1.13.1 Alternate Shutdown Facility

(a) A.C. Power System

All A.C. components included in Alternate Shutdown Facility are powered from Train B power sources except for RBCCW pump 1-1, Shutdown Cooling Pump NU02A, "A" 480V switchgear room HVAC and RBCCW isolation valve V-5-167. These are powered from Unit Substation (USS) 1A2 which is a Train A source. Since USS 1A2 can be tied to USS 1B2 by means of the tie breaker, energization of Train A busses from emergency

diesel generator DG-1 is not needed. Therefore, isolation and transfer of control of DG-1, 4160V bus 1C and 480V USS bus 1A3 to local panel is not required because these Train A components are not used for safe shutdown.

The following motor control centers will be used to achieve safe shutdown during a fire emergency in cable spreading and control rooms: MCC 1AB2, 1A21, 1A23, 1A21A, 1B2, 1B21, 1B32. Since the feeder breakers to these MCCs are manual breakers, no electrical control is involved.

A new stack is added to MCC 1B21 in the 480V Switchgear Room to supply power to the relocated isolation condenser 'B' valves and the HVAC modification loads. The relay panel and 125V D.C. power panel are not required because of the EMRV logic circuit modifications as described in paragraph 2.1.12.

(b) D.C. Power System

Batteries "B" and "C" will be utilized to provide required D.C. power for safe shutdown during a fire emergency in cable spreading and control rooms. All circuit breakers associated with these batteries are manual breakers. Therefore, control and indication of these breakers is not required on local panels.

2.1.13.2 Rerouting/Fire Wrapping of Circuits

The original scope contained 31 circuits associated with electrical power system. These circuits were required to be either rerouted or fire wrapped. Eighteen (18) of these circuits were associated either with auto starting of emergency diesel generator DG-2 or the battery chargers.

Since emergency diesel generator DG-2 is provided with isolated control at a local panel, it can be started locally if its auto start circuits are damaged by a fire in any other area. Therefore, fire protection of these circuits is not required.

The batteries, rather than the battery chargers, supply power to safe shutdown equipment. The chargers can not be relied on to provide emergency power per IEEE 308. Therefore, it is not necessary to protect circuits associated with the battery chargers.

Therefore, the new scope for rerouting of circuits does not include these 18 circuits associated with emergency diesel generator DG-2 and the station battery chargers. The remaining 13 circuits are associated with Train B power sources and are protected or rerouted. Therefore Train A power system circuits are not required to be protect ed due to availability of Train B power system circuits which will be free from fire damage.

2.1.14 Ventilation of Battery Rooms

The A-B Battery Room houses the "B" power train batteries which are required for plant shutdown utilizing the "B" shutdown train. The C Battery Room houses the "C" batteries which are required for plant shutdown utilizing the "A" shutdown train. The two battery rooms are located remote

from each other, and each room has a separate ventilation system. However, some equipment and cables for the two battery room ventilation systems are located in the same fire area and would be subject to damage from a single fire. the modifications required for the battery room ventilation systems to be in compliance with the requirements of Appendix R, were determined in a study (Reference 12), which is summarized below.

(a) A-B Battery Room

- Starter for exhaust fan EF-1-20 will be relocated from 'A' 480V SWGR to 'B' 480V SWGR Rm
- Separate controls will be provided for each fan (SF-1-20 and EF-1-20). 'K' relay providing interconnection between fans will be eliminated.
- Intake and exhaust dampers will be modified to provide failure in the open position to eliminate the possibility of a single failure stopping all battery room ventilation.

(b) C Battery Room

- Ventilation of the 'C' Battery Room is not required for a minimum of 38 hours after loss of ventilation.

- Adequate ventilation can be achieved for the 'C' Battery Room by manually opening the Battery Room door and manually opening dampers D-1 and D-2 in the ventilation system.

REFERENCES

1. Fire Hazard Analysis Appendix R Fire Evaluation Report, GPUN Document No. FHA-402050-002, Revision 2.

2. Appendix R Plant Walkdown conducted on 12/11/84.

3. Evaluation of Tripping Feedwater Pumps and Recirculation Pumps from Control Room in the Event of a Fire in Cable Spreading Rooms or Control Room, Burns and Roe Study #712, dated 11/9/84.

4. Spurious Actuation of Electromatic Relief Valves, Isolation Condenser Valves and Main Steam Isolation Valves, Burns and Roe Study #638, dated 10/12/84.

5. Evaluation of Main Steam Line Drain Valves Spurious Actuation, Burns and Roe Study #708, dated 11/6/84.

6. Study for the Spurious Actuation of the Motor Operated Core Spray System Containment Isolation Valves due to Fire, Burns and Roe Study #640, dated 10/17/84.

7. Study for Spurious Actuation of Motor Operation Reactor Clean-up Containment Isolation Valve Caused by a Fire, Burns and Roe Study #653, dated 10/17/84.

8. Loss of Reactor Coolant through Emergency Condenser Main Steam Vent Line Isolation Valves, Burns and Roe Study #750, dated 11/30/84.

9. Selection of Controls and Instrumentation for the Oyster Creek Remote Shutdown System, GPU Nuclear TDR No. 350, Revision 1.

10. Cleanup System Supplemental Study - BRI (Pending)

11. Evaluation of Shutdown Cooling Isolation Valves Spurious Actuation - BRI.

12. 480V Switchgear Room Ventilation Study for Compliance with Appendix R Requirements, Burns and Roe Study #682, dated 10/26/84.

13. Evaluation of Emergency condenser High Flow Protection System, Rev. 1, Burns and Roe Study #748, dated 10/11/84.

TABLE 1
SUMMARY OF APPENDIX R CHANGES IN SCOPE FOR SHUTDOWN
FROM OUTSIDE THE CONTROL ROOM

REQUIREMENTS AS DESCRIBED IN SCD 637 A, (GPUN FHA-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS			APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS			SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.		FUNCTION	COMPONENT/NO.		FUNCTION		
Reactor Scram and Reactivity Control	Reactor Scram Control Logic	Provide alternate controls & protect circuits	- Scram Pilot Valves - Backup Scram Pilot Valves - SDV Vent & Drain Pilot Valves	305-117 NC 56A All 'A' valves in the SDV system	Reactor Scram (Half Scram) De-Energize all Status ind. for NC 56A and all SDV vent & drain valves.	CRD Instrument Air Press. Filter d/p	PS-RD-24 PS-RD-39	Indication Indication	Eliminated	The control room is continuously manned and has a fire detection system which initiates a halon suppression system. Each cable spreading room has a fire detection and wet pipe sprinkler system. These rooms contain relatively low combustible loadings. Multiple scram paths exist from various Control Room Panels: (1) Scram pushbuttons are located on Panel 4F, (2) Disconnecting power to the RPS panels (3) Placing the Reactor Mode Select switch in the "Shutdown" position on panel 4F. Hence, the Control Room operator can initiate a successful reactor scram prior to evacuation to achieve hot shutdown. (Ref. Scope Revision Summary Para. 2.1.1)
			- Scram Pilot Valves - Back-up Scram Pilot Valves - SDV Vent & Drain Pilot Valves	305-118 NC 56B All 'B' valves in the SDV System	Reactor Scram (Half Scram. De-Energize all Status ind. for NC 56A and all SDV vent & drain valves					
			North SDV Isolation		Indication					
			South SDV Isolation		Indication					
										In depth review of scram logic indicates that shorts, etc. will not prevent manual scram based on a "De-energize-to-trip" logic. (Ref. Scope Revision Summary Para. 2.1.1)
	Reactor Recirc. Pump Trip (RPT)	Provide alternate controls and protect five (5) RPT circuits	Recirc. Pumps	NG01A NG01B NG01C NG01D NG01E	1 Trip function & 1 status light for all five pumps trip				Eliminated	In addition to initiation of a reactor scram, the control room operator can also trip the five (5) recirc. pumps prior to evacuation. This can be accomplished from two (2) Control Room panels: (1) Pump control switches on Panel 3F and (2) Trip 4160V busses 1A and 1B feeder breakers from Panel 8F. (Ref. Scope Revision Summary Para. 2.1.2)

REQUIREMENTS AS DESCRIBED IN SDD 657 A, (GPUN FHA-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS		APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS		SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.	FUNCTION	COMPONENT/NO.	FUNCTION		
Reactivity Monitoring	IRM's	Provide alternate indications for two (2) channels & route/protect circuits for same	Neutron Flux Monitoring Core Flux Monitor Drive Core Flux Monitor	Drive Controls Indication			Eliminated	A successful scram precludes the need for reactivity monitoring. Scram can be verified via full core rod position display or the APRM's. (Ref. Scope Revision Summary Para 2.1.3) SECY 83-269 and IE Notice 84-09 have not identified any neutron monitoring instrumentation for BWR's in their recommended list of instruments for alternate shutdown system.
Reactor Vessel Level & Pressure Monitoring	Rx Instrumentation	Six (6) instrument loops to be rerouted/protected & alternate indications provided	Fuel Zone Level - N.C. "B" Channel 2 of B574 Narrow Range Level New Channel REGS/19B Wide Range level (GEMAC) 1A12 Pressure CH "A" 1D46A Ch "B" 1G46B	Indication Indication Indication Indication Indication Indication			Delete (1) narrow range level	Redundant narrow range level indication is not required to comply with Appendix R criteria. However, redundant vessel level instrumentation will be provided on the RSP. The specific instrument channels to be used are currently being evaluated and will be finalized during detail design. (Ref Scope Revision Summary 2.1.5).

REQUIREMENTS AS DESCRIBED IN SDD 637 A, (GPUN FHA-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS			APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS			SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.		FUNCTION	COMPONENT/NO.		FUNCTION		
Reactor Isolation (to prevent excessive coolsnt loss)	Main Steam System Isolation	Reroute/protect & provide alternate controls for four (4) valve control circuits	Inner MSIV	NS03A NS03B	Close Control and Open/Close Position Indication				Eliminated	The control room operator can trip all four (4) MSIV's in conjunction with a reactor scram. Each main steam line has two (2) totally independent redundant valves in series and only one is required to remain closed for successful isolation. Hence inner and outer MSIV's NS03A&B and NS04A&B will be manually closed from the Control Room Panel 11F prior to evacuation. (Ref. Scope Revision Summary Para. 2.1.4.1a).
			Inner Drain Valve	V-1-106 V-1-107	Open/Close Position Indication	Inner Drain Valve	V-1-106 V-1-107	Close Control	Eliminated	By revision to plant operating procedures the inner Main Steam Drain Valves V-1-106 & 107 will be locked closed immediately following plant startup. Hence this will ensure against loss of Reactor Coolant Inventory through these valves., (Ref. Scope Revision Summary Para. 2.1.4.1b).
	Core Spray System Isolation	Reroute/protect & provide alternate controls for four (4) valve control circuits	Parallel Valve	V-20-15 V-20-40 V-20-21 V-20-41	Open/close position indication	Parallel Valve	V-20-15 V-20-40 V-20-21 V-20-41	Close Control	Eliminated	Check valves in series with Core Spray System isolation valves prevent excessive coolant loss. The four (4) parallel isolation valves can be manually closed within 3 hours with minimum reactor coolant inventory loss. (Ref. Scope Revision Summary Para. 2.1.4.2). Refer to "Rx Water Level Control" function of this Table for additional discussion on these valves.
	Clean-up System Isolation	Reroute/protect & provide alternate controls for four (4) valve control circuits				Valve	V-16-1 V-16-2 V-16-14 V-16-61	Close Control; Open/Close position indication	(1) Eliminated control for V-16-61. (2) The other 3 valves are being evaluated for elimination.	(1) The check valve (V-16-62) in series with the outer containment isolation valve (V-16-61) in the Reactor Cleanup discharge to the reactor will prevent excessive reactor coolsnt loss. The outer containment isolation valve can be manually closed within 6 hours with minimum reactor coolsnt inventory loss. (Ref. Scope Revision Summary Para. 2.1.4.3). (2) Pending the results of the study, if Reactor Coolant Inventory loss through these valves is a concern, valve closure will be assured by circuit modification and/or protection. (Ref. Scope Revision Summary Para. 2.1.4.3).

REQUIREMENTS AS DESCRIBED IN SDD 637 A, (GPUN FHA-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS		APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS		SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.	FUNCTION	COMPONENT/NO.	FUNCTION		
Reactor Isolation (Cont'd)	Shutdown Cooling Isolation	Administrative control			Valve V-17-19 V-17-54	Close Control; Open, Close position indication	Eliminated for reactor isolation. However, local control of these valves is required to support Residual Heat Removal. Refer to RHR function of this Table.	The Shutdown Cooling System is a closed loop filled system which therefore does not present a concern for loss of reactor coolant. However, the SDCS design temperature is lower than that of the RCS. Simultaneously opening both SDCS isolation valves would establish circulation flow and expose SDCS piping to higher than design temperatures. However, no flow will be established because the reactor recirculation pumps are off and no driving force is available. An evaluation of spurious actuation of the SDCS isolation valves has concluded that both valves will not be open simultaneously, hence no local control of these valves is required. (Ref. Scope Revision Summary Para 2.1.4.4).
	Isolation Condenser Vents	Not Addressed					Additional concerns addressed: (1) Iso Condenser 'B' Vent valves - Provide logic change to ensure closure (Ref. to "Decay Heat Removal" function of this table). (2) Iso Condenser 'A' Vent valve - Pending Evaluation	(1) To prevent Reactor Coolant Inventory loss, transfer and control logic modifications will close vent valves and prevent a spurious opening. (Ref. Scope Revision Summary Para 2.1.4.5). (2) Pending the results of the Iso condenser 'A' Vent valve study. If Reactor Coolant Inventory loss is a concern, spurious openings will be prevented by control logic circuit modifications and/or circuit protection. (Ref. Scope Revision Summary Para. 2.1.4.5).
	SDV System Vents and Drains	Not Addressed					The SDV Vent and Drain Valves are being evaluated for potential loss of Reactor Coolant Inventory due to a spurious opening.	Pending the results of the valve study, if Reactor Coolant Inventory loss through the SDV Vent and Drain Valves is a concern, spurious openings will be prevented by control logic circuit modifications and/or circuit protection. (Ref. Scope Revision Summary Para. 2.1.4.6)

REQUIREMENTS AS DESCRIBED IN SDD 657 A, (GPUN FSAR-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS			APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS		SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.		FUNCTION	COMPONENT/NO.	FUNCTION		
Reactor Coolant Makeup	CRD System	Circuits for five (5) components to be rerouted/protected & alternate controls provided outside of control room	Pump Flow	FT-RD-15	Indication			Reduced scope. Alternate controls to be provided for NCO8B pump only (one component). Provide local (field) indication for pump flow and pressure. Delete pump overload alarm.	Emphasis has been placed on reducing/ eliminating reactor coolant loss by assuring successful reactor isolation as opposed to providing redundant sources of coolant makeup. Aps. R vessel level analysis indicates that Rx coolant makeup is not required for 3 hours, 24 mins with: a successful scram, isolation of Rx vessel & initiation of iso condenser. Hence local indication is adequate. (Ref. Scope Revision Summary Para. 2.1.6)
			Charging Pressure	PT-RD-18	Indication				
			CRD Pump	NCO8A	Control				
			CRD Pump	NCO8B	Control				
			Pump Overload Alarm		Annunciation				
Rx Water Level Control (to prevent flooding of the Iso Condenser main steam lines)	Feedwater Trip	Protect/reroute circuits and provide alternate controls for three (3) feedwater pumps	Rx. Feedwater Pump	1-A	Trip Control & Status Indication			Eliminated	Operator can trip Feedwater pumps from the Control Room prior to evacuation. (Ref. Scope Revision Summary Para. 2.1.7.1)
			Rx. Feedwater Pump	1-B	Trip Control & Status Indication				
			Rx. Feedwater Pump	1-C	Trip Control & Status Indication				
	Core Spray Isolation	Protect/reroute circuits and provide alternate controls for four (4) isolation valves for the Core Spray System	Parallel Valve	V-20-15 V-20-40 V-20-21 V-20-41	Open/close position Indication			Elimination being considered pending on-going study.	Pending the results of the study, if overfilling of the vessel is a concern, spurious opening of the parallel valves with the Core Spray System pumps operating will be pre-empted by manually tripping breaker or circuit modifications. (Ref. Scope Revision Summary Para. 2.1.7.2).
	Recirc. Valve Loops	Protect/reroute circuits and provide alt. controls for four valves	Discharge Valve	NGO3A NGO3C	Control and Position Indication			Eliminated	Five loops are required to be open per Tech. Spec. during normal operations. Closure of more than one loop due to hot shorts, etc. is highly improbable. Hence, four (4) flow paths will always be available which exceeds the minimum requirement of two flow paths during and following shutdown. (Ref. Scope Revision Summary Para 2.1.7.3)
			Suction Valve	NGO2A NGO2C	Control and Position Indication				

REQUIREMENTS AS DESCRIBED IN SDD 637 A, (GPUN FHA-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS			APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS			SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.		FUNCTION	COMPONENT/NO.		FUNCTION		
Decay Heat Removal	ISO Condenser 'B'	Reroute/protect circuits & provide alternate controls for six (6) valves, one (1) level indicator, and two (2) RAD monitors. Provide an additional MCC.	Steam Line Valves	V-14-32	Control & Position Indication	Steam Line Vent Valves	V-14-1 V-14-19	Control & Position Indication	Reduced scope by valve control logic modification of all valves. Reroute/protect circuits & provide alt. control for one (1) valve and shell water level indication. Delete Vent RAD Monitoring and additional MCC.	By transfer and control logic circuit modifications will isolate both steam line valves and both condensate line valves from Control Room/Cable Spreading Rooms. Only condensate valve V-14-35, closed during normal operation, will have control from the RSP. The three valves V-14-32, 33 & 37 are open during normal operation, hence spurious closure of normally open valves will be eliminated by control logic modifications. The high flow protection logic will be defeated on the 'B' condenser when using RSP. These valves will also have their power sources relocated to existing MCC's such that they are not in the same fire zone as the Isolation Condenser 'A' valve power sources. Transfer and control logic modifications will close vent line valves V-14-1 and V-14-19 and prevent a spurious opening. Hence local controls are not required. (Ref. Scope Revision Summary 2.1.8.1) Vent Rad monitoring is not required for IC system operation. (Ref. Scope Revision Summary Para 2.1.8.1).
				V-14-33	Control & Position Indication					
			Condensate Line Valves	V-14-35	Control & Position Indication					
				V-14-37	Control & Position Indication					
			Shell Water Level	IG056	Indication					
			Vent Rad. Monitor	RND4A RND4B	Indication Indication					
	Condensate Transfer	Reroute/protect circuit & provide alternate control for one (1) valve	Make-up Line Valve	V-11-34	Control & Position Indication				No change for make-up valve V-11-34. Added local control for the Condensate Transfer pump 1-2 for makeup to Iso Condenser 'B'	
	ISO Condenser 'A'	Reroute/protect circuit & provide alternate control for one (1) valve	Condensate Line Valve	V-14-36	Control & Position Indication				Eliminated	App. R reactor vessel level analysis for a spurious initiation of 'A' ISO condenser does not show any adverse impact on the ability to achieve shutdown or maintain water level above 'TAF' (Ref. "RC Makeup"). Hence, no protection or alternate controls for V-14-36 are required. (Ref. Scope Revision Summary Para. 2.1.8.2). The vent valves for this condenser are discussed under "Reactor Isolation" function of this table.

REQUIREMENTS AS DESCRIBED IN SOD 637 A, (GPUN FHA-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS		APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS			SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.	FUNCTION	COMPONENT/NO.		FUNCTION		
Drywell Cooling	DW recirc. fans RBCCW Service Water	Reroute/protect/repower circuits for five (5) fans, two (2) RBCCW pumps & two (2) SW pumps. Provide alternate controls & indications for RBCCW & SW pumps & press. instrumentation	RBCCW Discharge Pressure Service Water Discharge Pressure	Indication Indication	Drywell Cooling Fans	RF-1-1 RF-1-2 RF-1-3 RF-1-4 RF-1-5	Control & Indication Control & Indication Control & Indication Control & Indication Control & Indication	Eliminated (for DW cooling only) RBCCW & SW Disch. pruss. Ind on RSP, Drywell Cooling fan controls/ind, RBCCW Isolation valves controls/inc., and SW pump 1-1 controls/ind, Ind,	Drywell temperature analysis performed for App. R scenario confirms that containment integrity will not be challenged throughout the '72' hour hot shutdown period. Since drywell cooling is not required, local control of the Drywell Cooling Fans can be eliminated along with the support services of RBCCW and SW discharge pressure indication on the Remote Shutdown Panel. (Ref. Scope Revision Summary Para. 2.1.9.1) RBCCW is required, however, to support the Shutdown Cooling System. Therefore, local alternate controls for both RBCCW Pumps 1-1 and 1-2 are required. Local gages will be utilized to check pump discharge pressure. (Ref. Scope Revision Summary Para. 2.1.9.2a) One SW pump is adequate to supply cooling water to the RBCCW heat exchangers. Hence local alternate controls for SW pump 1-2 are required and controls for SW pump 1-1 will be deleted. (Ref. Scope Revision Summary Para. 2.1.9.3).
					RBCCW to Drywell Isolation Valves	V-5-147 V-5-148	Control & Indication Control & Indication		
					RBCCW from Drywell Isolation Valves	V-5-166 V-5-167	Control & Indication Control & Indication		
					RBCCW Pump	1-1 1-2	Control & Indication Control & Indication		
					Service Water Pump	1-1 1-2	Control & Indication Control & Indication		

REQUIREMENTS AS DESCRIBED IN SDD 637 A, (GPUN FHA-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS			APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS			SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.		FUNCTION	COMPONENT/NO.		FUNCTION		
Drywell Cooling (Cont'd)	Misc. Containment Instrumentation	Reroute/protect circuits & provide alternate indications				Drywell Temperature		Indication	Eli[illegible]	These indications are not required for a Control Room/Cable Spreading Room fire. Failure of EMRV is not required to be assumed. EMRV control circuit failure will be precluded by logic modification. (Ref. Scope Revision Summary Para. 2.1.10).
						Torus Temperature		Indication		
						Electromatic Relief Valve Discharge Piping Temp.		Indication		
Residual Heat Removal (Cool-down/Cold Shutdown)	Shutdown Cooling RBCCW Service Water Recirc. loop 'E' discharge valve	Repair circuits & provide alternate controls for four (4) shutdown cooling components & disch. valve for 'E' recirc. loop Modification to RBCCW & SW discussed under "Drywell Cooling" function of this Table				Shutdown Cooling System			No change in scope for Shutdown Cooling & recirc. valve. Local alternate controls for the RBCCW & SW pumps to be provided.	No change in scope. Reduced scope for RBCCW/SW systems is to support Residual Heat Removal function only. (Ref. Scope Revision Summary Para. 2.1.11)
						Pump	NU02A NU02B	Control & Indication Control & Indication		
						Suction Valve	V-17-19	Open Control & Open/Close Indication		
						Discharge Valve	V-17-54	Open Control & Open/Close Indication		
						Recirculation Pump 'E' Discharge Valve	NG03-E	Close Control & Open/Close Indication		
Reactor Coolant Depressurization	Automatic Depress. System/EMRV Control	Reroute/protect circuits for control of five (5) EMRV's	EMRV's	NR108A NR108B NR108C NR108D NR108E	Control and Position Indication Control and Position Indication Control and Position Indication Control and Position Indication Control and Position Indication				Eliminated controls from Remote Shutdown Panel (RSP).	The EMRV/ADS control logic circuits will be modified and cables rerouted/protected to prevent spurious opening of these valves. (Ref. Scope Revision Summary Para. 2.1.12).

REQUIREMENTS AS DESCRIBED IN SDD 637 A, (GPUN FHA-402050-002 REV. 2, APPENDIX D)

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE	APPENDIX A REMOTE SHUTDOWN PANEL FUNCTIONS		APPENDIX B INDICATION AND CONTROL AT POWER DISTRIBUTION PANELS		SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
			COMPONENT/NO.	FUNCTION	COMPONENT/NO.	FUNCTION		
Electrical Power	Onsite AC 125V DC	All power feeders to busses powering shutdown equipment, control circuits for incoming breakers to these busses will be re-routed/protected & alternate controls provided for DG #1, DG #2 & breaker control circuits. Provide a new MCC, Relay Panel and 125V DC Power Panel in fire zone 08-FA-6B.	Control Power Transfer for Individual Transfer	Indications	Emergency Diesel Generator DG-1	Control	Delete alternate controls for DG-1 and 'A' division power busses (4160V Bus 1C and 480V Bus 1A3)	Only one emergency diesel generator is required for safe shutdown. Train 'B' electrical power will be the primary source for safe shutdown utilizing tie breaker between USS 1B2 and 1A2 for required train 'A' cold shutdown loads. (Ref. Scope Revision Summary Para. 2.1.13.1)
					Emergency Diesel Generator DG-2	Control		
					4160V Bus 1C	Incoming Breaker Control & Bus Voltage		
					4160V Bus 1D	Incoming Breaker Control & Status Indication		
					480V Bus 1A2	Incoming Breaker Control & Status Indication	Reduced number of power feeders protected/re-routed.	Train 'B' DC power feeders for switchgear breaker controls are rerouted out of the cable spreading room. (Ref Scope Revision Summary Para. 2.1.13.1)
					480V Bus 1B2	Incoming Breaker Control & Status Indication		
					480V Bus 1A3	Incoming Breaker Control & Status Indication		
					480V Bus 1B3	Incoming Breaker Control & Status Indication		
					Battery C	Breaker Control & Indication	Alternate controls for DG-2 'B' division power busses, and USS 1A2 remain.	Rx. vessel level analysis confirms that onsite AC power is not needed for 3 hrs, 24 mins. Modifications proposed in the reduced scope will be able to establish on-site power within 1/2 hour, if lost due to a fire. (Ref. Scope Revision Summary Para. 2.1.6)
					Battery B	Breaker Control & Indication		
							Added 480V MCC 1AB2, 1A21, 1A21A, 1A23, 1B2, 1B21, 1B32, and 125VDC MCC DG-2 and distribution centers B and C.	These busses, without control functions or protection, are included to support alternate shutdown capability. (Ref. Scope Revision Summary Para 2.1.13.1)
							Reduce scope to add only a MCC stack to MCC 1B21 in fire area 08-FA-6B. Delete relay panel and 125 VDC power panel.	An MCC stack is added to MCC 1B21 in fire area 08-FA-6B for the repowering of the isolation condenser valves and new HVAC system loads. The relay panel and 125VDC Power Panel are no longer required because of EMRV logic circuit modifications. (Ref. Scope Revision Summary Para. 2.1.13.1).

TABLE 2

SUMMARY OF APPENDIX R CHANGES IN SCOPE FOR SHUTDOWN DUE TO FIRES OUTSIDE CONTROL ROOM/CABLE SPREADING ROOMS COMPLEX

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE (OPUN FHA - 402050-002, REV. 2)	SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
PROTECTION/ SEPARATION OF ELECTRICAL CIRCUITS	Reactor Scram	Reroute/protect one (1) circuit	Eliminated	A successful scram can be initiated from the control room, hence, protection of circuit not required. (Ref. Scope Revision Summary Para. 2.1.1)
	Neutron Monitoring (IRMs)	Reroute/protect eight (8) circuits	Eliminated	Monitoring of a successful scram is not required. (Ref. Scope Revision Summary Para. 2.1.3)
	Reactor Instrumentation	Reroute/protect seven (7) circuits	Reduced number of protected circuits to five (5). Deleted protection of redundant Channel "A" Narrow Range level indication.	Redundant Narrow Range Level is not required. (Ref. Scope Revision Summary Para. 2.1.5).
	Main Steam System Isolation	Reroute/protect nine (9) circuits	Eliminated	MSIVs are de-energize-to-close to the fail safe position. Each Main Steam line has two (2) redundant and diverse isolation valves in series, hence, only one is required to operate. A spurious signal can only prevent one valve from closing. (Ref. Scope Revision Summary Para. 2.1.4.1)
	Core Spray System Isolation	No requirements	None, pending results of ongoing stud,	(Ref. Scope Revision Summary Para. 2.1.7.2)
	Clean-up System Isolation	No requirements	None, pending results of ongoing study	(Ref. Scope Revision Summary Para. 2.1.4.3)
	Shutdown Cooling System Isolation	No requirements	None	-
	CRD System	Reroute/protect twelve (12) circuits	Reduced number of protected circuits to two (2). Deleted ten (10) circuits in support of control and instrumentation.	CRD System can be used to provide Reactor Coolant makeup. However, reactor water inventory analysis indicates that sufficient inventory exists to maintain a level above "TAF" for 3 hours, 24 minutes without makeup. Hence, alternate local control from the unit substation or RSP with local indication is adequate. (Ref. Scope Revision Summary Para. 2.1.6)
	Feedwater System Trip	No requirements	None	-
	Recirculation System Valves	No requirements	None	-
	Isolation Condenser "B"	Reroute/protect twenty (20) circuits	Reduced number of protected circuits to eighteen (18). Deleted two (2) circuits.	Reduction of IC "B" protected circuits are a result of revised power circuit arrangement. (Ref. Scope Revision Summary Para. 2.1.8.1)
	Misc. Containment Instrumentation	No requirements	Added two (2) circuits	Torus level and temperature were inadvertently omitted from last fire hazards analysis revision.

TABLE 2

SUMMARY OF APPENDIX R CHANGES IN SCOPE FOR SHUTDOWN DUE TO FIRES OUTSIDE CONTROL ROOM/CABLE SPREADING ROOMS COMPLEX

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE (GPUN FHA - 402050-002, REV. 2)	SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
PROTECTION/ SEPARATION OF ELECTRICAL CIRCUITS(cont'd)	Isolation Condenser "A"	Reroute/protect twelve (12) circuits	Reduced number of protected circuits to five (5). Deleted seven (7) circuits.	Isolation Condenser 'B' is the primary path for hot shutdown. Hence, protection of Isolation Condenser 'A' circuits is not required. However, five circuits will be rerouted to provide separation from ISO Condenser 'B' circuits. (Ref. Scope Revision Summary Para. 2.1.8.2)
	DW Recirculation Fans	Reroute/protect eight (8) circuits	Eliminated	Drywell temperature study confirms that the containment integrity will not be challenged throughout the 72 hour hot shutdown period. Hence, protection of DW Recirculation Fan circuits is not required. (Ref. Scope Revision Summary Para. 2.1.9.1)
	RBCCW	Reroute/protect fifteen (15) circuits	Eliminated	RBCCW is required for cold shutdown. Hence, necessary repairs will be performed to support operation of required equipment. If damage is extensive, an alternate cold shutdown path is available, with repairs, using the EMRVs/Core Spray/Containment Spray/Emergency Service Water Systems. (Ref. Scope Revision Summary Para. 2.1.9.2)
	Service Water	Reroute/protect two (2) circuits	Eliminated	Service Water is required in support of RBCCW which is required for cold shutdown. An alternate cold shutdown path is available using the Emergency Service Water pump in conjunction with EMRVs/Core Spray/Containment Spray Systems. (Rev. Scope Revision Summary Para. 2.1.9.3)
	EMRVs	Reroute/protect fifteen (15) circuits	Elimination being considered pending an ongoing study.	EMRV logic circuits will be revised to prevent spurious actuation. New cables added to accomplish this logic change will be protected in accordance with Appendix R criteria.
	Emergency Service Water	No requirements	Added one (1) circuit	This circuit will be protected at the intake structure to assure one path of emergency service water for cold shutdown. (Ref. Scope Revision Summary Para. 2.1.9.4)
	Electrical Power	Reroute/protect thirty-one (31) circuits	Reduced number of protected circuits to thirteen (13)	The auto starting circuits of DG-2 are not being protected because circuit isolation and alternate start capability are provided at the diesel. In addition, the station battery charger feeders for both trains are not protected since they cannot be relied on for shutdown per IEEE 308. (Ref. Scope Revision Summary Para. 2.1.13.2)

TABLE 2

SUMMARY OF APPENDIX R CHANGES IN SCOPE FOR SHUTDOWN DUE TO FIRES OUTSIDE CONTROL ROOM/CABLE SPREADING ROOMS COMPLEX

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE (GPUN FHA - 402050-002, REV. 2)	SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
PHYSICAL SEPARATION/ FIRE BARRIERS/ FIRE ZONES	RBCCW	Install a partial fire barrier having a one-hour fire rating between RBCCW Pumps 1-1 and 1-2.	Eliminated	An alternate cold shutdown path will be utilized in the event of loss of RBCCW. The recommended alternate path will effect the minimum amount of repairs required for cold shutdown by use of EMRVs/Core Spray/Containment Spray/Emergency Service Water systems. (Ref. Scope Revision Summary Para. 2.1.9.2)
	Service Water Condensate Transfer	Install a partial fire barrier having a one-hour fire rating between Unit Substations 1A3 and 1B3.	Eliminated	An alternate method will be utilized to achieve cold shutdown in the event of loss of unit substations 1A3 and 1B3 at the intake structure. The power feed circuit to an Emergency Service Water pump will be protected. (Ref. Scope Revision Summary Para. 2.1.9.3)
	Electrical Power	Install one hour fire rated wall for separation of the 480V Switchgear Rooms "A" and "B"	None	-
		Alternate fuel supply connections to the diesel generator day tanks.	None	-
VENTILATION OF 480 V SWGR RM	480V SWGR RM H&V System (Fans SF-1-21 and EF-1-21)	Ventilation for 480V SWGR RM would be revised due to the new wall between the redundant 480V SWGR	None	-
FIRE PROTECTION OF 480V SWGR RM	480V SWGR RM Halon Fire Suppression System	Halon Fire Suppression System for 480V SWGR RM would be revised due to the new wall between the redundant 480V SWGR	None	-
VENTILATION OF A-B BATTERY ROOM	Battery and MG Set Room Ventilation System (Fans SF-1-20 and EF-1-20)	Not included	Revise A-B Battery Room ventilation system	Following modifications to Ventilation System will be made: 1) Starter for exhaust fan EF-1-20 will be relocated from 'A' 480V SWGR RM to 'B' 480V SWGR Rm 2) Separate controls will be provided for each fan (SF-1-20 and EF-1-20). 'K' relay providing interconnection between fans will be eliminated. 3) Intake and exhaust dampers will be modified to provide failure in the open position to eliminate the possibility of a single failure stopping all battery room ventilation (Ref. Scope Revision Summary Para. 2.1.14)

TABLE 2

SUMMARY OF APPENDIX R CHANGES IN SCOPE FOR SHUTDOWN DUE TO FIRES OUTSIDE CONTROL ROOM/CABLE SPREADING ROOMS COMPLEX

FUNCTION	SYSTEM	SUMMARY OF ORIGINAL SCOPE (GPUN FHA - 402050-002, REV. 2)	SCOPE REVISION	REMARKS/REASONS/JUSTIFICATION
VENTILATION OF 'C' BATTERY ROOM	Battery Room 'C' Ventilation System	Not included	Exemption to Appendix R criteria is requested for providing one hour fire barriers for Battery Room Ventilation System cables in the 'B' 480V SWGR RM.	Basis of exemption is as follows: 1) Ventilation of the 'C' Battery Room is not required for a minimum of 38 hours after loss of ventilation. 2) Adequate ventilation can be achieved for the 'C' Battery Room by manually opening the Battery Room door and manually opening dampers D-1 and D-2 in the ventilation system ductwork. (Ref. Scope Revision Summary Para. 2.1.14)
FIRE DETECTION SYSTEMS	Fire Detection System	Fire detection systems would be added to (1) areas of Office Building OB-FA-9 where cables are rerouted, (2) Chem Lab, Laundry, and Instrument Shop in fire area OB-FZ-10B, and (3) new Cable Spreading Room OB-FA-22 (which consists of OB-FZ-22A, B & C).		
FIRE WALLS IN EMERGENCY DIESEL GENERATOR ENCLOSURES	Emergency Diesel Generators	Not included	North wall of Emergency Diesel Generator Enclosures and fuel oil tank enclosure will be rated as a 3 hour fire barrier.	-

TABLE 3

STATUS OF OCNGS APPENDIX R EXEMPTION REQUEST

Fire Area/ Zone	Previous Exemption Requests (GPUN FHA - 402050-002, Rev. 2)	Exemption Status for Revised Submittal	Remarks/Reasons	Additional Exemptions Requested
RB-FZ-1D	1. Automatic suppression	Same	In addition, a request has been made to convert the automatic tray suppression system to manual actuation.	
	2. Partial fire barrier between RBCCW Pumps	Withdraw	These pumps are not required for hot shutdown because drywell cooling is not required per the drywell temperature analysis. In addition, an alternate heat removal path (EMRV's, Core Spray, Containment Spray and ESW) is being utilized for cold shutdown. Therefore, the partial barrier to assure one RBCCW pump in the event of fire at the pumps is not required for safe shutdown.	1. The alternate decay heat removal path as provided by the EMRV's, Core Spray, Containment Spray, and ESW does not satisfy the technical specification definition for cold shutdown because the design of the EMRV's prohibits venting of the primary system. Therefore, an exemption shall be requested from the requirement to satisfy the technical specification definition of cold shutdown as it applies to RC venting. 2. Based on the B&R Spurious Actuation Study, protection of the EMRV circuits is not necessary to prevent spurious opening of these valves. Therefore, an exemption shall be requested from the requirement to protect the EMRV circuits for hot shutdown spurious actuation concerns.
RB-FZ-1E	1. Automatic suppression	Same	In addition, a request has been made to convert the automatic tray suppression system to manual actuation.	
	2. Protection of Reactor Scram Circuitry	Same		
	3. Protection of Reactor Recirculation Pump Suction and Discharge Valves Circuitry	Same		1. The alternate decay heat removal path as provided by the EMRV's, Core Spray, Containment Spray, and ESW does not satisfy the technical specification definition for cold shutdown because the design of the EMRV's prohibits venting of the primary system. Therefore, an exemption shall be requested from the requirement to satisfy the technical specification definition of cold shutdown as it applies to RC venting.

Fire Area/ Zone	Previous Exemption Requests (GPUN FHA - 402050-002, Rev. 2)	Exemption Status for Revised Submittal	Remarks/Reasons	Additional Exemptions Requested
				2. Based on the B&K Spurious Actuation Study, protection of the EMRV circuits is not necessary to prevent spurious opening of these valves. Therefore, an exemption shall be requested from the requirement to protect the EMRV circuits for hot shutdown spurious actuation concerns.
TB-FZ-11D	1. Automatic detection	Same		
TB-FZ-11E	1. Automatic detection	Same		
	2. Separation of redundant electrical power system circuits by 20 ft. with no intervening combustibles.	Same	Revise to indicate circuits of concern	
OB-FA-6A	None	See additional exemption		1. The alternate decay heat removal path as provided by the EMRV's, Core Spray, Containment Spray, and ESW does not satisfy the technical specification definition for cold shutdown because the design of the EMRV's prohibits venting of the primary system. Therefore, an exemption shall be requested from the requirement to satisfy the technical specification definition of cold shutdown as it applies to RC venting.
OB-FA-6B	None	See additional exemption		1. An exemption shall be requested from the requirement to protect the "C" Battery Room HVAC circuitry.
OB-FZ-8A	1. Automatic detection	Same		
	2. Protection of reactor recirculation pump suction and discharge valves circuitry	Same		

Fire Area/ Zone	Previous Exemption Requests (GPUN FHA - 402050-002, Rev. 2)	Exemption Status for Revised Submittal	Remarks/Reasons	Additional Exemptions Requested
				1. The alternate decay heat removal path as provided by the EMRV's, Core Spray, Containment Spray, and ESW does not satisfy the technical specification definition for cold shutdown because the design of the EMRV's prohibits venting of the primary system. Therefore, an exemption shall be requested from the requirement to satisfy the technical specification definition of cold shutdown as it applies to RC venting. 2. Based on the B&R Spurious Actuation Study, protection of the EMRV circuits is not necessary to prevent spurious opening of these valves. Therefore, an exemption shall be requested from the requirement to protect the EMRV circuits for hot shutdown spurious actuation concerns.
08-FZ-8C	1. Protection of reactor scram circuitry	Same	None	
	2. Protection of reactor recirculation pump suction and discharge valves circuitry	Same	None	
				1. The alternate decay heat removal path as provided by the EMRV's, Core Spray, Containment Spray, and ESW does not satisfy the technical specification definition for cold shutdown because the design of the EMRV's prohibits venting of the primary system. Therefore, an exemption shall be requested from the requirement to satisfy the technical specification definition of cold shutdown as it applies to RC venting. 2. Based on the B&R Spurious Actuation Study, protection of the EMRV circuits is not necessary to prevent spurious opening of these valves. Therefore, an exemption shall be requested from the requirement to protect the EMRV circuits for hot shutdown spurious actuation concerns.
08-FA-9	1. Automatic suppression	Withdraw	Based on the B&R Spurious Actuation Study, the EMRV circuits do not require protection. Therefore, automatic detection and suppression is not required in this area.	

Fire Area/ Zone	Previous Exemption Requests (GPUN FHA - 402050-002, Rev. 2)	Exemption Status For Revised Submittal	Remarks/Reasons	Additional Exemptions Requested
				1. Based on the B&R Spurious Actuation Study, protection of the EMRV circuits is not necessary to prevent spurious opening of these valves. Therefore, an exemption shall be requested from the requirement to protect the EMRV circuits for hot shutdown spurious actuation concerns.
OB-FZ-10A	None	See additional exemption		1. Based on the B&R Spurious Actuation Study, protection of the EMRV circuits is not necessary to prevent spurious opening of these valves. Therefore, an exemption shall be requested from the requirement to protect the EMRV circuits for hot shutdown spurious actuation concerns.
OB-FZ-10B	1. Automatic suppression	Withdraw	Circuits requiring protection have been deleted from the scope of Appendix R (RBCCW to Drywell Cooling Valves). Therefore, automatic detection and suppression is not required in this zone.	
CW-FA-14	1. Automatic detection	Withdraw	Components in this area are not being relied upon for hot shutdown. One ESW circuit is being protected to assure cold shutdown in lieu of repairs.	
	2. Automatic suppression	Withdraw	Components in this area are not being relied upon for hot shutdown. One ESW circuit is being protected to assure cold shutdown in lieu of repairs.	
	3. Partial fire barrier between Unit Substation 1A3 and 1B3	Withdraw	Components in this area are not being relied upon for hot shutdown. One ESW circuit is being protected to assure cold shutdown in lieu of repairs.	
				1. The alternate decay heat removal path as provided by the EMRV's, Core Spray, Containment Spray, and ESW does not satisfy the technical specification definition for cold shutdown because the design of the EMRV's prohibits venting of the primary system. Therefore, an exemption shall be requested from the requirement to satisfy the technical specification definition of cold shutdown as it applies to RC venting.