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10 CFR 50.12

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Request for Exemption from 10 CFR 50, Appendix R, Section III.G, "Fire Protection of Safe Shutdown Capability"

Reference: Regulatory Issue Summary (RIS) 2006-10, "Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions," dated June 30, 2006.

In accordance with 10 CFR 50.12, "Specific exemptions," Exelon Generation Company, LLC (Exelon) hereby requests an exemption from the provisions of 10 CFR 50, Appendix R, Section III.G, "Fire Protection of Safe Shutdown Capability," for the use of operator manual actions for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, in lieu of the requirements specified in Section III.G.2. This exemption is being requested in accordance with the requirements of 10 CFR 50.12(a)(2)(ii) since the application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule.

Regulatory Issue Summary (RIS) 2006-10, "Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions," indicates that an approved exemption in accordance with the requirements of 10 CFR 50.12 is required for all operator manual actions credited for satisfying the requirements of 10 CFR 50, Appendix R, Section III.G.2. This exemption request is limited to those manual actions that were not included in a previous exemption request. The attachment to this letter provides the detailed exemption request, including the basis for the exemption and the defense-in-depth review for each of the initiating fire areas for which a manual action is required.

This exemption request will not result in undue risk to the public health and safety because Exelon has determined that the subject manual actions are feasible and the NRC has already found similar manual actions to be acceptable for use in achieving post-fire safe shutdown. The intent of 10 CFR 50, Appendix R, Section III.G.2, is to ensure that one train of systems necessary to achieve and maintain hot shutdown will remain available in the event of a fire. The manual actions discussed in this exemption request provide that assurance. If manual actions are not used to meet the underlying purpose of the rule, modifications to: 1) provide additional fire suppression systems, detection systems, or fire barriers, or 2) reroute cables or wrap cables, that involve issues such as accessibility, dose, structural interferences, design limitations, ampacity derating, etc., would be required to achieve compliance. Such modifications represent an unwarranted burden on Exelon since they are not necessary to meet the underlying purpose of the rule. Therefore, the special circumstances for issuance of the

exemption are satisfied in accordance with the requirements of 10 CFR 50.12(a)(2)(ii), since application of the rule is not necessary to achieve the underlying purpose of the rule. In addition, the requested exemption is authorized by law and is consistent with the common defense and security. Therefore, the requirements of 10 CFR 50.12(a)(1) are satisfied.

This request includes no new regulatory commitments.

Information supporting the exemption request is contained in the attachment to this letter. Exelon requests approval of this exemption request by March 6, 2010.

If you have any questions or require additional information, please contact Glenn Stewart at 610-765-5529.

Respectfully,

D PH

Pamela B. Cowan
Director, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Operator Manual Actions Exemption Request

cc:	Regional Administrator - NRC Region I	w/attachment
	NRC Senior Resident Inspector - PBAPS	"
	NRC Project Manager, NRR - PBAPS	"
	S. T. Gray, State of Maryland	"
	R. R. Janati, Commonwealth of Pennsylvania	"

ATTACHMENT

10 CFR 50.12 Exemption Request

Peach Bottom Atomic Power Station, Units 2 and 3
Docket Nos. 50-277 and 50-278

Request for Exemption from 10 CFR 50, Appendix R,
Section III.G, “Fire Protection of Safe Shutdown Capability"

<u>Operator Manual Actions Exemption Request</u>

ATTACHMENT
OPERATOR MANUAL ACTIONS EXEMPTION REQUEST

I. SPECIFIC EXEMPTION REQUEST

In accordance with 10 CFR 50.12, "Specific exemptions," Exelon Generation Company, LLC (Exelon) hereby requests an exemption from the requirements of 10 CFR 50, Appendix R (Reference 1), Section III.G, "Fire Protection for Safe Shutdown Capability," for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, to the extent that operator manual actions are necessary to achieve and maintain hot shutdown for fire areas in which both trains of safe shutdown cables/equipment are routed through the same fire area.

Background:

The criteria for granting specific exemptions from 10 CFR 50 regulations are specified in 10 CFR 50.12. In accordance with 10 CFR 50.12(a)(1), the NRC is authorized to grant an exemption upon determining that the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security.

Regulatory Issue Summary (RIS) 2006-10 (Reference 2) documents the NRC position relative to the use of operator manual actions as part of a compliance strategy to meet the requirements of 10 CFR 50, Appendix R, Section III.G.2. The RIS states that plants which credit manual actions for Section III.G.2 compliance must obtain specific NRC approval for the manual action via the exemption process in accordance with the requirements of 10 CFR 50.12. This exemption request is limited to those manual actions that were not included in a previous exemption request.

II. BASIS FOR EXEMPTION REQUEST

This exemption request includes those operator manual actions credited for 10 CFR 50, Appendix R, Section III.G.2 compliance which were not considered to have been previously submitted to the NRC for review and approval. The basis for this exemption request is the special circumstances cited in 10 CFR 50.12 (a)(2)(ii): "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." The intent of 10 CFR 50, Appendix R, Section III.G.2, is to ensure that one train of systems necessary to achieve and maintain hot shutdown will remain available in the event of a fire. The manual actions discussed in this exemption request provide that assurance. If manual actions are not used to meet the underlying purpose of the rule, modifications to: 1) provide additional fire suppression systems, detection systems, or fire barriers, or 2) reroute cables or wrap cables, that involve issues such as accessibility, dose, structural interferences, design limitations, ampacity derating, etc., would be required to achieve compliance. Such modifications represent an unwarranted burden on Exelon since they are not necessary to meet the underlying purpose of the rule. Therefore, the special circumstances for issuance of the exemption are satisfied in accordance with the requirements of 10 CFR 50.12(a)(2)(ii), since application of the rule is not necessary to achieve the underlying purpose of the rule.

This exemption request provides the documentation necessary to demonstrate the feasibility and reliability of the operator manual actions. As defined in NUREG-1852 (Reference 3), a

"feasible action" is one "that is analyzed and demonstrated as being able to be performed within an available time so as to avoid a defined undesirable outcome." A "reliable action" is "a feasible action that is analyzed and demonstrated as being dependably repeatable within an available time, so as to avoid a defined adverse consequence, while considering varying conditions that could affect the available time and/or the time to perform the action." A final aspect of operator manual actions that will be addressed in this exemption request is defense-in-depth. Specifically, this aspect will consider the fire protection features such as detection, suppression, physical separation and combustible loading in the fire areas under consideration (i.e., the initiating fire area).

A. OVERVIEW OF OPERATOR MANUAL ACTIONS

PBAPS utilizes operator manual actions as part of the post-fire safe shutdown strategy for Appendix R compliance. The operator manual actions are listed in Table A-4 of the PBAPS Fire Protection Program (FPP), which is part of the PBAPS Updated Final Safety Analysis Report (UFSAR). This exemption request is limited to those manual actions that were not included in a previous exemption request. These operator manual actions are primarily those that were established as part of the Thermo-Lag resolution effort, or to resolve deficiencies or improvement items identified during or subsequent to the Thermo-Lag resolution effort.

There are 31 individual operator manual actions addressed by this exemption request. The operator manual actions included in this exemption request can be divided into the following general categories based on the type of action taken

- Circuit Breaker manipulation (trip [open] or close)
- Removal of fuses/fuse blocks
- Operating a single switch on a panel
- Installing a circuit test plug into an instrument connection
- Manually opening a valve (at the valve or at the MCC contactor)

This section of the exemption request is organized in the following manner:

B. Fire Area Descriptions
C. Detailed Evaluation of Operator Manual Actions
    1. Description of Individual Operator Manual Actions
    2. Consideration of Operator Manual Actions Combined by Fire Area
    3. Review of Operator Manual Actions Against NUREG-1852
D. Defense in Depth

B. FIRE AREA DESCRIPTIONS

There are 15 initiating fire areas (i.e., the area where the fire that requires the manual action to be performed originates) included in this exemption request. A brief description of each fire area is provided below. This information provides a summary of the type of fires that are postulated to occur in each area and the type of combustibles located in each area. Detection and suppression systems that are installed in the fire area are also discussed. The information provided was obtained from the PBAPS FPP Chapter 5 and Appendix A, Table A-1. Note that many of these fire areas are made up of a number of separate rooms. The information provided is a summary of the rooms for the initiating fire areas, as appropriate. Where individual operator manual actions are discussed elsewhere in this document reference to the initiating fire area is provided.

1. Fire Area 2, Radwaste Building

This fire area is composed of a number of separate rooms located within the Radwaste Building. Significant rooms within this fire area include, but are not limited to: the Unit 2 and Unit 3 High Pressure Coolant Injection (HPCI) pump rooms, the Reactor Core Isolation Cooling (RCIC) pump rooms, the Reactor Building Closed Cooling Water (RBCCW) heat exchanger rooms (which contain the Reactor Recirculation Pump Motor Generator (MG) set lube oil pumps) and a number of tank rooms. Standby Gas Treatment (SBGT) charcoal filters are also in this fire area. Postulated fires within this area include: electrical cable fires (note that all exposed cables have fire retardant insulation), lube oil fires (significant lube oil hazards have either carbon dioxide (CO_2) or pre-action sprinkler systems), charcoal filter fires, trash in Radwaste trash area, and paper in the Radwaste Control Room. The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area include: cable insulation, lube oil, silicone rubber, thermo-lag, charcoal and various Class A combustibles. There is smoke or heat detection in most rooms, although some of the Radwaste pump and tank rooms (locked high radiation areas) do not have detection. Suppression systems include manual CO_2 in each HPCI pump room, pre-action sprinklers over the MG set lube oil pumps, wet pipe sprinklers in the Radwaste trash area and water spray for the charcoal filters in the SBGT system. This fire area is physically divided into a number of separate rooms with heavy concrete walls and floors for radiological separation. These features will prevent a single fire from rapidly propagating through this fire area. For a fire in Fire Area 2, Shutdown Method C as described in Section 5 of the PBAPS FPP is available for both Unit 2 and Unit 3.

2. Fire Area 4, Unit 2 Recirculation Pump MG Set Room

The Unit 2 Recirculation Pump MG Set Room is located in the Radwaste Building, 135' elevation. This fire area is separated from adjacent areas by fire rated barriers. The postulated fires in this area include: electrical cable fires (note that all exposed cables have fire retardant insulation), and a lube oil fire. The overall combustible loading in this fire area is MODERATE (an equivalent fire severity of less than 105 minutes). Combustibles in this area include: cable insulation, lube oil and thermo-lag. This fire area has full area smoke detection that actuates a pre-action sprinkler system. For a fire in Fire Area 4, Shutdown Method C is available for Unit 2 and Shutdown Methods A, B and C as described in Section 5 of the PBAPS FPP are available for Unit 3.

3. Fire Area 6N, Unit 2 Reactor Building 135' elevation north side

The postulated fires in the fire area include: electrical cable fire (note that all exposed cables have fire retardant insulation), and a Class A materials fire. The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area include: cable insulation, thermo-lag and Class A materials. This fire area is separated from adjacent fire areas with fire rated barriers except for separation from Fire Area 6S. A water curtain type open head sprinkler system is installed on the west side of the 135' elevation of the reactor building, providing separation from Fire Area 6S located on the south side of the 135' elevation of the reactor building. Smoke detection is provided in this fire area. For a fire in Fire Area 6N, Shutdown Method C is available for Unit 2 and Shutdown Methods A, B and C are available for Unit 3.

4. Fire Area 6S, Unit 2 Reactor Building 135' elevation south side and the upper elevations of the Unit 2 Reactor Building (165', 195' and 234')

The postulated fires in the fire area include: electrical cable fire (note that all exposed cables have fire retardant insulation), boronated shield door fire, and Class A materials fire. The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area include: cable insulation, silicone rubber, lead blanket material and various Class A combustibles. Smoke detection is located on each elevation, except for the refueling floor (there are no cables associated with safe shutdown routed on that elevation). A water curtain type open head sprinkler system is installed on the west side of the 135' elevation of the reactor building, providing separation from Fire Area 6N located on the north side of the 135' elevation of the reactor building. This fire area is subdivided into various rooms and floors by heavy concrete barriers. This feature will prevent a singe fire from rapidly propagating through this fire area. For a fire in Fire Area 6S, Shutdown Method B is available for Unit 2 and Shutdown Methods A, B and C are available for Unit 3.

5. Fire Area 13N, Unit 3 Reactor Building 135' elevation north side and the upper elevations of the Unit 3 Reactor Building (165', 195' and 234')

The postulated fires in the fire area include: electrical cable fire (note that all exposed cables have fire retardant insulation) and Class A materials fire. The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area include: cable insulation and various Class A combustibles. Smoke detection is located on each elevation, except for the refueling floor (there are no cables associated with safe shutdown routed on that elevation). A water curtain type open head sprinkler system is installed on the west side of the 135' elevation of the reactor building, providing separation from Fire Area 13S located on the south side of the 135' elevation of the reactor building. This fire area is subdivided into various rooms and floors by heavy concrete barriers. This feature will prevent a singe fire from rapidly propagating through this fire area. For a fire in Fire Area 13N, Shutdown Methods A, B and C are available for Unit 2 and Shutdown Method A is available for Unit 3.

6. Fire Area 26, Unit 3 MG Set Vent Supply Fan Room

This room is located on the 165' elevation of the Radwaste Building and is separated from adjacent fire areas by rated fire barriers. The postulated fire in this area is indeterminate due to the low amount of combustibles. The overall combustible loading rating for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area are limited to cable insulation. There is smoke detection located in this fire area, but there is no fire suppression system since there is no fire hazard. For a fire in Fire Area 26, Shutdown Methods A, B and C are available for Unit 2 and Shutdown Methods A and C are available for Unit 3.

7. Fire Area 27, Unit 2 MG Set Vent Supply Fan Room

This room is located on the 165' elevation of the Radwaste Building and is separated from adjacent fire areas by rated fire barriers. The postulated fire in this area is indeterminate due to the low amount of combustibles. The overall combustible loading rating for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area are limited to cable insulation. There is smoke detection located in this fire area, but there is no fire

suppression system since there is no fire hazard. For a fire in Fire Area 27, Shutdown Methods B and C are available for Unit 2 and Shutdown Methods A, B and C are available for Unit 3.

8. Fire Area 30, Unit 3 B/D Battery Room

This room is located on the 135' elevation of the Turbine Building. The room is separated from other fire areas by rated fire barriers. The postulated fire in this area involves electrical cable insulation (note that all exposed cables have fire retardant insulation). The combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this area include cable insulation, battery cases and thermo-lag (abandoned in place). This area has smoke detection that annunciates in the Control Room. For a fire in Fire Area 30, Shutdown Methods A and C are available for both Units 2 and 3.

9. Fire Area 33, E13 Emergency Bus Room

This room is located on the 135’ elevation of the Turbine Building. The room is separated from other fire areas by rated fire barriers. The postulated fire in this area involves electrical cable insulation (note that all exposed cables have fire retardant insulation). The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area include: cable insulation and thermo-lag. This room has smoke detection that initiates a pre-action sprinkler system. For a fire in Fire Area 33, Shutdown Methods B and C are available for Unit 2. Shutdown Method C is available for Unit 3 although manual actions may be necessary to recover certain functions.

10. Fire Area 36, E42 Emergency Bus Room

This room is located on the 135’ elevation of the Turbine Building. The room is separated from other fire areas by rated fire barriers. The postulated fire in this area involves electrical cable insulation (note that all exposed cables have fire retardant insulation). The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area include: cable insulation and thermo-lag. This room has smoke detection that initiates a pre-action sprinkler system. For a fire in Fire Area 36, Shutdown Method A is available for both Unit 2 and Unit 3.

11. Fire Area 37, E22 Emergency Bus Room

This room is located on the 135’ elevation of the Turbine Building. The room is separated from other fire areas by rated fire barriers. The postulated fire in this area involves electrical cable insulation (note that all exposed cables have fire retardant insulation). The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area include: cable insulation and thermo-lag. This room has smoke detection that initiates a pre-action sprinkler system. For a fire in Fire Area 37, Shutdown Method A is available for Unit 2 and Shutdown Methods A and C are available for Unit 3.

12. Fire Area 43, Diesel Generator Building Bay D (E-4 EDG Room)

This fire area consists of a single diesel generator room and the ventilation equipment room located above the diesel generator room. This room has exterior walls on three sides and a common wall with another diesel bay on the south side. The wall shared with another diesel bay is a rated fire barrier. Postulated fires in the room include either a lube oil or fuel oil fire.

The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes). There are nine heat detectors located in the diesel generator room that annunciate an alarm to the Control Room. The ventilation equipment room does not have fire detection. This configuration was accepted in a letter from the NRC dated March 13, 1985 (Reference 4). The diesel generator room has a manual CO_2 fire suppression system, which was approved by the NRC in a License Amendment and associated Safety Evaluation Report dated June 24, 2005 (Reference 5) in response to a License Amendment Request dated September 26, 2003 (Reference 6). For a fire in Fire Area 43, Shutdown Methods A, B and C are available for Unit 2 and Shutdown Methods A and C are available for Unit 3.

13. Fire Area 50, Unit 2 and Unit 3 Turbine Building

This fire area consists of the majority of the combined Unit 2 and Unit 3 Turbine Building. Significant rooms within this fire area include both the Unit 2 and Unit 3 moisture separator areas, Unit 2 and Unit 3 turbine decks and reactor feed pump rooms, the common hatch area and both Unit 2 and Unit 3 lube oil storage rooms. This large area is separated from adjacent fire areas (including separate fire areas located within the Turbine Building) by fire rated barriers. Postulated fires within this area include: electrical cable fires (note that all exposed cables have fire retardant insulation), lube oil fires (significant lube oil hazards are protected by sprinkler systems) and Class A material fires. The overall combustible loading for this fire area is LOW (an equivalent fire severity of less than 45 minutes); however, the turbine decks are considered MODERATE (equivalent fire severity of less than 105 minutes) and some individual rooms, such as the lube oil rooms, are considered HIGH (equivalent fire severity greater that 105 minutes). Combustibles in this fire area include: cable insulation, lube oil, thermo-lag, battery cases and various Class A combustibles. There is smoke and heat detection in certain individual rooms within the Turbine Building. Areas with significant fire hazards, such as lube oil, are provided with wet pipe sprinkler systems. Specifically, wet pipe sprinkler systems are provided in the moisture separator areas, the feed pump rooms, the lube oil rooms and in the common hatch area, as well as on the turbine bearings. The hydrogen seal oil skid on each unit is provided with an automatic deluge system. A pre-action sprinkler system is provided over the 13kV switchgear cabinets. Wet pipe sprinkler heads have been installed at the openings between the 13kV switchgear area on elevation 116' common area and the Unit 2 and Unit 3 portions of the Turbine Building at the open corridor also on elevation 116'. This installation establishes a water curtain at the open doorway between the 13kV switchgear area and Units 2 and 3 respectively. For a fire in Fire Area 50, Shutdown Method A is available for both Unit 2 and Unit 3, although manual actions may be necessary to recover certain functions.

14. Fire Area 57, Switchgear/Radwaste Corridor

This is a narrow corridor (approximately 6’ wide) located between the 4kV bus rooms to the east and the Radwaste Building to the west. This corridor is separated from adjacent fire areas by rated fire barriers. The postulated fire in this fire area is an electrical cable fire (note that all exposed cables have fire retardant insulation). The overall combustible rating for this fire area is LOW (an equivalent fire severity of less than 45 minutes). Combustibles in this fire area include: cable insulation and thermo-lag. There is a full area smoke detection system that actuates a pre-action sprinkler system that protects the entire corridor. For a fire in Fire Area 57, Shutdown Method C is available for both Unit 2 and Unit 3.

15. Fire Area 58, Unit 3 Recirculation Pump MG Set Room

This fire area is located in the Radwaste Building, 135' elevation. This fire area is separated from adjacent areas by three-hour fire rated barriers. The postulated fires in this area include: electrical cable fires (note that all exposed cables have fire retardant insulation) and a lube oil fire. The overall combustible loading in this fire area is MODERATE (an equivalent fire severity of less than 105 minutes). Combustibles in this area include: cable insulation, lube oil and thermo-lag. This fire area has smoke detection that actuates a pre-action sprinkler system. For a fire in Fire Area 58, Shutdown Methods A, B and C are available for Unit 2 and Shutdown Method C is available for Unit 3.

C. DETAILED EVALUATION OF OPERATOR MANUAL ACTIONS

The T-300 Fire Guides at PBAPS were written to address the potential loss of all equipment susceptible to fire damage in a fire area and assumed that the equipment losses would occur concurrently. The timeline developed to support the shutdown fire guides are intended to demonstrate that all the manual actions can be performed concurrently as well, with a minimum of plant personnel available. The assumption that all the required post fire actions would have to be performed concurrently is conservative and not representative of conditions anticipated in real fire conditions. This is particularly true at PBAPS since the Boiling Water Reactor (BWR) symptom-based Emergency Operating Procedures (EOPs) are used that permit the Control Room operators to use any mitigating systems that are unaffected by the fire. Therefore, a level of conservatism is already factored into any review of individual and combined operator manual actions for a fire area.

This evaluation will consider the manual actions in two separate approaches. The first approach will be to consider the individual operator manual actions in a specific fire area based on the individual attachments to the applicable T-300 Fire Guide. This part of the evaluation will consider both feasibility and reliability aspects and demonstrate that sufficient time margin exists to perform the operator manual actions. The second approach will consider the combination of all operator manual actions for a fire area contained in all the attachments to the T-300 Fire Guide for that Fire Area. The evaluation will demonstrate that sufficient time and staff are available to accomplish the combined operator manual actions for a given Fire Area. Time margins for the combined actions are smaller than for the individual actions. As noted previously, the conservatisms built into the Appendix R program make the demonstration of additional time margin for the combined actions unnecessary.

1. Description of Individual Operator Manual Actions

Each of the actions below addresses an operator manual action for a specific fire area and addressed by a specific attachment to the applicable T-300 Fire Guide for that fire area. This review only considers the performance of the individual attachment. Concurrent performance of other attachments included in the applicable T-300 Fire Guide is addressed in the next section. This review will consider time required and time available to perform the task. The "Action" designation is used to provide a cross-reference to the individual action within the combined action review in the next section.

Action A:	Transfer of Panel 20Y033 to Alternate Power Source
Fire Area:	Fire location is the Radwaste Building general area Fire Area 2
Task:	These two tasks are included as part of a single operator manual action. The first task is to close 480 VAC MCC breaker 52-5944 at E134-T-B, which is located in the E13 Switchgear Room. The second task is to operate manual transfer switch 20S701, located in the E12 Switchgear Room to restore power to the 20Y033 panel.
Allowable Time:	25 minutes
Estimated Time:	Prompt Action (actions that must be completed in 30 minutes or less). Travel and performance time is 12 minutes.
Tools:	Electrical PPE.
Location of Action/Environment:	The action locations are E13 and E12 Switchgear Rooms, both of which are separate fire areas from the Radwaste Building general area. In addition the Switchgear Rooms have a separate ventilation system from the Radwaste Building. A fire in the Radwaste Building will not create smoke or heat conditions in either Switchgear Room or in the Turbine Building, which is used for travel routes.
Discussion:	A loss of normal power to panel 20Y033 will result in the loss of some indications in the Control Room. At least one indication of each of the following parameters will still be available in the Control Room: vessel level, vessel pressure, condensate storage tank level, torus level, torus temperature, drywell pressure and drywell temperature. A 25-minute time limit was selected based on restoring flow indication for Core Spray RPV injection; however, this time is flexible as other complementary indications; such as RPV coolant level, valve positions, breaker positions, and pump ammeters remain available. Twenty-five minutes is the approximate time that Core Spray injection to the RPV would be initiated if no high-pressure injection source were available. The tasks associated with this action, operating a breaker and a manual transfer switch are straightforward and are considered to be within the skill of the craft. The travel and performance time associated with this action is 12 minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. This task can be completed within 25 minutes.

Action B:	Transfer of SU-25 Breaker Auxiliary Equipment to Alternate Power Source
Fire Area	Fire location is the Radwaste Building general area Fire Area 2
Task	Transfer SU-25 breaker auxiliary equipment from normal power source to its alternate power source, by operating manual transfer switch 00S306.
Allowable Time:	120 minutes (Refer to Note 1 for the time basis for additional margin)

Estimated Time:	30 minutes diagnosis time; 15 minutes travel and performance time.
Tools:	No tools are required.
Location of Action/Environment:	The action location is in the Unit 2 Startup Building, which is located in the exterior Yard area. The Radwaste Building general area is not attached to the Unit 2 Startup Building so there will be no fire effects in the Unit 2 Startup Building in the event of a fire in the Radwaste Building general area.
Discussion:	The SU-25 breaker auxiliaries are powered from two normal sources via an automatic transfer switch, as well as a third source via a manual transfer switch. If the fire actually results in a loss of power to both of the normal power sources to the SU-25 breaker auxiliaries, a conservative time of 120 minutes to transfer power to the SU-25 breaker auxiliaries alternate power supply is given. Additional margin for this time is available as described in Note 1 in Section 2 below. Off-site power is provided, but this action ensures the long-term availability of that power by powering the auxiliaries (heating/cooling and SF-6 compressor). Indication of the loss of power to the SU-25 breaker auxiliaries is addressed in the applicable T-300 Fire Guide, and it is therefore expected that operators would restore power to the auxiliaries before an inadvertent trip of the SU-25 breaker occurred. The actual travel and performance time is 15 minutes. The task to be performed is to operate manual transfer switch 00S306 located in the Unit 2 Startup Building. Operating a manual transfer switch is considered to be straightforward and considered to be within the skill of the craft. The Unit 2 Startup Building is an exterior structure that will not be impacted by a fire in the Radwaste Building general area. There is adequate time to perform this action with margin.

Action C:	Defeat of 4kV Bus 2SU Feeder Breakers Degraded Voltage Trip Relays for E12, E22, E13, E23, E32 and E33 Buses
Fire Area:	The fire location is the Radwaste Building general area Fire Area 2.
Task:	This action is a group of six tasks to remove degraded voltage relay fuses located in the Unit 2 and Unit 3 Switchgear Rooms. The task involves pulling the FU-35 fuse block in the E12 Switchgear Room, the FU-66 fuse block in the E22 Switchgear Room, the FU-97 fuse block in the E32 Switchgear Room, the FU-30 fuse block in the E13 Switchgear Room, the FU-60 fuse block in the E23 Switchgear Room, and the FU-93 fuse block in the E33 Switchgear Room.
Allowable Time:	25 minutes (E12, E22, E32, E13 and E23 busses); 60 minutes (E33 bus)
Estimated Time:	This is a prompt action. The travel and performance time is three minutes per fuse. Five of the six fuses must be removed within 25 minutes for a combined time of 15 minutes.
Tools:	No tools are required.
Location of	The Radwaste Building general area is a separate fire area from the

Action/Environment:	Switchgear Rooms and has separate ventilation systems. There will be no adverse environmental conditions encountered in the Switchgear Rooms for a fire in the Radwaste Building. The travel path to the Switchgear Rooms via the Turbine Building will also remain unaffected by a Radwaste Building fire.
Discussion:	This action is only required if the 2SU is the only offsite power source available and a loss of power to the 2SU transformer tap changer has occurred. (See Note 1 for additional details.) A 25-minute time limit was selected based on restoring AC power to the Core Spray system for both units for RPV injection. Twenty-five minutes is the approximate time that Core Spray injection to the RPV would be initiated if no high-pressure injection source were available. The time to reach the Switchgear Room and perform the action is three minutes for each of the fuse blocks or a total of 18 minutes for all six fuse blocks being removed. Five of the six fuse blocks need to be removed within 25 minutes; the sixth fuse can be removed within 60 minutes. Removal of fuse blocks is considered a straightforward task and considered to be within the skill of the craft. The Switchgear Rooms will remain tenable for a fire in the Radwaste Building general area due to the positive pressure ventilation in the Switchgear Rooms. The action to pull the fuse blocks can be performed within the required time. There is sufficient time to complete this task.

Action D:	Transfer of 125V Battery Charger 2AD003 to Alternate Power Source
Fire Area:	Fire in the Radwaste Building general area Fire Area 2.
Task:	The operator will close 480 VAC MCC breaker 52-5945 located in the E13 Switchgear Room and then operate switch 20S700 located in the E32 Switchgear Room.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; 12 minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	Both Switchgear Rooms are separate fire areas from each other and from the Radwaste Building. The Switchgear Rooms have a separate ventilation system from the Radwaste Building. The Switchgear Rooms will remain free of fire effects from a Radwaste Building fire. Access to the Switchgear Rooms can be made from the Turbine Building.
Discussion:	This action transfers 125V battery charger 2AD003 from its normal power source to its alternate source. The battery charger is required since battery capacity is not sufficient for all loads for the duration of the event. There are 60 minutes available to perform this task. The tasks are performed in the Switchgear Rooms, which are within the Turbine Building and familiar to the operators. Closing an MCC breaker and operating a manual switch are straightforward and are considered to be within the skill of the craft. Access to the Switchgear Rooms can be made from the Turbine Building. The travel and performance time

	associated with this action is 12 minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available to perform this task with margin.
Action E	Defeat Unit 2 RHR Logic Trip of 3B RHR Pump
Fire Area:	Fire location is the Unit 2 MG Set Room Fire Area 4
Task:	This activity involves installing a logic plug test switch for the test jack 2-10A-J1A at panel 20C032. This action will prevent the Unit 2 RHR logic from tripping the Unit 3 3B RHR pump. The action is installing the red collar logic plug into a receptacle on the front of the Unit 2 RHR logic panel in the Cable Spreading Room.
Allowable Time:	150 minutes
Estimated Time:	30 minutes diagnosis time; 10 minutes travel and performance time.
Tools:	The test plug is available in the fire shutdown equipment cabinet located outside of the Control Room.
Location of Action/Environment:	The action is performed in the Cable Spreading Room. The Unit 2 MG Set Room and Cable Spreading Room are separate fire areas with separate ventilation systems. Therefore, the Cable Spreading Room will not see fire affects from a fire in the Unit 2 MG Set Room. The access route to the Cable Spreading Room is via the Turbine Building which is also a separate fire area and will not be adversely impacted by a fire in the Unit 2 MG Set Room.
Discussion:	If the 3B RHR pump fails to start when needed for Torus cooling or establishing alternate shutdown cooling, this action provides a method to defeat the loss of coolant accident (LOCA) trip logic and permit the 3B RHR pump to be started. This action is not required for establishment of hot shutdown RPV injection. The allotted time for this activity is 150 minutes and performance time is 10 minutes. There is no time pressure to perform this task. The T-300 Fire Guide Attachment that directs the performance of this activity clearly describes the storage location of the test plug and lists the panel in which the plug is to be installed. Installation of the plug is considered to be straightforward and considered to be within the skill of the craft. The Cable Spreading Room and Turbine Building will not be impacted by fire in the Unit 2 MG Set Room. There is adequate time with margin available to perform this task.
Action F:	Transfer of Panel 20Y035 to Alternate Power Source
Fire Area:	Fire in Unit 2 MG Set Room Fire Area 4
Task:	There are two tasks included as part of a single operator manual action. The first task is to close 480 VAC MCC breaker 52-3801 at E334-R-B

	located in the Unit 3 Reactor Building 135' general area. The second task is to operate manual transfer switch 20S703 located in the Unit 2 Reactor Building 135' general area to restore power to 20Y035.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; 16 minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	There are two tasks associated with this manual action. The first task is performed in the Unit 2 Reactor Building 135' elevation, the second is performed in the Unit 3 Reactor Building 135' elevation. Both of these locations are separate fire areas from each other and from the Unit 2 MG Set Room, which is located in the Radwaste Building. In addition, each of these fire areas has a separate ventilation system. A fire in the Unit 2 MG Set Room will not create smoke or other fire effects that will interfere with the manual actions in the Reactor Building or in access to the Reactor Building, which can be done via the Turbine Building.
Discussion:	A loss of power to Panel 20Y035 does not cause a loss of all indication in the Control Room. At least one indication of each of the following parameters will still be available in the Control Room: vessel level, vessel pressure, condensate storage tank level, torus level, torus temperature, drywell pressure and drywell temperature. Restoring 20Y035 will restore additional redundant instrumentation. This action is primarily necessary to provide for the long-term availability of ADS valves for cold shutdown by re-establishing power to nitrogen supply solenoid SV-8130A. The allowable time to perform this action is flexible; 60 minutes was chosen for analysis purposes. The two tasks within this action, operating a breaker and a manual transfer switch are straightforward tasks that are considered to be within the skill of the craft. The travel and performance time associated with this action is 16 minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. Since there are 60 minutes allotted to perform this action, there is adequate time to perform this action with margin.
Action G:	Transfer of 125V Battery Charger 2AD003 to Alternate Power Source
Fire Area:	Fire in the Unit 2 Reactor Building Fire Area 6S
Task:	The operator will close 480 VAC MCC breaker 52-5945 located in the E13 Switchgear Room and then operate manual transfer switch 20S700 located in the E32 Switchgear Room.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; 11 minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	Both Switchgear Rooms are separate fire areas from each other and from the Unit 2 Reactor Building. The Switchgear Rooms have a

	separate ventilation system from the Reactor Building. The Switchgear Rooms will remain free of fire effects from a Reactor Building fire. Access to the Switchgear Rooms can be made from the Turbine Building.
Discussion:	This action transfers 125V battery charger 2AD003 from its normal power source to its alternate source. This battery charger is required since battery capacity is not sufficient for all loads for the duration of the event. There are 60 minutes available to perform this task. The tasks are performed in the Switchgear Rooms, which are within the Turbine Building and are familiar to the operators. Closing an MCC breaker and operating a manual switch are straightforward and are considered to be within the skill of the craft. Access to the Switchgear Rooms can be made from the Turbine Building, which is also independent from the Reactor Building. The travel and performance time associated with this action is 11 minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available with margin to perform this action.

Action H:	Bypass of Reactor Low Pressure Permissive for Opening MO-2-10-025A
Fire Area:	Fire in Unit 2 Reactor Building 135' elevation, Fire Area 6N
Task:	The operator will install the blue collar plug-in test switch into Test Jack 14A-J2A at Panel 20C032 to permit the opening of MO-2-10-025A. (The valve will be opened from the Control Room.) Panel 20C032 is located in the Cable Spreading Room.
Allowable Time:	25 minutes
Estimated Time:	Prompt Action as identified in the shutdown Fire Guide T-306N; seven minutes to obtain the plug and travel to standby at panel 20C032.
Tools:	Core Spray logic test blue collar plug (stored in the Fire shutdown cabinet)
Location of Action/Environment:	The action is performed in the Cable Spreading Room, located directly below the Control Room. The Cable Spreading Room is a separate building with a separate ventilation system from the Unit 2 Reactor Building. Access to the Cable Spreading Room from the Control Room will also be unaffected by a fire in the Reactor Building.
Discussion:	Fire damage may affect the pressure permissive instrumentation circuit needed to open valve MO-2-10-025A. This action will allow the valve to be opened by satisfying the low pressure permissive for the valve. There are 25 minutes available to perform this task. This is the only operator manual action needed to achieve hot shutdown for a fire in fire area 6N, Unit 2 Reactor Building, 135' elevation. The task is performed in the Cable Spreading Room. The plug is stored in the fire shutdown storage area, located outside the Control Room. The time to obtain the plug-in test switch and travel to the Cable Spreading Room is

	approximately seven minutes. To ensure the action is performed in a timely fashion, an operator is pre-staged at panel 20C032 in constant communication with the MCR, and performs the action when directed by the MCR. The test plug is inserted when the reactor pressure reaches the value that automatically opens MO-2-10-025A. With the operator pre-staged with necessary equipment, the task time is negligible. Twenty-five minutes is the approximate time that Residual Heat Removal-Low Pressure Coolant Injection (RHR-LPCI) to the reactor pressure vessel (RPV) would be initiated if no high-pressure injection source were available. Installing a test plug into a specific receptacle in Panel 20C032 is straightforward and is considered to be within the skill of the craft. There is adequate time available to perform this action.
Action J:	Transfer of 125V Battery Charger 3DD003 to Alternate Power Source Fire location is the Unit 3 Reactor Building Fire Area 13N.
Task:	There are two tasks within the action. The first task is to close 480 VAC MCC breaker 52-5021 in the E43 Switchgear Room. The second task is to operate manual transfer switch 30S700 also in the E43 Switchgear Room in order to provide an alternate power supply to battery charger 3DD003.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; eight minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	The Unit 3 Reactor Building is a separate building from the Switchgear Rooms which have separate ventilation systems. Both of the tasks associated with this action are located in the E43 Switchgear Room which will remain tenable for a fire in the Unit 3 reactor building.
Discussion:	This action transfers 125V battery charger 3DD003 from its normal power source to its alternate source. This battery charger is required since battery capacity is not sufficient for all loads for the duration of the event. Both tasks included in this action are located in the same Switchgear Room. Closing an MCC breaker and operating a manual transfer switch are straightforward actions and are considered to be within the skill of the craft. A fire in the Unit 3 Reactor Building will not create any adverse environmental conditions in the Switchgear Room. Travel to the Switchgear Room can be accomplished via the Turbine Building. The travel and performance time associated with this action is eight minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available with margin to perform this action.

Action K:	Transfer of 125V Battery Charger 3DD003 to Alternate Power Source
Fire Area:	Fire location is the Unit 3 MG Set Ventilation Equipment room in the Radwaste Building Fire Area 26.
Task:	There are two tasks within the action. The first task is to close 480 VAC MCC breaker 52-5021 in the E43 Switchgear Room. The second task is to operate manual transfer switch 30S700 also in the E43 Switchgear Room in order to provide an alternate power supply to battery charger 3DD003.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; 10 minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	The Unit 3 MG Set Ventilation Equipment room is a separate fire area from the E43 Switchgear Room and has separate ventilation systems. There will be no adverse conditions in the Switchgear Room resulting from a fire in the Unit 3 MG set ventilation equipment room. Travel to the Switchgear Room is also independent of the initiating fire area.
Discussion:	This action transfers 125V battery charger 3DD003 from its normal power source to its alternate source. This battery charger is required since battery capacity is not sufficient for all loads for the duration of the event. Both tasks included in this action are located in the same Switchgear Room. Closing a MCC breaker and operating a manual transfer switch are straightforward actions and are considered to be within the skill of the craft. A fire in the Unit 3 MG Set Ventilation Equipment room will not create any adverse environmental conditions in the Switchgear Room. Travel to the Switchgear Room is also independent of the initiating fire room. The travel and performance time associated with this action is 10 minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time to perform this task with margin.

Action L:	Transfer of Panel 20Y035 to Alternate Power Source
Fire Area:	Fire in Unit 2 MG Set Ventilation Equipment room in the Radwaste Building Fire Area 27
Task:	There are two tasks included as part of a single operator manual action. The first task is to close 480 VAC MCC breaker 52-3801 at E334-R-B located in the Unit 3 Reactor Building 135' general area. The second task is to operate manual transfer switch 20S703 located in the Unit 2 Reactor Building 135' general area to restore power to 20Y035.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; 16 minutes travel and performance time.
Tools:	Electrical PPE.

Location of Action/Environment:	There are two tasks associated with this manual action. The first task is performed in the Unit 3 Reactor Building 135' elevation, the second is performed in the Unit 2 Reactor Building 135' elevation. Both of these locations are separate fire areas from each other and from the Unit 2 MG Set Ventilation Equipment room, which is located in the Radwaste Building. In addition, each of these fire areas has a separate ventilation system. A fire in the Unit 2 MG Set Ventilation Equipment room will not create smoke or other fire effects that will interfere with the manual actions in the Reactor Building or in access to the Reactor Building, which can be done via the Turbine Building.
Discussion:	A loss of power to Panel 20Y035 does not cause a loss of all indication in the Control Room. At least one indication of each of the following parameters will still be available in the Control Room: vessel level, vessel pressure, condensate storage tank level, torus level, torus temperature, drywell pressure and drywell temperature. Restoring 20Y035 will restore additional redundant instrumentation. Restoration of power to the panel is not required to achieve and maintain hot shutdown. This action is primarily necessary to provide for the long-term availability of automatic depressurization system (ADS) valves for cold shutdown by re-establishing power to nitrogen supply solenoid SV-8130A. The allowable time to perform this action is flexible; 60 minutes was chosen for analysis purposes. The two tasks within this action, operating a breaker and a manual transfer switch are straightforward tasks that are considered to be within the skill of the craft. The travel and performance time associated with this action is 16 minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available to perform this task with margin.

Action M:	Transfer of 125V Battery Charger 3AD003 to Alternate Power Source
Fire Area:	Fire Location is the Unit 3 B/D Battery Room Fire Area 30
Task:	This activity involves operation of manual transfer switch 3AS456 to restore power to battery charger 3AD003, located in the E33 Switchgear Room.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; nine minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	This action is performed in the E33 Switchgear Room, which is a separate fire area from the Unit 3 B/D battery room. There is separate ventilation between the battery room and the Switchgear Room. There are no doors that communicate directly between the Unit 3 B/D battery room and any Switchgear Room. There will be no adverse environmental conditions in the Switchgear Room as a result of a fire in the Unit 3 B/D battery room.

Discussion:	This action is performed if there is a loss of normal power to 3AD003 125V Battery Charger. This battery charger is required since battery capacity is not sufficient for all loads for the duration of the event. The 60-minute time limit is based on restoring power to the credited battery chargers to provide long-term DC power. The task necessary to complete this activity is to operate a manual transfer switch. This is a straightforward action that is considered to be within the skill of the craft. No tools are required to perform this task. A fire in the Unit 3 B/D battery room will not create untenable conditions in any Switchgear Room. The travel and performance time associated with this action is nine minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time to perform this task.

Action N:	Local Manual Operation of MO-3-10-089A
Fire Area:	Fire Location is the Unit 3 B/D battery Fire Area 30
Task:	This activity involves two individual actions. The first is opening 480 VAC MCC breaker 52-3623 at E134-W-A located in the Unit 3 Reactor Building Closed Cooling Water (RBCCW) room. The second action is to manually open valve MO-3-10-089A which is located in the A/C RHR room on elevation 116' in the Unit 3 Reactor Building.
Allowable Time:	150 minutes
Estimated Time:	30 minutes diagnosis time; 16 minutes travel and performance time.
Tools:	No tools are required.
Location of Action/Environment:	The action locations are the Unit 3 RBCCW room and the Unit 3 A/C RHR room. These rooms are a separate fire area from the Unit 3 B/D battery room and have a separate ventilation system. A fire in the Unit 3 B/D battery room will not create any challenging conditions in either of the action locations nor in any of the travel routes.
Discussion:	If local operation of MO-3-10-089A is required, then this will be performed by opening the breaker to the MOV and operating the MOV by hand. MO-3-10-089A is the "A HPSW Heat Exchanger Outlet" valve and is needed to establish A loop high pressure service water (HPSW) flow through the 3A RHR heat exchanger. There are 150 minutes to complete this action and the travel/performance time for the action is 16 minutes. The 150-minute time limit is based on establishing suppression pool cooling and/or alternate shutdown cooling. This action is not required for initial RPV inventory control. Opening a breaker and manipulating a valve by hand is a straightforward action that is considered to be within the skill of the craft. A fire in the Unit 3 B/D battery room will have no impact on the two rooms in which the associated actions are to be performed or on the travel paths. There is adequate time to perform this task with margin.

Action P:	Transfer of Instrument Power Supply 30C144 Using Transfer Switch 30S546
Fire Area:	Fire Location is the Unit 3 B/D Battery Room Fire Area 30
Task:	This action involves operating key switch 30S546 to restore power to 30C144. This key switch is located in the Cable Spreading Room.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; three minutes travel and performance time.
Tools:	A key is required to operate the key switch. This key is available from the Control Room key cabinet.
Location of Action/Environment:	The action is performed in the Cable Spreading Room, which is a separate fire area and has a separate ventilation system from the Unit 3 B/D battery room. There will be no fire effects from a battery room fire that could impact the operator either in traveling to the Cable Spreading Room or performing the action in the Cable Spreading Room.
Discussion:	This action provides an alternate power supply to certain Control Room instruments. The applicable T-300 Fire Guide identifies which instruments may be lost for a fire in the B/D battery room on the front page of the fire guide. With the exception of condensate storage tank level, drywell temperature, and Unit 3 HPSW Flow indication, at least one other instrument indication will be available for vessel level and pressure, and torus level and pressure. Flow indication for the protected RCIC, LPCI and Core Spray systems are also available without performing this action. This action only needs to be performed if the normal power to 30Y050 has been lost. There is no upper limit on the time available to perform this action since no unacceptable conditions would occur without this instrumentation. Sixty minutes has been selected as the time limit for analysis purposes only. Operating a key switch on a panel is a straightforward action and considered to be within the skill of the craft. A fire in the 3B/D battery room will not create any adverse environmental conditions for travel to or action in the Cable Spreading Room. The time to obtain the key, travel to the Cable Spreading Room and perform the action is three minutes. There is adequate time to perform this task with margin.

Action Q:	Transfer of Panel 30Y034 to Alternate Power Source
Fire Area:	The fire location is the E13 Switchgear room Fire Area 33.
Task:	There are two tasks associated with this action. The first task is to close MCC breaker 52-6011 in the E22 Switchgear Room and the second is to operate switch 30S702 in the E23 Switchgear Room in order to restore power to 30Y034.
Allowable Time:	25 minutes

Estimated Time:	This is a prompt action. The travel and performance time for the two tasks that make up this manual action is 10 minutes.
Tools:	Electrical PPE.
Location of Action/Environment:	The fire location is the E13 Switchgear Room. Each Switchgear Room is a separate fire area so the rooms are physically separated and E13 does not directly communicate via a doorway with either E22 or E23. The E13 Switchgear Room is protected by an automatic pre-action sprinkler system. Entry into the E22 and E23 Switchgear Rooms can be made independent of the E13 Switchgear Room and from two different locations. The Switchgear Rooms have a common ventilation system, that can be in either fresh or recirculation mode. The pre-fire plan calls for the ventilation system to be controlled if necessary. A detailed discussion of the environmental conditions is provided in Section 3 of this exemption request. Conditions in both the E22 and E23 Switchgear Rooms will remain tenable.
Discussion:	This is considered a prompt action since it needs to be done within the first 25 minutes following the scram if there is a loss of power to Panel 30Y034 which provides some (but not all) instrument indications in the Control Room. Loss of power to the 30Y034 panel will result in the loss of condensate storage tank (CST) level (CST not credited for this fire area), one of three torus level indications, one of three drywell pressure indications, loss of drywell temperature indication and LPCI and Core Spray flow indications. The instruments that would be lost with loss of power to 30Y034 are clearly indicated in the associated T-300 Fire Guide. A 25-minute time limit was selected based on restoring indication for LPCI and Core Spray RPV injection; however, this time is flexible as other complementary indications of proper Core Spray or RHR-LPCI operation; such as RPV coolant level, valve positions, breaker positions, and pump ammeters remain available. While the E13 Switchgear Room is adjacent to the E23 Switchgear Room, they are separate fire areas, with separate entrances. The E13 Switchgear Room has a pre-action sprinkler system. Operators can access the E23 and E22 Switchgear Rooms without impact from a fire in the E13 Switchgear Room. Closing an MCC breaker and operating a manual transfer switch are straightforward, and are considered to be within the skill of the craft. The travel and performance time associated with this action is 10 minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time to perform this task.

Action R:	Restoring Power to E12 Bus From E1 Diesel Generator
Fire Area:	Fire location E42 Switchgear Room Fire Area 36
Task:	This activity involves several individual tasks to energize the E12 bus. The individual actions include pulling two fuse blocks, tripping two 4kV

	breakers with the pushbutton and operating three control switches.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; 12 minutes travel and performance time.
Tools:	No tools are required.
Location of Action/Environment:	The action location is the E12 Switchgear Room and the initiating fire area is the E42 Switchgear Room. Each Switchgear Room is a separate fire area. The E12 Switchgear Room can be accessed independent of the E42 Switchgear Room. While these rooms are near one another, they are not adjacent and are not connected by an interior doorway. The Switchgear Rooms have a common ventilation system, that can be in either fresh or recirculation mode. The pre-fire plan calls for the ventilation system to be controlled if necessary. A detailed discussion of the environmental conditions is provided in Section 3. Conditions in the E12 Switchgear Room will remain tenable.
Discussion:	This action is only required if offsite power is lost and the E1 diesel generator did not successfully align with the E12 bus. Control cables for the offsite feeder breakers E212 and E312 to the E12 switchgear are routed through this room. If these cables are damaged, proper operation of the E212 and/or E312 breakers is not assured. Consequently the E12 switchgear may not separate from the offsite power source if a fire-induced loss of offsite power (LOOP) occurs, and the E12 diesel breaker would not be able to close due to interposing contacts between the breakers. The E12 diesel breaker controls remain intact, so there is no possibility of spuriously paralleling multiple sources. The lack of power to the E12 bus will be readily apparent in the Control Room and operator action will be initiated using the Attachment to the applicable T-300 Fire Guide. The 60-minute time limit is based on restoring power to the credited battery chargers to provide long term DC power. Access to the E12 Switchgear Room can be made via the Turbine Building, which will avoid contact with the E42 Switchgear Room. The two Switchgear Rooms are separate fire areas and there will be no adverse environment effects in E12 from a fire in the E42 Switchgear Room. The E42 Switchgear Room has an automatic pre-action sprinkler system. The operator tasks involved in this action, pulling a fuse block in the E212 and E312 breakers, using the mechanical trip pushbuttons to trip the E212 and E312 breakers and manipulating the Control Room control switches for the diesel generator E12 breaker are straightforward and are considered to be skill of the craft activities. There are 60 minutes to perform this task and the estimated travel and action time is 12 minutes. This is adequate time to perform this task.
Action S:	Restoring Power to E12 Bus From E1 Diesel Generator
	Fire location E22 Switchgear Room Fire Area 37
Task:	This activity involves several individual actions to energize the E12 bus.

	The individual actions include pulling two fuse blocks, tripping two breakers with the pushbutton and operating three hand switches.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; 12 minutes travel and performance time.
Tools:	No tools are required.
Location of Action/Environment:	The action location is the E12 Switchgear Room and the initiating fire area is the E22 Switchgear Room. Each Switchgear Room is a separate fire area. The E12 Switchgear Room can be accessed independent of the E22 Switchgear Room. While these rooms are near one another, they do not communicate via a common doorway. The Switchgear Rooms have a common ventilation system, that can be in either fresh or recirculation mode. The pre-fire plan calls for the ventilation system to be controlled if necessary. A detailed discussion of the environmental conditions are provided in Section 3. The conditions in the E12 Switchgear Room will remain tenable.
Discussion:	This action is only required if offsite power is lost and the E1 diesel generator did not successfully align with the E12 bus. Control cables for the offsite feeder breakers E212 and E312 to the E12 switchgear are routed through this room. If these cables are damaged, proper operation of the E212 and/or E312 breakers is not assured. Consequently, the switchgear may not separate from the offsite power source if a fire-induced LOOP occurs, and the E12 diesel breaker would not be able to close due to interposing contacts between the breakers. The E12 diesel breaker controls remain intact, so there is no possibility of spuriously paralleling multiple sources. The lack of power to the E12 bus will be readily apparent in the Control Room and operator action will be initiated using the Attachment to the applicable T-300 Fire Guide. The 60-minute time limit is based on restoring power to the credited battery chargers to provide long-term DC power. Access to the E12 Switchgear Room can be made via the Turbine Building which will avoid contact with the E22 Switchgear Room. The two Switchgear Rooms are separate fire areas and there will be no adverse environment effects in E12 from a fire in the E22 Switchgear Room. The E22 Switchgear Room has an automatic pre-action sprinkler system. The operator tasks involved in this action, pulling a fuse block in the E212 and E312 breakers, using the mechanical trip pushbuttons to trip the E212 and E312 breakers, and manipulating the Control Room control switches for the diesel generator E12 breaker are straightforward and are considered to be skill of the craft activities. There are 60 minutes to perform this task and the estimated travel and action time is 12 minutes. There is adequate time available to perform this task.

Action T: Transfer of 125V Battery Charger 2DD003 to Alternate Power Source

Fire location E-4 Emergency Diesel Generator Room, Fire Area 43

Task:	This activity involves operating manual transfer switch 2DS456 to restore power to battery charger 2DD003 from an alternate power source.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; nine minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	The action location is the E42 Switchgear Room in the Turbine Building and the initiating fire area is the E-4 Emergency Diesel Generator in the diesel building. These two fire areas are in separate buildings and there will be no environmental impact to hinder performing the action.
Discussion:	This action transfers 125V battery charger 2DD003 from its normal power source to its alternate source. This battery charger is required since battery capacity is not sufficient for all loads for the duration of the event. Operating a manual transfer switch is straightforward and considered to be within the skill of the craft. A fire in the Diesel Generator Building does not create any adverse environmental conditions in the Switchgear Room. Travel to the Switchgear Room is also independent of the initiating fire room. The travel and performance time associated with this action is nine minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time to perform this action with margin.

Action U:	Restoration of offsite power to the Unit 2 E12, E22, E32 and E42 4kV Busses
Fire Area:	Fire location is the Turbine Building Fire Area 50
Task:	Activities involve tripping a breaker and pulling a fuse for the affected bus.
Allowable Time:	60 minutes (E22, E32, and E42 busses); 180 minutes (E12 bus)
Estimated Time:	30 minutes diagnosis time; eight minutes travel and performance time for restoration of a single bus; 26 minutes travel and performance time if all four busses are assumed to require action.
Tools:	No tools are required.
Location of Action/Environment:	Each bus is restored in the associated Switchgear Room. The Switchgear Rooms have a separate ventilation system from the Turbine Building and will be free of smoke, heat and fire fighting effects. The Switchgear Rooms are separate fire areas from the Turbine Building and from each other. The Switchgear Rooms can be accessed via the radwaste corridor. The Switchgear Rooms and the radwaste corridor will remain tenable for the operators performing this task.

Discussion:	There is the potential for any of the four diesel generator output breakers to spuriously close, rendering the bus unavailable until the diesel generator breaker is opened and lockouts are reset. The 60 minutes to perform this task is conservative, and is based on the need to ensure AC power is available to battery chargers within 60 minutes. Only three of the four busses would require restoration within 60 minutes, with the other bus permitting restoration later (within 180 minutes), as symptoms dictated. Only one bus is assumed to require restoration. The 26-minute performance time is for restoration of all four Unit 2 busses. Since only one bus is assumed to spuriously operate, it is unlikely that there will be a need to perform this task in the first place. The actions take place in the Switchgear Rooms, which will remain tenable for the operators performing this task. The cables subject to spurious actuation of the diesel breakers (Breaker E12 cable ZA2A1503E; breaker E22 cable ZB2A1606E; breaker E32 cable ZC2A1704E; breaker E42 cable ZD2A1807E) are exposed in one fire zone in this fire area (room 126, fire zone 50-78B, 13kv switchgear area). All four cables are routed in separate conduit, in accordance with their divisional electrical separation criteria. Combustible loading in this zone is LOW, and the zone is protected by a pre-action sprinkler system. The tasks of tripping a breaker and pulling a fuse block are straightforward and are considered to be within the skill of the craft. There is adequate time available to perform this task.

Action V:	Restoration of offsite power to the Unit 3 E13, E23, E33 and E43 4kV Busses
Fire Area:	Fire location is the Turbine Building Fire Area 50.
Task:	Activities involve tripping a breaker and pulling a fuse for the affected bus.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; eight minutes travel and performance time for restoration of a single bus; 26 minutes of travel and performance time if all four busses are assumed to require action.
Tools:	No tools are required.
Location of Action/Environment:	Each bus is restored in the associated Switchgear Room. The Switchgear Rooms have a separate ventilation system from the Turbine Building and will be free of smoke, heat and fire fighting effects. The Switchgear Rooms are separate fire areas from the Turbine Building and from each other. The Switchgear Rooms can be accessed via the radwaste corridor.
Discussion:	There is the potential for any of the four diesel generator output breakers to spuriously close, rendering the bus unavailable until the diesel generator breaker is opened and lockouts are reset. The 60 minutes to perform this task is conservative, and is based on the need to ensure AC

	power is available to battery chargers within 60 minutes. Only one bus is assumed to require restoration. The 26-minute performance time is for restoration of all four Unit 3 busses. Since only one bus is assumed to spuriously operate, it is unlikely that there will be a need to perform this task for multiple busses. The actions take place in the Switchgear Rooms, which will remain tenable for the operators performing this task. The cables subject to spurious actuation of the diesel breakers (Breaker E13 cable ZA3A1503E; breaker E23 cable ZB3A1606E; breaker E33 cable ZC3A1704E; breaker E43 cable ZD3A1807E) are exposed in one fire zone in this fire area (room 126, fire zone 50-78B, 13kv switchgear area). All four cables are routed in separate conduit, in accordance with their divisional electrical separation criteria. Combustible loading in this zone is LOW, and the zone is protected by a pre-action sprinkler system. The tasks or tripping a breaker and pulling a fuse block are straightforward and are considered to be within the skill of the craft. There is adequate time available to perform this task.
Action W:	Transfer of 125V Battery Charger 2AD003 to Alternate Power Supply
Fire Area:	Fire in the Turbine Building Fire Area 50
Task:	The operator will close 480 VAC MCC breaker 52-5945 located in the E13 Switchgear Room and then operate manual transfer switch 20S700 located in the E32 Switchgear Room.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; nine minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	Both Switchgear Rooms are separate fire areas from each other and from the Turbine Building. The Switchgear Rooms have a separate ventilation system from the Turbine Building. The Switchgear Rooms will remain free of fire effects from a Turbine Building fire. Access to the Switchgear Rooms can be made from the Radwaste Building corridor.
Discussion:	This action transfers 125V battery charger 2AD003 from its normal power source to its alternate source. This battery charger is required since battery capacity is not sufficient for all loads for the duration of the event. There are 60 minutes available to perform this task. The tasks are performed in the Switchgear Rooms, which are within the Turbine Building and are familiar to the operators. Closing a breaker at the MCC and operating a manual transfer switch are straightforward and are considered to be within the skill of the craft. Access to the Switchgear Rooms can be made from the Radwaste corridor. The travel and performance time associated with this action is nine minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available to perform this task.

Action X:	Defeat of 4kV Bus 2SU Feeder Breakers Degraded Voltage Trip Relays for E12, E22, E32, E42, E13, E23, E33 and E43 Buses
Fire Area:	The fire location is the Turbine Building Fire Area 50
Task:	The task involves pulling the FU-35 fuse block in the E12 Switchgear Room, the FU-66 fuse block in the E22 Switchgear Room, the FU-97 fuse block in the E32 Switchgear Room, the FU-128 fuse block in the E42 Switchgear Room, the FU-30 fuse block in the E13 Switchgear Room, the FU-60 fuse block in the E23 Switchgear Room, the FU-93 fuse block in the E33 Switchgear Room and the FU-123 fuse block in the E43 Switchgear Room.
Allowable Time:	60 minutes after the loss of power to the 2SU transformer tap changer has occurred.
Estimated Time:	30 minutes diagnosis time; 24 minutes travel and performance time to remove all eight fuses.
Tools:	No tools are required.
Location of Action/Environment:	The Turbine Building is a separate fire area from the Switchgear Rooms. The ventilation system for the Turbine Building is separate from the ventilation system for the Switchgear Rooms. The Turbine Building is adjacent to the Switchgear Rooms, but the ventilation system in the Switchgear Rooms keeps the Switchgear Rooms pressurized and the Turbine Building ventilation system creates a negative pressure. This configuration of positive pressure in the Switchgear Rooms and negative pressure in the Turbine Building will keep smoke out of the Switchgear Rooms. The Switchgear Rooms can be accessed from the Radwaste corridor. Travel in the Turbine Building can be minimized. Travel between the Switchgear Rooms can be accomplished without entering the Turbine Building.
Discussion:	This action is only required if the 2SU is the only offsite power source available and a loss of power to the 2SU transformer tap changer has occurred. (See Note 1 for additional details.) Action is required within 60 minutes for four of the eight busses to support battery chargers. Actions for the remaining four busses are provided for operational flexibility, and are not necessary to support the credited method for achieving hot shutdown. The time to reach the Switchgear Room and perform the action is approximately three minutes for each of the fuses or a total of 24 minutes if all eight fuses are being removed. Removal of fuses is a straightforward task and is considered to be within the skill of the craft. The Switchgear Rooms will remain tenable for a fire in the Turbine Building due to the positive pressure ventilation in the Switchgear Rooms. The action to pull each of the eight degraded voltage relay fuses is conservative. There is adequate time to perform this task.

Action Y:	Transfer of SU-25 Breaker Auxiliary Equipment to Alternate Power Source
Fire Area:	Fire location is the Turbine Building Fire Area 50
Task:	Transfer SU-25 breaker auxiliary equipment from normal power source to its alternate power source, by operating manual transfer switch 00S306.
Allowable Time:	120 minutes (Refer to Note 1 for the time basis)
Estimated Time:	30 minutes diagnosis time; 15 minutes travel and performance time.
Tools:	No tools are required.
Location of Action/Environment:	The action location is in the Unit 2 Startup Building which is located in the exterior Yard area. The Turbine Building is not attached to the Unit 2 Startup Building so there will be no fire effects in the Unit 2 Startup Building in the event of a fire in the Turbine Building.
Discussion:	The SU-25 breaker auxiliaries are powered from two normal sources via an automatic transfer switch, as well as a third source via a manual transfer switch. If the fire actually results in a loss of power to both of the two normal sources to the SU-25 breaker auxiliaries, there are 120 minutes to transfer power to the SU-25 breaker auxiliaries alternate power supply. Off-site power is provided, but this action ensures the long-term availability of that power by powering the auxiliaries (heating/cooling and SF-6 compressor). The actual travel and performance time is 15 minutes. The task to be performed is to operate manual transfer switch 00S306 located in the Unit 2 Startup Building. Operating a manual transfer switch is straightforward and is considered to be within the skill of the craft. The Unit 2 Startup Building is an exterior structure that will not be impacted by a fire in the Turbine Building. Indication of the loss of power to the SU-25 breaker auxiliaries is addressed in the applicable T-300 Fire Guide, and it is therefore expected that operators would restore power to the auxiliaries before an inadvertent trip of the SU-25 breaker occurred. There is adequate time available to perform this task.

Action Z:	Transfer of Instrument Power Supply 30C144 using Transfer Switch 30S546
Fire Area:	Fire location is the Radwaste corridor elevation 135' Fire Area 57
Task:	This action involves operating key operated switch 30S546 to restore power to 30C144. This hand switch is located in the Cable Spreading Room.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; three minutes travel and performance time.
Tools:	A key for the switch is required for this task. The key is available from the Control Room key cabinet.

Location of Action/Environment:	The action is performed in the Cable Spreading Room, which is a separate fire area and has a separate ventilation system from the Radwaste corridor. There will be no fire effects from a Radwaste corridor fire that could impact the operator either in traveling to the Cable Spreading Room or performing the action in the Cable Spreading Room.
Discussion:	This action provides an alternate power supply to certain Control Room instruments. The applicable T-300 Fire Guide identifies which instruments may be lost for a fire in the Radwaste corridor. With the exception of reactor vessel pressure and torus temperature, at least one other instrument indication will be available for reactor vessel level, torus level, CST level, and drywell temperature and pressure in the event power is lost to the 30C144 panel. This action only needs to be performed if the normal AC power supply is lost, and the automatic DC power supply has been depleted. The DC power supply is calculated to carry the load for a minimum of 60 minutes. If the action to restore power from an alternate source is completed before the battery power level is depleted, then no loss of indication will occur. If the action is performed after the battery is depleted, then a temporary loss of reactor vessel pressure and torus temperature indication will occur; however, neither of these conditions will result in an unrecoverable condition. Operating a key switch on a panel is a straightforward action and considered to be within the skill of the craft. A fire in the Radwaste corridor will not create any adverse environmental conditions for travel to or action in the Cable Spreading Room. The time to obtain the key, travel to the Cable Spreading Room and perform the action is three minutes. There is adequate time available to perform this task.

Action AA:	Transfer of Panel 30Y033 to Alternate Power Source
Fire Area:	Fire location is the Radwaste corridor elevation 135' Fire Area 57
Task:	There are two tasks associated with this action. The first task is to close 480 VAC MCC breaker 52-5935 in the E12 Switchgear Room and the second task is to operate manual transfer switch 30S701 in the E13 Switchgear Room in order to restore power to 30Y033.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; nine minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	The Radwaste corridor is a separate fire area from the E12 and E13 Switchgear Rooms. The Switchgear Rooms have a separate ventilation system from the Radwaste corridor; however, the ventilation ducts for the Switchgear Rooms are routed through the Radwaste corridor (and there are no registers from these ducts into the Radwaste corridor). There are dampers in the ducts where they pass through the shared fire barriers. In addition, the Radwaste corridor has an automatic pre-action sprinkler system. The Switchgear Rooms can be accessed from the Turbine Building. The E12 and E13 Switchgear Rooms each have an

	adjacent Switchgear Room separating them from the Radwaste corridor. The conditions in the E12 and E13 Switchgear Rooms will not be adversely impacted by a fire in the Radwaste corridor.
Discussion:	This action provides an alternate power supply to Panel 30Y033 in the event a fire causes the loss of the normal power supply. This panel supplies power to several instruments in the Control Room. The applicable T-300 Fire Guide provides information identifying which instruments may be lost if power is lost to the 30Y033 panel. It should be noted that if this panel is lost, at least one other instrument providing: vessel level, vessel pressure, condensate storage tank level, torus level and temperature, drywell temperature and flow indication for the protected Core Spray and RHR loops are powered by other panels. This action is primarily being performed to restore power to ADS valve position indication (tailpipe temperature recorders). This indication is considered desirable to the Operations staff, but is not essential to safe shutdown, as no unrecoverable condition is postulated to occur if the ADS valve position indication is lost. The action to restore power to the 30Y033 panel from the alternate source is to close a breaker and operate a manual transfer switch. Closing an MCC breaker and operating a manual transfer switch are straightforward and are considered to be within the skill of the craft. There is no upper limit on the time available to perform this action since no unacceptable conditions would occur without this instrumentation. Sixty minutes has been selected as the time limit for analysis purposes only. The E12 and E13 Switchgear Rooms will not be affected by a fire in the Radwaste corridor since they are separate fire areas and are further separated by intervening Switchgear Rooms. The travel and performance time associated with this action is nine minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available to perform this function.
Action BB:	Transfer of 125V Battery Charger 3DD003 to Alternate Power Source
Fire Area:	Fire location is the Unit 3 MG Set room Fire Area 58
Task:	There are two tasks within the action. The first task is to close 480 VAC MCC breaker 52-5021 in the E43 Switchgear Room. The second task is to operate manual transfer switch 30S700 also in the E43 Switchgear Room in order to provide an alternate power supply to battery charger 3DD003.
Allowable Time:	60 minutes
Estimated Time:	30 minute diagnosis time; 10 minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	The Unit 3 MG Set room is a separate fire area with a separate ventilation system from the E43 Switchgear Room where both of these tasks are performed. The Switchgear Room will remain tenable for a fire

	in the Unit 3 MG Set room.
Discussion:	This action transfers 125V battery charger 3DD003 from its normal power source to its alternate source. This battery charger is required since battery capacity is not sufficient for all loads for the duration of the event. Both tasks included in this action are located in the same Switchgear Room. Manipulating a breaker and a manual transfer switch are straightforward actions and are considered to be within the skill of the craft. A fire in the Unit 3 MG Set room will not create any adverse environmental conditions in the Switchgear Room. Travel to the Switchgear Room can be accomplished via the Turbine Building. The travel and performance time associated with this action is 10 minutes, which includes five minutes added to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available to perform this task.
Action CC:	Defeat of 4kV Bus 2SU Feeder Breakers Degraded Voltage Trip Relays for E12, E22, E32, E42, E23, E33 and E43 Buses
Fire Area:	Fire location is the Unit 3 MG Set room Fire Area 58
Task:	This is a group of seven actions to remove degraded voltage relay fuses located in the Unit 2 and Unit 3 Switchgear Rooms. The tasks involve pulling the FU-35 fuse block in the E12 Switchgear Room, the FU-66 fuse block in the E22 Switchgear Room, the FU-97 fuse block in the E32 Switchgear Room, the FU-128 fuse block in the E42 Switchgear Room, the FU-60 fuse block in the E23 Switchgear Room, the FU-93 fuse block in the E33 Switchgear Room and the FU-123 fuse block in the E43 Switchgear Room.
Allowable Time:	25 minutes from the time a loss of power has occurred to the 2SU transformer tap changer when the 2SU is the only offsite power source available (E12, E22, E32 and E23 busses); 60 minutes (E42, E33 and E43 busses). (See Note 1)
Estimated Time:	This is a prompt action in which the operator would be dispatched shortly after the unit was shutdown. The travel and performance time is three minutes per fuse. Four of the seven fuses must be removed within 25 minutes for a combined time of 12 minutes.
Tools:	No tools are required.
Location of Action/Environment:	The Unit 3 MG Set room is a separate fire area with a separate ventilation system from the Switchgear Rooms where the fuses are located. The Switchgear Rooms will remain tenable for a fire in the Unit 3 MG Set room.
Discussion:	This action is only required if the 2SU is the only offsite power source available and a loss of power to the 2SU transformer tap changer has occurred. (See Note 1 for additional details.) Four of the seven fuses (identified in the T-300 Fire Guide) need to be removed within the 25 minutes. Removal of the remaining fuses is not as time critical and can

	be completed within 60 minutes. The time to reach the Switchgear Room and perform the action is three minutes for each of the fuses or a total of 21 minutes for all seven fuses being removed. Removal of fuses is a straightforward task that is considered to be within the skill of the craft. The Switchgear Rooms will remain tenable for a fire in the MG Set room due to the positive pressure ventilation in the Switchgear Rooms. The action to pull each of the seven degraded voltage relay fuses is conservative. There is adequate time available to perform this task.
Action DD:	Transfer of Panel 30Y034 to Alternate Power Source
Fire Area:	Fire location is the Unit 3 MG Set room Fire Area 58
Task:	There are two tasks associated with this action. The first task is to close 480 VAC MCC breaker 52-6011 in the E22 Switchgear Room and the second is to operate manual transfer switch 30S702 in the E23 Switchgear Room in order to restore power to 30Y034.
Allowable Time:	25 minutes
Estimated Time:	This is a prompt action. The travel and performance time for the two tasks that make up this manual action is nine minutes.
Tools:	Electrical PPE.
Location of Action/Environment:	The Unit 3 MG Set room is a separate fire area from the Switchgear Rooms and has a separate ventilation system. Access to the Switchgear Room can be made from the Turbine Building. There will be no fire effects in the E22 and E23 Switchgear Rooms from a fire originating in the Unit 3 MG Set room.
Discussion:	This is considered a prompt action since it needs to be done within the first 25 minutes following the scram if there is a loss of power to Panel 30Y034, which provides some (but not all) instrument indications in the Control Room. Loss of power to the 30Y034 panel will result in the loss of condensate storage tank (CST) level (CST not credited for this fire area), one of three torus level indications, one of three drywell pressure indications, one of four drywell temperature indications and Core Spray flow indications. The instruments that would be lost with loss of power to 30Y034 are clearly indicated in the associated T-300 Fire Guide. A 25-minute time limit was selected based on restoring indication for Core Spray RPV injection; however, this time is flexible as other complementary indications; such as RPV coolant level, valve positions, breaker positions, and pump ammeters remain available. There will be no environmental concerns for the operators entering the E22 and E23 Switchgear Rooms in the event of a fire in the Unit 3 MG Set room. Closing a breaker and operating a manual transfer switch are both straightforward tasks that are considered to be within the skill of the craft. The travel and performance time associated with this action is nine minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available to perform

this task.

Action EE:	Transfer of Instrument Power Supply 30C144 using Transfer Switch 30S546
Fire Area:	Fire location is the Unit 3 MG Set room Fire Area 58
Task:	This action involves operating key operated switch 30S546 to restore power to 30C144. This hand switch is located in the Cable Spreading Room.
Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; three minutes travel and performance time.
Tools:	A key is required to operate the key switch. The key is available from the Control Room key cabinet.
Location of Action/Environment:	The action is performed in the Cable Spreading Room, which is a separate fire area and has a separate ventilation system from the Unit 3 MG Set room. There will be no fire effects from a Unit 3 MG Set room fire that could impact the operator either in traveling to the Cable Spreading Room or performing the action in the Cable Spreading Room.
Discussion:	This action provides an alternate power supply to certain Control Room instruments. The applicable T-300 Fire Guide identifies which instruments may be lost for a fire in the Unit 3 MG Set Room. With the exception of CST level and torus temperature, at least one other instrument indication will be available for reactor vessel level and pressure, torus level, and drywell temperature and pressure in the event power is lost to the 30C144 panel. This action only needs to be performed if the normal AC power supply is lost. A temporary loss of CST level (CST not credited for this fire area) and torus temperature indication will not result in an unrecoverable condition. There is no upper limit on the time available to perform this action since no unacceptable conditions would occur without this instrumentation. Sixty minutes has been selected as the time limit for analysis purposes only. Operating a key switch on a panel is a straightforward action that is considered to be within the skill of the craft. A fire in the Unit 3 MG Set room will not create any adverse environmental conditions for travel to or action in the Cable Spreading Room. The time to obtain the key, travel to the Cable Spreading Room and perform the action is three minutes. There is adequate time available to perform this task.

Action FF:	Transfer of Panel 30Y033 to Alternate Power Source
Fire Area:	Fire location is the Unit 3 MG Set room Fire Area 58
Task:	There are two tasks associated with this action. The first task is to close 480 VAC MCC breaker 52-5935 in the E12 Switchgear Room and the second task is to operate manual transfer switch 30S701 in the E13 Switchgear Room in order to restore power to 30Y033.

Allowable Time:	60 minutes
Estimated Time:	30 minutes diagnosis time; nine minutes travel and performance time.
Tools:	Electrical PPE.
Location of Action/Environment:	The Unit 3 MG Set room is a separate fire area from the E12 and E13 Switchgear Room. The Switchgear Rooms have a separate ventilation system from the Unit 3 MG Set room. The Switchgear Rooms can be accessed from the Turbine Building, avoiding any contact with the MG Set room. The conditions in the E12 and E13 Switchgear Rooms will not be adversely impacted by a fire in the Unit 3 MG Set room.
Discussion:	This action provides an alternate power supply to Panel 30Y033 in the event a fire causes the loss of the normal power supply. This panel supplies power to several instruments in the Control Room. The applicable T-300 Fire Guide provides information identifying which instruments may be lost if power is lost to the 30Y033 panel. It should be noted that if this panel is lost, at least one other instrument providing: vessel level, vessel pressure, torus level and temperature and drywell pressure and temperature and flow indications for the protected Core Spray and RHR loops are powered by other panels. Restoring 30Y033 will restore additional redundant instrumentation. The action to restore power to the 30Y033 panel from the alternate source is to close a breaker and operate a manual transfer switch. These actions are straightforward and considered to be within the skill of the craft. There is no upper limit on the time available to perform this action since no unacceptable conditions would occur without this instrumentation. Sixty minutes has been selected as the time limit for analysis purposes only. The E12 and E13 Switchgear Rooms will not be affected by a fire in the Unit 3 MG Set room since they are separate fire areas with separate ventilation systems. The travel and performance time associated with this action is nine minutes, which includes five minutes to account for donning and doffing electrical safety PPE required by procedure when manipulating manual transfer switches. There is adequate time available to perform this task.

Action GG:	Defeat Unit 3 RHR Logic Trip of 2D RHR Pump
Fire Area:	Fire location is the Unit 3 MG Set room Fire Area 58
Task:	This action involves installing a logic plug test switch for the test jack 3-10A-J1A at Panel 30C032. This action will prevent the Unit 3 RHR logic from tripping the Unit 2 2D RHR pump. The action is installing the red collar logic plug into a receptacle on the front of the Unit 3 RHR logic panel in the Cable Spreading Room.
Allowable Time:	150 minutes
Estimated Time:	30 minutes diagnosis time; seven minutes travel and performance time.
Tools:	The T-300 RHR Logic Plug (red collar) for test jack 10A-J1A

Location of Action/Environment:	The action location is the Cable Spreading Room. The Unit 3 MG Set room is a separate fire area from the Cable Spreading Room and each room has a separate ventilation system. A fire in the MG Set room will not impact conditions in the Cable Spreading Room. The travel route to the Cable Spreading Room is via the Turbine Building, which is also a separate fire area with a separate ventilation system and will be unaffected by a MG Set room fire.
Discussion:	If the 2D RHR pump fails to start when needed for Torus cooling or establishing alternate shutdown cooling, this action provides a method to defeat the trip logic and permit the 2D RHR pump to start. This action is not required for establishment of hot shutdown RPV injection. There are 150 minutes to perform this activity, which can be performed in less than 10 minutes. The steps of the activity are clearly described in the attachment to the applicable T-300 Fire Guide. The logic plug-in test switch is located in the fire shutdown cabinet located outside the Control Room. The action is performed in the Cable Spreading Room, which will remain unaffected by a fire in the MG Set room. This activity allows the Unit 2 "D" RHR pump to be placed in service. Unit 2 is the unaffected unit and this step is not critical to the shutdown of the affected unit (Unit 3). Inserting a test plug into the outside of a panel is a straightforward task that is considered to be within the skill of the craft. There is adequate time available to perform this task.

Note 1: Offsite power is provided to each of the 4kV Class 1E switchgear by two of three redundant sources (2SU, 3SU and 343SU). Control cables for the sources have been separated by rerouting selected cables, such that one of the redundant sources remains free of fire damage for fires in most plant areas. In particular, cables associated with the 2SU source have been relocated out of the Turbine Building (Fire Area 50), and portions of the Radwaste Building (Fire Areas 2 and 58). When the 2SU source is credited, manual actions are procedurally directed by the T-300 Fire Guides to address the potential for a slight voltage degradation. Two types of operator manual actions are inherent when the 2SU source is credited.

The 2SU source is provided with an automatic load tap changer, step-down transformer with forced-air and forced-oil cooling, and SF6 gas breaker with gas compressor and heaters. Some of this auxiliary equipment is not powered from a Class 1E power source and is, therefore, assumed to be lost. This is a limitation in the design, in that even though the 2SU source remains free of fire damage, manual actions will still be required to maintain the availability of the source. Manual actions address the loss of SF6 gas breaker heater and compressor by re-powering the heater and compressor from an available offsite source, via switch 00S306. Without heaters available, the SF6 gas in the breaker is assumed to slowly cool and liquefy, with the breaker eventually tripping automatically on low gas pressure. This cooldown rate depends on outside temperatures and is estimated to take two hours at 0^{o} F, three hours at 10^{o} F, and indefinitely at or above 45^{o} F. For analysis purposes, 120 minutes is used as the time limit to operate switch 00S306 to restore power to the SF6 gas compressor and heaters. If the action is performed within 120 minutes, then no inadvertent trip of the SU-25 breaker is expected to occur. An indicating light is

provided in the 2SU Switchgear Building to notify the operator that the action is required.

No manual actions are required for the loss of forced-air/forced-oil cooling for the step-down transformer, due to the relatively small shutdown loads compared to the normal running loads. An analysis has been performed for the loss of power to the automatic load tap changer, which has determined that the voltage to the 4kV class 1E switchgear remain acceptable (98% of rated voltage or greater) given the worst case shutdown loads; however, manual actions may be required to pull fuses to disable the 98% non-LOCA undervoltage relays at individual 4kV switchgear that are credited in each fire area. Using reasonable assumptions, the analysis shows that the 98% undervoltage relays will not actuate when at their nominal setting; however, using worse-case assumptions including assuming worse –case shutdown loads are applied, setting tolerances and allowable instrument drift in the worse-case direction, could result in an individual Class 1E switchgear 98% undervoltage relay being susceptible to tripping. Because the potential for a switchgear to trip is based on a worst case shutdown load, instrument setting tolerances and instrument drift, it is unlikely that any 98% undervoltage relay would actuate; however, actions are conservatively shown to be required for all credited 4kV switchgear in each scenario that credits the 2SU as the only available offsite power source.

2. Consideration of Operator Manual Actions Combined by Fire Area

Each of the initiating fire areas that has operator manual actions addressed in this exemption request are listed below. A review of all of the operator manual actions occurring in the same timeframe is included in the combined operator manual actions evaluation below (not just those included in this exemption request). Actions necessary to achieve cold shutdown and cold shutdown repairs are not included, since those actions are not as time critical and additional plant personnel would become available several hours after the start of the event. The focus of this review is to demonstrate that adequate time and staff are available to perform all the operator manual actions. The information regarding transit and action times, environmental conditions, accessibility, tools and smoke issues remain the same. Other than for prompt actions (those that have completion times of 30 minutes or less), the diagnostic time is assumed to be 30 minutes, which is conservative as previously described. The information below was obtained primarily from the timelines that are contained in each of the fire safe shutdown calculations. The timelines in the safe shutdown calculations give assignments to "Operator 1" and continue to give that operator assignments until there is an overlap and then "Operator 2" is given an assignment. "Operator 3" only has assignments when "Operators 1 and 2" are both occupied. This approach was taken to simply show that all actions could be performed within the allotted time with the available staff. In actual practice, three operators are dedicated to fire safe shutdown and can be assigned tasks as deemed appropriate by the Control Room. This approach adds a level of conservatism, since the other operators will be available to assist, as needed, which will shorten the action time.

In considering the combined actions for a fire area, the relative simplicity of the manual actions as previously described should be considered. In addition, the ability to readily access each of the manual action locations and the lack of challenging environmental conditions at the location where the operator manual action is performed should be factored into the consideration of the ability to perform the tasks.

The tables below consider all the operator manual actions performed in each of the initiating fire areas addressed by this exemption request. The information in the tables is limited to the actions performed to achieve and maintain hot shutdown. Actions associated with cold shutdown are not included. The table format is as follows:

1) The first column in each table represents the operator assigned to perform the manual action. The operator designated to perform the task is the one currently listed in the FSSD calculation timeline. Operator 1 was chosen to perform the actions until a conflict occurs and then Operator 2 is assigned and then Operator 3. This column is provided to show that sufficient staffing exists and is not intended to show specific operator assignments.
2) The second column in each table provides a brief description of each hot shutdown action for the fire area. If the action is marked with an asterisk, this signifies that this manual action is addressed by this exemption request.
3) The third column in each table specifies the allotted time for the action from the FSSD calculation timetable. This includes the 30-minute diagnostic time unless the action is considered "prompt."
4) The fourth column in each table lists the estimated travel and action time based on times provided in the FSSD calculation. The estimated times are based on walkdowns of the activities (simulating the activity).
5) The fifth column lists the time allowed by the calculation to have the action complete.

For the tables below the actions marked with an asterisk (*) identifies those operator manual actions that are addressed by this exemption request.

Fire Area 2: Fire area 2 covers much of the Radwaste Building. A fire in this area has the potential to impact both units and there are actions to be performed for both units. Significant lube oil hazards in this fire area are protected with suppression systems.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action A]* Restore Power To Panel 20Y033 o Close breaker 52-5944* o Operate Switch 20S701*	T=0 to T=25	12 minutes	25 minutes
2	[Action C]* Remove Degraded Voltage Relay Fuses o Remove fuses FU-35*, FU-66*, FU-97*, FU-30*, FU-60*, FU-93*	T=0 to T=25 (E12, E22, E32, E13 and E23 busses) T=30 to T=60 (E33 bus)	15 minutes 15 minutes for 5 fuses; 18 minutes for all 6 fuses	25 minutes (E12, E22, E32, E13 and E23 busses) 60 minutes (E33 bus) (See Note 1 above)

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action D]* Provide Alternate Power To Battery Chargers ○ Close breaker 52-5945* ○ Operate switch 20S700* ○ Operate switch 2BS456 ○ Operate switch 2DS456	T=30 to T=60	18 minutes 12 minutes for Action D plus 6 minutes for the other two actions.	60 minutes
2	[Action B]* Provide Alternate Power For SU-25 Breaker Auxiliaries ○ Operate switch 00S306*	T=30 to T=120	15 minutes	120 minutes (See Note 1 above)
1	Disable RHR Pump Trips ○ Install plug in test switch 2-10A-J1A ○ Install plug in test switch 3-10A-J1B	T=60 to T=150	16 minutes	150 minutes
3 and 1	Align Valves For Suppression Pool Cooling ○ Open breaker 52-3933 for MO-3-10-034B ○ Manually open valve MO-3-10-034B ○ Open breaker for 52-3942 for MO-3-10-039B ○ Manually open valve MO-3-10-039B	T=30 to T=150	104 minutes	150 minutes Operator 3 opens the two breakers and one valve. Operator 1 manually opens the other valve.

In the event all the operator manual actions had to be performed concurrently for a fire in Fire Area 2, there is adequate time available to perform all of the operator manual actions. There are three safe shutdown operators available to perform operator manual actions. The third safe shutdown operator could assist the first or second safe shutdown operator during the initial 25-minute activities if needed. Each action has time margin available. Note 1 above discusses additional margin associated with pulling the degraded voltage relay control fuses. The operator manual actions in Fire Area 2 can be accomplished in the event all the potential operator manual actions had to be performed concurrently.

Fire Area 4: Fire area is the Unit 2 MG Set room. This room has a pre-action sprinkler system.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action F]* Provide Power To Panel 20Y035 o Close breaker 52-3801* o Operate switch 20S703*	T=30 to T=60	16 minutes	60 minutes
2	Provide Power To 2B Battery Charger o Operate switch 2BS456	T=30 to T=60	3 minutes	60 minutes
2	[Action E]* Disable 3B RHR Pump Trip o Install plug in test switch 2-10A-J1A*	T=60 to T=150	10 minutes	150 minutes
3/1	Align Valves For Suppression Pool Cooling o Open valve MO-2486 at E234-D-A (breaker 5442) o Open breaker 52-3832 for MO-2-10-034A o Manually open valve MO-2-10-034A o Open breaker 52-3831 for MO-2-10-039A o Manually open MO-2-10-039A	T=30 to T= 150	97 minutes	150 Minutes Operator 3 would open valve MO-2486. Operator 1 would open breakers for MO-2-10-034A and MO-2-10-039A. These two valves would be manually opened by Operator 1 and 3 respectively. Operator 2 is also available to assist.

In the event all the operator manual actions had to be performed concurrently for a fire in this Fire Area, there is adequate time available with margin to accomplish these tasks.

Fire Area 6N: Fire area 6N is the north side of the Unit 2 Reactor Building on elevation 135'.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action H]* Align Valve For LPCI o Install plug in test switch 2-14A-J2A*	T=0 to T=25	7 minutes (to obtain plug and stage operator at panel; refer to Action H discussion)	25 minutes

In the event of a fire in Fire Area 6N there is a single operator manual action required. While this is a prompt action, a single safe shutdown operator can accomplish this task and adequate time margin remains available. Note that the second and third safe shutdown operators are available but not needed.

Fire Area 6S: Fire Area 6S is in the Unit 2 Reactor Building and includes the south side of the 135' elevation and upper elevations of the Reactor Building (165', 195', 234').

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action G]* Provide Alternate Power To Battery Chargers o Close breaker 52-5945* o Operate switch 20S700* o Operate Switch 2BS456 o Operate Switch 2DS456	T=30 to T=60	14 minutes 11 minutes for Action G and 3 minutes for the other two actions.	60 minutes
2	Align Valves For Suppression Pool Cooling o Open breaker 52-3933 for MO-2-10-034B o Open breaker 52-3942 for MO-2-10-039B o Open breaker 52-3931 for MO-2-10-089D o Manually open valve MO-2-10-034B o Manually open valve MO-2-10-039B o Manually open valve MO-2-10-089D	T=30 to T=150	114 minutes	150 minutes (Operators 1 and 3 can assist with this action)

In the event of a fire in Fire Area 6S there is time to perform this task with adequate margin.

Fire Area 13N: Fire Area 13N is located in the Unit 3 Reactor Building and includes the north side of the 135' elevation and all the upper elevations (165', 195' and 234')

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	Provide Power To 30C144 o Operate switch 30S546	T=0 to T=30	3 minutes	30 minutes

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action J]* Provide Alternate Power To Battery Chargers o Operate switch 3AS456 o Operate switch 3CS456 o Close breaker 52-5021* o Operate switch 30S700*	T=30 to T=60	12 minutes 8 minutes for Action J and 4 minutes for the other actions.	60 minutes
2	Align Valves For Suppression Pool Cooling o Open breaker 52-3832 for MO-3-10-034A o Open breaker 52-3831 for MO-3-10-039A o Manually open valve MO-3-10-034A o Manually open valve MO-3-10-039A o Open breaker 52-3623 for MO-3-10-089A o Manually open MO-3-010-089A	T=30 to T=180	119 minutes	180 minutes (Operators 1 and 3 are available to assist.)

In the event of a fire in Fire Area 13N there are tasks assigned to two safe shutdown operators with a third safe shutdown operator available to assist as needed. These operator manual actions can be accomplished with adequate time margin.

Fire Area 26: Fire Area 26 is located on the 165' elevation of the Radwaste Building and is the Unit 3 MG Set Ventilation Equipment room.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action K]* Provide Alternate Power To Battery Chargers o Close breaker 52-5021* o Operate switch 30S700* o Operate switch 3CS456	T=30 to T=60	12 minutes 10 minutes for Action K and 2 minutes for the other action.	60 minutes

Operator	Action	Allotted Time	Estimated Time	Allowable Time
2	Align Valves For Suppression Pool Cooling o Open breaker 52-3832 for MO-3-10-034A o Open breaker 52-3831 for MO-3-10-039A o Manually open valve MO-3-10-034A o Manually open valve MO-3-10-039A	T=30 to T=150	97 minutes	150 minutes

In the event of a fire in Fire Area 26 there is adequate time and margin to perform the operator manual actions. Note that safe shutdown operator 3 is available but is not assigned tasks. Both safe shutdown operator 1 and 3 can assist safe shutdown operator 2 with the suppression pool cooling valves.

Fire Area 27: Fire Area 27 is located on the 165' elevation of the Radwaste Building and is the Unit 2 MG Set Ventilation Equipment room.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action L]* Provide Power To Panel 20Y035 o Close breaker 52-3801* o Operate switch 20S703*	T=30 to T=60	16 minutes	60 minutes

In the event of a fire in Fire Area 27 there is adequate time and margin to perform the operator manual actions. Note that the second and third safe shutdown operators are available but are not assigned tasks.

Fire Area 30: Fire Area 30 is the Unit 3 B/D battery room located on elevation 135' in the Turbine Building.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action P]* Provide Power To 30C144 o Operate switch 30S546*	T=30 to T=60	3 minutes	60 minutes

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action M]* Provide Alternate Power To 3A Battery Charger o Operate switch 3AS456*	T=45 to T=60	9 minutes	60 minutes
1	[Action N]* Align Valve For Decay Heat Removal o Open breaker 52-3623* o Manually open MO-3-10-089A*	T=60 to T=150	16 minutes	150 minutes

In the event of a fire in Fire Area 30 adequate time is available to perform all the operator manual actions with adequate margin. Note that the second and third safe shutdown operators are available, but were not assigned any tasks.

Fire Area 33: Fire Area 33 is the E13 4kV Switchgear Room. This room is located in the 135' elevation of the Turbine Building. This room has a pre-action sprinkler system.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action Q]* Provide Alternate Power To Panel 30Y034 o Close breaker 52-6011* o Operate switch 30S702*	T=0 to T=25	10 minutes	25 minutes

In the event of a fire in Fire Area 33, there is adequate time to perform the prompt action with sufficient margin. Note that the second and third safe shutdown operators are available to assist with this prompt action, but were not assigned any tasks.

Fire Area 36: Fire Area 36 is the E42 Switchgear Room located on the 135' elevation of the Turbine Building. This room has a pre-action sprinkler system.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action R]* Restore Power To E12 Bus From E1 EDG o Pull control power fuses for 2-152-1501* o Pull control power fuses for 2-152-1508* o Open breakers E12 (1501) and E12 (1508)* o Energize E12 bus*	T=30 to T=60	12 minutes	60 minutes

In the event of a fire in Fire Area 36, there is adequate time to perform the operator manual actions with sufficient margin. Note that the second and third safe shutdown operators are available, but were not assigned any tasks.

Fire Area 37: Fire Area 37 is the E22 Switchgear Room located on the 135' elevation of the Turbine Building. This room has a pre-action sprinkler system.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action S]* Restore Power To E12 Bus From E1 EDG o Pull control power fuses for 2-152-1501* o Pull control power fuses for 2-152-1508* o Open breakers E12 (1501) and E12 (1508)* o Energize E12 bus*	T=30 to T=60	12 minutes	60 minutes

In the event of a fire in Fire Area 37, there is adequate time to perform the operator manual actions with sufficient margin. Note that the second and third safe shutdown operators are available, but were not assigned any tasks.

Fire Area 43: Fire Area 43 is the E-4 Emergency Diesel Generator Room located in the Diesel Generator Building. This room has a manual CO_2 fire suppression system.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action T]* Provide Alternate Power To 2D Battery Charger ○ Operate switch 2DS456*	T=30 to T=60	9 minutes	60 minutes

There is adequate time to perform this action with margin. Safe shutdown operators 2 and 3 are available if needed.

Fire Area 50: Fire Area 50 is the Turbine Building. There is sprinkler protection for lube oil areas, the 13kV switchgear area and the truck loading bay area.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action U]* Offsite Power Restoration To 4kV Buses ○ Remove control power fuses, trip breaker 2-152-1503, and reset lockouts* ○ Remove control power fuses, trip breaker 2-152-1606 and reset lockouts* ○ Remove control power fuses, trip breaker 2-152-1704 and reset lockouts* ○ Remove control power fuses, trip breaker 2-152-1807 and reset lockouts*	T=30 to T=60 (E22, E32 and E42 busses) T=30 to T=180 (E12 bus)	8 minutes One bus takes 8 minutes; all 4 buses can be done in 26 minutes.	60 minutes (E22, E32 and E42 busses) 180 minutes (E12 bus)

Operator	Action	Allotted Time	Estimated Time	Allowable Time
2	[Action V]* Offsite Power Restoration To 4kV Buses o Remove control power fuses, trip breaker 3-152-1503 and reset lockouts* o Remove control power fuses, trip breaker 3-152-1606 and reset lockouts* o Remove control power fuses, trip breaker 3-152-1704 and reset lockouts* o Remove control power fuses, trip breaker 3-152-1807 and reset lockouts*	T=30 to T=60	8 minutes One bus takes 8 minutes; all 4 buses can be done in 26 minutes.	60 minutes
2	[Action W]* Provide Alternate Power To 2A Battery Charger o Close breaker 52-5945* o Operate switch 20S700*	T=45 to T=60	9 minutes	60 minutes
3	[Action X]* Defeat Degraded Voltage Trips o Remove fuses FU-35*, FU-66*, FU-97*, FU-128*, FU-30*, FU-60*, FU-93* and FU-123*	T=30 to T=60	24 minutes	60 minutes (See Note 1 above)
3	[Action Y]* Provide Alternate Power For SU-25 Auxiliaries o Operate switch 00S306*	T=60 to T=120	15 minutes	120 minutes (See Note 1 above)

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1,2	Align Valves For HPSW Operation o Open breaker 52-5442 for MO-2486 o Open breaker 52-5441 for MO-3486 o Manually open valve MO-2486 o Manually open valve MO-3486	T=60 to T=180	74 minutes	180 Minutes (Operator 1 opens breakers and manually opens one valve. Operator 2 manually opens the other valve in parallel.)

In the event of a fire in Fire Area 50 that requires all the operator manual actions to be performed concurrently, each of the three safe shutdown operators have specific tasks to perform. Each task can be completed within the designated time. Note 1 in the individual operator manual action section above provides information to show that additional margin is available in pulling the degraded voltage relay fuses. The estimated time of 12 minutes to defeat the four 4kV undervoltage relay trips required to support shutdown in the first hour is conservative. Actions U and V above provide information to show that it is unlikely that more than one breaker will require restoration. The estimated time of 24 minutes to defeat the 4kV undervoltage relay trips is conservative. The Turbine Building has sprinkler protection around lube oil hazards as well as in most of the common areas between the two units. It is unlikely that a fire of the magnitude to require these manual actions will occur in the Turbine Building due to the suppression systems. All of the potential operator manual actions needed to achieve and maintain hot shutdown can be performed within the allotted time.

Fire Area 57: Fire Area 57 is the Radwaste corridor located on elevation 135' between the Switchgear Rooms and the Radwaste Building. This fire area has a pre-action sprinkler system.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action Z]* [Action AA]* Provide Alternate Power To 30C144 And Panel 30Y033 o Operate switch 30S546* o Close breaker 52-5935* o Operate switch 30S701*	T=30 to T=60	12 minutes 3 minutes for Action Z and 9 minutes for Action AA.	60 minutes
1	Provide Alternate Power to Battery Chargers o Operate switch 2BS456 o Operate switch 3CS456	T=30 to T=60	5 minutes	60 minutes

Operator	Action	Allotted Time	Estimated Time	Allowable Time
2	Disable RHR Pump Trips ○ Install plug-in test switch 2-10A-J1A ○ Install plug-in test switch 3-10A-J1B	T=60 to T=150	16 minutes	150 minutes
1, 2 and 3	Align Valves for Suppression Pool Cooling ○ Open breaker 52-3933 for MO-3-10-034B ○ Open breaker 52-3942 for MO-3-10-039B ○ Manually open MO-3-10-034B ○ Manually open MO-3-10-039B ○ Open MO-2486 at the MCC ○ Open MO-3486 at the MCC ○ Open breaker 52-3832 for MO-2-10-034A ○ Open breaker 52-3831 for MO-2-10-039A ○ Manually open MO-2-10-034A ○ Manually open MO-2-10-039A	T-30 to T-150	110 minutes	150 minutes (All three Operators will be involved in this evolution. One Operator will open all the breakers, then open valves. Other Operators will be opening valves. Estimated time is for long leg actions performed in series.)

In the event of a fire in Fire Area 57, there is adequate time to perform the necessary operator manual actions to achieve and maintain hot shutdown. There is adequate time and staff to perform these tasks within the allotted time.

Fire Area 58: Fire Area 58 is the Unit 3 Recirculation Pump MG Set room located in the Radwaste Building, elevation 135'. This area has a pre-action sprinkler system that protects the MG Set.

Operator	Action	Allotted Time	Estimated Time	Allowable Time
1	[Action DD]* Provide Power To Panel 30Y034 ○ Close breaker 52-6011* ○ Operate switch 30S702*	T=0 to T=25	9 minutes	25 minutes

Operator	Action	Allotted Time	Estimated Time	Allowable Time
2	[Action CC]* Defeat Degraded Voltage Relay Trips Remove fuses FU-35*, FU-66*, FU-97*, FU-128*, FU-60*, FU-93* and FU-123*	T=0 to T=25 (E12, E22, E32 and E23 busses) T=30 to T=60 (E42, E33 and E43 busses)	12 minutes 12 minutes to remove 4 fuses; 21 minutes to remove all 7 fuses.	25 minutes (E12, E22, E32 and E23 busses) 60 minutes (E42, E33 and E43 busses) (See Note 1 above)
1	[Action BB]* Provide Alternate Power For Battery Chargers o Close breaker 52-5021* o Operate switch 30S700* o Operate switch 3CS456	T=30 to T=60	12 minutes 10 minutes for Action BB and 2 minutes for the other action.	60 minutes
3	[Action FF]* [Action EE]* Provide Alternate Power For Instrumentation o Close Breaker 52-5935* o Operate switch 30S701* o Operate switch 30S546*	T=30 to T=60	12 minutes 9 minutes for Action FF and 3 minutes for Action EE.	60 minutes
1 and 2	[Action GG]* Align Equipment for Suppression Pool Cooling o Install Plug-in test switch 3-10A-J1A* o Open valve MO-3486 at MCC o Open breaker 52-3933 for MO-3-10-034B o Open breaker 52-3942 for MO-3-10-039B o Open breaker 52-3931 for MO-3-10-089D o Manually open valve MO-3-10-034B o Manually open valve MO-3-10-039B o Manually open valve MO-3-10-089D	T=30 to T=150	115 minutes 7 minutes for Action GG.	150 minutes Operators 1 and 2 split these duties. Operator 3 will also be available to assist.

In the event of a fire in Fire Area 58, all of the operator manual actions necessary to achieve and maintain hot shutdown can be performed within the allotted time. Note 1 in the individual operator manual action section above describes additional margin available associated with removing the potentially degraded voltage relay fuses. Sufficient margin exists to successfully perform these actions.

* - Identifies those manual actions that are addressed by this exemption request.

3. Review of Operator Manual Actions against NUREG-1852

NUREG-1852 was used to provide guidance in reviewing the attributes of feasibility and reliability for each of the operator manual actions. NUREG-1852 noted that there will be some operator manual actions that may be considered "straightforward." The operator manual actions that can be considered straightforward will not require the same level of analysis as those that may be considered more complex. This point is made several times in the NUREG with statements such as; "However, not all of the criteria will usually require significant analysis or even be applicable, particularly for the simpler and more straightforward tasks." While the term "straightforward" was not specifically defined in the guidance documents, adequate information was provided to assist a licensee in determining which operator manual actions are straightforward and which operator manual actions are complex.

Many of the operator manual actions used at PBAPS may be considered straightforward. These operator manual actions are simple to perform, are actions that operators routinely perform as part of their normal work activities and have sufficient time available to perform the activity. Most of the operator manual actions are performed in the Switchgear Rooms or Cable Spreading Room, which have positive environmental conditions, and are rooms in which operators routinely perform similar activities.

The feasibility and reliability of the PBAPS operator manual actions are addressed below considering the criteria in NUREG-1852. A general discussion of the operator manual actions addressed in this exemption request as they relate to the NUREG-1852 criteria is provided below.

a. ADEQUATE TIME AVAILABLE TO PERFORM THE ACTION (FEASIBILITY)

NUREG-1852 identifies the following four segments of time associated with an operator manual action:

1) The time to diagnose the need for the action and dispatch an operator(s) to perform the action,
2) Travel time to the location where the action is to be performed,
3) Time to perform the action,
4) Time to verify the action has been successful and achieved the desired results.

Each of these time segments is addressed in the discussion below.

1) Diagnosis

At PBAPS, safe shutdown fire guides (T-300 Fire Guide series) have been developed for each fire area identified in the PBAPS FPP. The fire guides for individual fire areas are used in conjunction with the Boiling Water Reactor (BWR) symptom-based Emergency Operating Procedures (EOPs) to provide a symptom-based approach to achieving safe shutdown following

a fire. The symptom-based approach to shutdown is incorporated into the Transient Response Implementation Plan (TRIP) procedures and involves the use of a flow chart of actions to chart the expected plant conditions and plant responses. The individual fire area shutdown fire guides provide the operators with information as to the available equipment (including instrumentation) that can be relied upon following a fire. The fire area specific safe shutdown fire guides also provide guidance to the operators as to what instrumentation and equipment could be affected by the fire, and where the need to perform a particular action is not self-evident, they provide guidance as to symptoms or cues the operator can look for to determine that an operator action is necessary. The fire guides will focus the operators to monitor the conditions of the equipment identified in the shutdown fire guides as having the potential to be affected by a fire in that area. Because the operator remains within the symptom-based EOP procedure framework, the operator retains the ability to use any mitigating system that is unaffected by the fire.

Fires in the initiating fire areas of the manual actions addressed by this exemption request have no immediate impact on the Control Room environment. Several areas impact Control Room temperature a number of hours into the event, but there are no smoke or environmental challenges that will occur in the Control Room during the initial diagnosis phase of the event. Therefore, Control Room habitability will not adversely impact the diagnostic time following a plant shutdown so the Control Room operators can focus attention on plant conditions and the shutdown fire guides.

Each of the safe shutdown calculations that provide the technical basis for the safe shutdown fire guides contain a timeline for operator actions for the specific fire area. This timeline assumes that all potential fire damage identified for that fire area occurs instantaneously at the point of plant shutdown. The timeline considers a generic 30-minute diagnosis time to assess the need for operator actions. For the evaluation of the individual operator manual actions addressed by this exemption request, a 30-minute diagnostic period has been used unless otherwise noted in the evaluation. The generic 30-minute diagnostic time was based on Operation's input when the safe shutdown calculations were first developed. Any prompt actions (prompt actions are those that must be done within 30 minutes or less) identified for a specific fire area are identified at the front of the applicable T-300 Fire Guide. With the prompt action identified at the beginning of the T-300 Fire Guides, the operators know to initiate prompt actions immediately upon entry into the fire guides. Additional information on diagnosis times is provided in the section that addressed Demonstrations.

Procedural direction in Off Normal procedure ON-114, "Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump, Inner Screen or Emergency Cooling Tower," requires that the T-300 Fire Guides be entered as soon as an actual fire is reported and performed concurrently with any other procedure (such as the TRIP procedures referenced above). Thus, the Control Room will be in a position to dispatch operators to perform contingency actions in the T-300 Fire Guide earlier in the event than 30 minutes and may be able to anticipate the potential for the contingency actions before the postulated fire damage were to occur. A table top review performed by a group consisting of a shift manager, senior licensed operator trainer, fire safe shutdown engineer and fire protection engineer, determined that in the worst case scenario (plant trip due to area wide instantaneous fire damage), the 30-minute diagnostic time remained conservative.

There are several actions described within this exemption request that are to be completed within 25 minutes. The T-300 Fire Guides that include the actions that must be performed

within 30 minutes or less following Unit shutdown have been revised to flag these actions as "prompt" which will ensure that the manual action will be initiated with sufficient time to complete the task and these actions have been placed as the first attachments in the applicable fire guides. ON-114 contains an attachment listing the T-300 Fire Guides that contain a prompt action, directions pointing to this attachment are located at the beginning of the document.

In the event of a fire, a plant page is provided dispatching the fire brigade, which is composed of plant operators. Therefore, in the event of a fire, the operators assigned safe shutdown responsibilities (which are separate from those operators assigned to the fire brigade) would be immediately aware of the fire. The fire brigade leader is instructed to provide key information on the fire (e.g., location of the fire, fire size, equipment involved, etc.) over the operations radio. The safe shutdown operators will be fully aware of the fire location and conditions and they will assemble in the Control Room or where instructed by the Control Room operators. They will be ready to initiate operator manual actions very close to the start of the event.

2) Travel Time and Action Time

The travel time and action time for each of the manual actions addressed by this exemption request are provided in the individual actions section above. These are based on a selected number of walkdowns of the actions. Since many of the actions are similar in nature, a selected number of actions were chosen to envelope the remaining actions. As noted above, the operator manual actions are within the skill of the craft and are similar to activities performed during normal work activities. The majority of the operator manual actions addressed by this exemption request occur in the emergency Switchgear Rooms or the Cable Spreading Room, all of which are located near the Control Room. The proximity between these rooms and the Control Room minimize the required travel time.

3) Confirmation Time

Each of the operator manual action fire guides directs the operator performing the task to notify the Control Room when the task has been completed. For all of the operator manual actions addressed by this exemption, confirmation of the action's success is self-evident to the operator in the field, or directly in the Control Room. Many of the actions involve support equipment such as power supplies or instrumentation; therefore, plant shutdown can proceed without specific confirmation from the operator in the field. In cases where confirmation is required from the operator in the field to the Control Room, additional time has been added to the estimated time to perform the operator manual action.

Based on the margin available, there is sufficient time margin to meet the allotted time assumed in the safe shutdown calculations. Verification of the available time margin was performed via demonstrations that are discussed later in this exemption request.

b. ADEQUATE TIME AVAILABLE TO ENSURE RELIABILITY

There are several sources of conservatism built into the time analysis for the manual actions. First, the fire safe shutdown calculation for each fire area identifies all the potential instruments and equipment that could fail as the result of a fire in that specific fire area. The worst case loss considerations have been captured by the safe shutdown calculation and the T-300 Fire Guides, by assuming all fire damage occurs instantaneously and thus all operator manual actions will be required. However, in a real fire event, it is not credible that all the potential fire damage will occur instantaneously. The use of the TRIP procedures in conjunction with the applicable T-300

Fire Guides will permit the use of any mitigating system available first, and if a desired system is not available, the T-300 Fire Guide provides a contingency action to restore the system or provide another means to perform the function. The fire areas with the least amount of time margin are the large fire areas (Turbine Building general area, radwaste building general area). These fire areas are very large and contain numerous rooms that are divided with heavy concrete walls and floor/ceiling assemblies. While these are not credited as rated fire barriers for Appendix R compliance purposes, they will slow fire growth and limit the amount of concurrent fire damage in these large fire areas. In addition, these large fire areas have fire suppression on significant combustible hazards as described in the PBAPS FPP.

A second source of conservatism is the assumption of a 30-minute generic diagnostic time. The Control Room operators will know a fire condition exists from the onset of the event. They will also be aware of the location and size of the fire based on reports from the fire brigade. Procedural direction in ON-114, "Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump, Inner Screen or Emergency Cooling Tower," requires that the T-300 Fire Guides be entered as soon as an actual fire is reported. Thus the Control Room will be in a position to dispatch operators to perform contingency actions in the T-300 Fire Guide earlier in the event than 30 minutes and may be able to anticipate the potential for the contingency actions before the postulated fire damage were to occur. The conservatisms factored into the approach to manual actions used at PBAPS provide a level of additional margin.

Finally, the assumption that all the required fire actions would have to be performed concurrently is not representative of conditions anticipated in real fire conditions. The Individual Plant Evaluation of External Events (IPEEE) for fire and a subsequent fire PRA performed for PBAPS found that in most cases the in-situ hazards within the fire area would not create a fire event of a magnitude sufficient to damage cables or equipment to require any operator manual actions.

Uncertainties in performance of operator manual actions in a real fire event such as unanticipated environmental conditions (e.g., smoke), human performance issues (e.g., emotional response to the event, cognitive differences) and equipment issues (e.g. locked doors, stiff valve hand wheels) can occur. The additional time to perform the actions in the event that uncertainties are encountered are enveloped by the combination of the time available to perform most of the actions as described in the individual action summaries and in the conservatisms built into the Appendix R analysis as described above.

Based on the conservatisms discussed above and the margin available, there is sufficient time margin to meet the allotted time assumed in the safe shutdown calculations. Verification of the available time margin was performed via demonstrations that are discussed later in this exemption request.

c. ENVIRONMENTAL FACTORS

This section will evaluate the environmental conditions that the operators may encounter while traveling to the area where the manual action will be performed and within the area the manual action will take place. Specific environmental factors that could impact the ability of the operators to successfully perform the manual actions are considered in this section.

1) Radiological Exposure

The majority of operator manual actions addressed by this exemption request are performed in a Switchgear Room (interior or exterior) or the Cable Spreading Room. The dose rates in these rooms are typically less than 2 mrem per hour and the dose rates in these rooms will not change following a plant shutdown. The interior Switchgear Rooms and Cable Spreading Room are in close proximity to the Control Room and plant access points, so little dose would be encountered while traveling to these rooms from the Control Room or from the radiologically controlled area (RCA) entry points. The Startup Building (exterior switchgear) is located outside of the RCA so no dose is encountered within this building or in accessing this building. The Unit 3 RBCCW room typically has a dose rate of less than 10 mrem/hour, in addition, the general area of both the Unit 2 and Unit 3 reactor building 135' elevation also typically have a dose rate of less than 10 mrem/hour. Dose rates in these areas would not significantly change following a plant shutdown. Access routes to these rooms are in areas with low dose rates. The final area in which an operator manual action is identified is the Unit 3 A/C RHR room. The dose rates for this room can reach approximately 50 mrem/hour when suppression pool cooling is in service, but the action time is about 10 minutes so the anticipated dose is less than 10 mrem. Therefore, in no case do the manual actions addressed by this exemption request place an operator in a high radiation area, or in a situation that will result in exceeding site administrative dose limits. Dose limits contained in 10 CFR 20 are never challenged.

2) Emergency Lighting

Each of the operator manual actions locations addressed by this exemption request is provided with emergency lighting that illuminates both the location where the manual action is performed and the access route to the manual action location. Where travel is required to buildings outside of the power block, credit is taken for portable lighting. Portable lights are staged in the fire safe shutdown equipment locker which is inventoried and maintained (battery replacement) by performance of a periodic routine test. The emergency lights are periodically checked for operation and aim at the target location. The emergency lighting has been the subject of review in previous NRC fire protection inspections.

3) Plant Environmental Conditions

The Switchgear Rooms, the Cable Spreading Room, Unit 2 Startup Building, Unit 3 RBCCW room, Unit 3 A/C RHR Room, Unit 2 Reactor Building 135' elev. and Unit 3 Reactor Building 135' elevation are the rooms in which the operator manual actions covered by this exemption request are performed. Each of these areas is entered by plant operators as part of their regular job activities, so these areas are familiar to plant operators that would be assigned to perform the operator manual actions. The familiarity with the rooms and areas will reduce anxiety that an operator may have performing operator manual actions under stressful conditions.

The Switchgear Rooms and Cable Spreading Room temperatures are maintained within a certain range while the plant is operating for equipment operability. Room conditions will not undergo a significant change in the time following shutdown to when these actions must be performed. Temperature and humidity conditions in these rooms will not challenge the operators performing the operator manual actions. The Unit 2 Startup Building is an exterior structure that would not be exposed to any fire generated heat or humidity condition. The Unit 2 and Unit 3 Reactor Building 135' general areas are not directly exposed to any high temperature equipment or steam lines (the main steam lines pass through the steam tunnel which is separated with a heavy concrete barrier). The temperature and humidity conditions in these areas will not significantly change following a plant trip. The RBCCW room may undergo a

slight temperature increase during shutdown but the action time in the room is less than five minutes. The same is true for the A/C RHR room. The temperature in the room may slightly increase following a shutdown, but the time to perform the action is less than 10 minutes. The temperatures in these rooms will not exceed 100°F during the time the manual action is to be performed.

4) Fire Effects

This environmental condition considers if the operators will encounter fire effects enroute to the location where the action is to be performed or at the location where the action is to be performed. To determine the fire effects, the initiating fire area spatial and ventilation relationship with the action and access locations were considered. Fire effects related to this exemption request could be placed into specific categories as described below.

Separate Buildings: The initiating fire area and the action fire area are located in separate buildings. These are cases of physically separate buildings. A fire in one building would not affect the other building. There would be no impact to operators performing actions in the other building and actions within this category need no further explanation.

Separate Fire Areas and Separate Ventilation Systems: The initiating fire area and the action fire area are separate fire areas with separate ventilation systems. The access route goes through fire areas separate from the initiating fire area. There would be no impact to operators performing actions in separate fire areas with separate ventilation systems and actions within this category need no further explanation.

Separate Fire Areas with the following configurations:

1) The Turbine Building is a large fire area that is comprised of both the Unit 2 and Unit 3 Turbine areas as well as the common central area. The Turbine Building is separated from the 4kV emergency Switchgear Rooms by 3-hour rated fire barriers. In addition, the Switchgear Rooms have ventilation systems separate from the Turbine Building. Normally, the Switchgear Rooms are maintained at a positive pressure, minimizing the potential for smoke spread into these rooms from the Turbine Building. A Turbine Building fire is expected to be localized to one section of the Turbine Building due to the large size of the building and the numerous substantial walls and floor slabs that compartmentalize the building. Access to the Switchgear Rooms can be made from either the Turbine Building on the east side or the Radwaste corridor on the west side. Access to the Radwaste corridor can be accomplished with a minimum amount of travel through the Turbine Building or directly from the Radwaste Building. Various travel paths through the Turbine Building, Reactor Buildings and Radwaste Building can be used to avoid any specific area of the Turbine Building where there are smoke and fire conditions. The safe shutdown operators performing the manual action will be in communication with the equipment operators on the fire brigade and will be fully aware of fire and smoke conditions in the plant.

2) The Radwaste corridor (Fire Area 57) is a separate fire area from the 4kV bus rooms (which are each separate fire areas). The ventilation system for the 4kV bus rooms is routed through the Radwaste corridor via ventilation ductwork. The ducts are provided with fire rated dampers. In addition, the Radwaste corridor has a full area

pre-action sprinkler system actuated by smoke detection. The Radwaste corridor is a narrow, well-traveled hallway (about 6' wide) and storage of combustibles in the area is prohibited. The only combustible in the area is thermo-lag and cables in the overhead. It is unlikely that sufficient heat will be generated by a fire in the Radwaste corridor to impact the bus room ventilation system. The bus rooms are kept at a positive pressure as compared to the Radwaste corridor. Entry into the bus rooms can be made from the Turbine Building side, so there will be no access issues for the safe shutdown operators.

3) Bus Rooms E13 (Fire Area 33) and E22 (Fire Area 37) are separate fire areas and are separated by an intervening bus room. There is no direct communication between these rooms, but the bus rooms share a common ventilation system that could be in the recirculation mode. Bus room E13 has a pre-action sprinkler system that will rapidly suppress a significant fire within the room. The pre-fire strategy for the area identifies the ventilation to be controlled if there is smoke spread. Any smoke that enters the common ventilation exhaust system will be quickly diluted with air from the other seven bus rooms reducing the smoke impact. The manual action within the bus room is approximately one minute in duration and involves closing a single MCC breaker. Fire Brigade personnel, who are equipment operators, can provide timely information on the smoke conditions of the bus rooms. Access into the E22 bus room will not be hampered by a fire in the E13 bus room.

4) Bus Rooms E13 (Fire Area 33) and E23 (Fire Area 35) are separate fire areas. There is no direct communication between these rooms (i.e., no shared doors) but the bus rooms share a common ventilation system that could be in the recirculation mode. Bus room E13 has a pre-action sprinkler system that will rapidly suppress a significant fire within the room. The pre-fire strategy for the area identifies the ventilation to be controlled if there is smoke spread. Any smoke that enters the common ventilation exhaust system will be quickly diluted with air from the other seven bus rooms reducing the smoke impact. The manual action within the bus room is approximately 1 minute in duration and involves operating a single manual control switch. Fire Brigade personnel, who are equipment operators can provide timely information on the smoke conditions of the bus rooms. Access into the E23 bus room will not be hampered by a fire in the E13 bus room.

5) Bus Rooms E12 (Fire Area 39) and E42 (Fire Area 36) are separate fire areas but are adjacent rooms. There is no direct communication between these rooms (i.e., no shared doors) but the bus rooms share a common ventilation system that could be in the recirculation mode. Bus room E42 has a pre-action sprinkler system that will rapidly suppress a significant fire within the room. The pre-fire strategy for the area identifies the ventilation to be controlled if there is smoke spread. Any smoke that enters the common ventilation exhaust system will be quickly diluted with air from the other seven bus rooms reducing the smoke impact. Fire Brigade personnel, who are equipment operators can provide timely information on the smoke conditions of the bus rooms. This is the only operator manual action required for fire area 36 and there are 60 minutes in which to accomplish this action.

6) Bus Room E12 (Fire Area 39) and E22 (Fire Area 37) are separate fire areas but are adjacent rooms. There is no direct communication between these rooms (i.e., no shared doors) but the bus rooms share a common ventilation system that could be in

the recirculation mode. Bus room E22 has a pre-action sprinkler system that will rapidly suppress a significant fire within the room. The pre-fire strategy for the area identifies the ventilation to be controlled if there is smoke spread. Any smoke that enters the common ventilation exhaust system will be quickly diluted with air from the other seven bus rooms reducing the smoke impact. Fire Brigade personnel, who are equipment operators can provide timely information on the smoke conditions of the bus rooms. This is the only operator manual action required for Fire Area 37 and there are 60 minutes in which to accomplish this action.

7) Bus Room E33 (Fire Area 32) and the Unit 3 Battery Room B/D are separate fire areas, but are adjacent rooms. These areas are separated by a rated fire barrier. These rooms have separate ventilation systems. There is no door or ventilation duct that communicates between the two rooms, so it is unlikely that smoke will communicate between the two rooms. Operation actions will not be impacted.

The potential impact of smoke on the ability to perform the operator manual actions is addressed for each manual action in the individual action Section 2 above. In each case, the fire initiating area and the action location are separate fire areas. None of the operator manual actions specifically address by the exemption request requires re-entry into the initiating fire area to perform the operator manual actions. Therefore, heat from the fire will not impact the operator performing the operator manual actions. In most cases, as described in the actions, the initiating fire area and action location fire area are in separate buildings and/or have separate ventilation systems. The potential for smoke to impede the operator performing the operator manual actions is small. The use of self-contained breathing apparatus (SCBA) to perform any of the operator manual actions in this exemption request is not considered necessary. However, the safe shutdown operators are also typically qualified fire brigade members and are trained and qualified in the use of SCBAs and are familiar with all the locations where SCBAs are staged.

Other than smoke, carbon dioxide (CO_2) is the other toxic gas that could present a hazard within the power block. PBAPS has made all of the CO_2 fire suppression systems at the plant manual, using a fail-safe approach that will not result in an inadvertent discharge. CO_2 can only enter an area if a manual valve is opened. Fire damage to the CO_2 fire suppression control system cannot result in a CO_2 system discharge. Each of the areas protected with a CO_2 fire suppression system will be considered from the standpoint of the impact on operator manual actions if the CO_2 system was used to suppress a fire in an initiating fire area addressed by this exemption request. The information below lists each of the areas protected by a CO_2 fire protection system and the potential impact on performing manual actions should CO_2 be initiated as part of the fire fighting effort for that room:

Cable Spreading Room/Computer Room - both of these rooms are part of the Control Room fire area and are considered an alternate shutdown area per 10 CFR 50, Appendix R, Section III.G.3. Shutdown would be performed at the alternate shutdown panel. Neither the Cable Spreading Room nor the Computer Room are initiating fire areas for any of the operator manual actions addressed by the exemption request.

Diesel Generator Rooms - each of the four diesel generator rooms are protected by a manual CO_2 system that will discharge only in the diesel room selected. The diesel generator rooms are located in a building separate from the power block, so a system discharge will not impact the actions in the power block. For the one manual action addressed by this exemption request

in which the initiating fire area is a diesel generator room, the manual action is performed in a Switchgear Room which is located in the turbine building and would not be impacted by a CO_2 fire suppression system discharge in a diesel generator room.

Unit 2 and Unit 3 HPCI pump rooms - both of these rooms are located within Fire Area 2, which is an initiating fire area for the operator manual actions addressed in this exemption request. None of the manual actions for a fire in Fire Area 2 are performed within Fire Area 2. Migration of CO_2 to other fire areas following a discharge in either HPCI pump room is not a concern for the following reason. CO_2 is approximately 1.5 times heavier than air and low pressure CO_2 is refrigerated to approximately 0^oF. The HPCI pump rooms are located on elevation 88' at the lowest elevation of the plant. The operator manual actions for a fire in Fire Area 2 are performed in separate fire areas at elevation 135' or higher with separate ventilation systems (or in exterior buildings). Measurable quantities of CO_2 will not migrate to upper elevations. Therefore, CO_2 does not create a toxic gas concern for any of the manual actions addressed by this exemption request.

d. EQUIPMENT FUNCTIONALITY AND ACCESSIBILITY

The equipment to be operated as part of the operator manual actions will be free of fire damage and will be accessible to the operators performing the action. The safe shutdown analysis considers fire effects on the components and cables in the area under consideration. The analysis identified those components that will be free of fire effects and will be available. The safe shutdown analysis is available for review and the information in the analysis will not be repeated here. Therefore, the components to be manipulated for operator manual actions will be assumed to be available for a fire in the area under consideration.

For MO-3-10-089A, no spurious actuation is possible as control cables are not affected by a fire in the initiating fire area (Fire Area 30); the manual action is addressing a loss of power to the valve only.

Accessibility of the equipment needed to perform the operator manual actions can be addressed in a number of ways. As identified in the section above, regarding Environmental Factors, all operator manual actions addressed in this exemption request are performed in separate fire areas from the initiating fire area. Conditions in the areas where the action is to be performed will remain tenable for the operator performing the action. Access to the Cable Spreading Room and Switchgear Rooms are via vital area (card reader) doors. In the event the card reader is not operating these doors can be opened with keys if necessary. Doors to other areas where manual actions are to be performed can also be opened using keys if the card reader is not working. Keys to access these rooms are available in the Control Room. The access routes between the Control Room and each of the areas where operator manual actions are to be performed are well known to the operators since these areas are accessed as part of their regular job tasks. Alternate paths to these areas are also known to the operators since their work involves frequent travel throughout the plant. The time available to travel to the area and perform the task given the time until the action must be completed provides adequate margin to compensate for unanticipated challenges.

The physical location of the components where operator manual actions are to be performed is readily accessible to the operator performing the action. All operator manual actions locations are accessible from the floor or with a short stepladder that has been staged for the operator to use (and is included on the periodic inventory test). None of the operator manual actions are

required to be performed in overhead areas, none require climbing across plant equipment and all can be safely accessed by the operator.

e. AVAILABLE INDICATIONS

At PBAPS, the Transient Response Implementing Plan (TRIP) procedures and the T-300 Fire Guides provide the operators with specific instructions in the event of a fire in a specific fire area. The T-300 Fire Guides for each fire area provide a list of the key protected instruments available for a fire in that area. This list includes instruments for both Unit 2 and Unit 3. If there are any "prompt" actions that are needed to restore an instrument for a fire in that area (i.e., those that need to be performed within 30 minutes), the applicable T-300 Fire Guide lists the "prompt" actions at the front of the document. The diagnostic instruments that are both available and unavailable (for the worse case Appendix R fire scenario) are listed at the beginning of each T-300 Fire Guide along with actions to restore needed instruments that may be disabled by the fire.

The TRIP flow charts and T-300 Fire Guides provide a list of indications needed to achieve safe shutdown. This list includes reactor pressure vessel coolant level, reactor pressure vessel pressure, condensate storage tank water level, torus water level, torus water temperature, drywell pressure, drywell temperature, and certain system process monitoring instruments. These indications are consistent with the guidance in Generic Letter 81-12, "Fire Protection Rule (45 F/R 76602, November 19, 1980)," and Information Notice 84-09, "Lessons Learned From NRC Inspections of Fire Protection Safe Shutdown Systems (10 CFR 50, Appendix R)." These indications also reflect Operations input regarding indications important in guiding the operator through the symptom-based TRIP flowcharts for the anticipated post-fire safe shutdown transients. Where specific necessary indication may be lost due to the fire, the applicable T-300 Fire Guide for that fire area identifies which indications may be lost and how to recover the loss of that indication. Most required shutdown parameter indications are provided by multiple instruments; therefore, even with the loss of certain instruments or power supplies, redundant instruments are available to provide indications.

f. COMMUNICATIONS

PBAPS has radios and phones available as part of the normal communications available between the Control Room and the operators. The communication system is not specifically hardened for post-fire survivability. However, the radio and phone systems are robustly designed such that they will be available following most fire scenarios. Face-to-face communication is available as an option to dispatch the safe shutdown operators from the Control Room to perform the tasks and return to the Control Room for reassignment when the task is complete. Generally, none of the operator manual actions addressed by this exemption request require immediate or concurrent coordination with the Control Room while performing the task. For a fire in Fire Area 6N, constant communication is required between the Control Room and an operator in the Cable Spreading Room to perform Action H.

The T-300 Fire Guides contain attachments that provide the step-by-step instructions for performing the operator manual actions in the field. Each attachment addresses one potential fire damage failure. Except as noted above, the attachment to be performed by a safe shutdown operator is standalone, in that once provided to the safe shutdown operator, additional communication between the safe shutdown operator and the Control Room is not required until the action is complete. The use of attachments provides direct instructions for the

safe shutdown operator on how to perform that operator manual action. Tasks and assignments will typically be given directly from the Control Room operator to the safe shutdown operator.

g. PORTABLE EQUIPMENT

The T-300 Fire Guides identify if a key, tool or component is needed and where the key, tool or component is located. Where a specific tool, component or key is needed to perform the operator manual action it is staged for use in a specified location. Equipment, tools and keys needed for the operator manual actions are stored in specific locations where they will be unaffected by a fire and a periodic inventory of the equipment is performed. The operators responsible for performing the manual actions are familiar with the location of the tools and equipment storage areas (due to both training and actually performing the periodic inventory procedure). A number of actions involve pulling fuse blocks. Fuse blocks can be removed without the use of any tools or fuse pullers.

h. PERSONAL PROTECTIVE EQUIPMENT

Operators performing the manual actions are provided with standard personal protective equipment (PPE) (i.e., hardhat, safety glasses, hearing protection, gloves, etc.). There are some actions that involve isolating 4kV electrical breakers, but these breakers are already de-energized so additional PPE is not required. Certain actions require that an electrical enclosure be opened to manipulate an insulated handle of a manual transfer switch. A corporate safety procedure requires the use of additional electrical safety PPE when performing this task. The necessary electrical safety equipment is available for the operators use. Should an operator desire additional electrical protective equipment, electrical PPE is available. SCBAs should not be needed to support operator manual actions since as shown in the individual evaluation of the manual actions, the travel path and action location will be free of fire effects. However, SCBAs are maintained at various locations throughout the plant and since safe shutdown operators are typically qualified fire brigade members, the safe shutdown operators are familiar with SCBA locations and are normally qualified in the use of SCBAs.

i. PROCEDURES AND TRAINING

The T-300 series fire guides provide safe shutdown direction for fires in specific fire areas. Each fire area has both a unit 2 and a unit 3 T-300 Fire Guide. The numbering nomenclature for these fire guides is such that the fire area number is the last one or two digits of the T-300 Fire Guide (e.g., Fire Area 2 has a T-302-2 and T-302-3 Fire Guide, Fire Area 13N has a T-313N-2 and a T-313N-3 Fire Guide, etc). These fire guides are written using a consistent format. Protected instruments are listed first, followed by protected equipment for level control, pressure control, torus cooling, electrical power systems and emergency service water. Any protected equipment or instruments that may be lost due to the fire are noted. Contingency actions are identified and standalone attachments are provided to provide instructions to perform the contingency actions. When the need for the action might not be readily apparent, symptoms or cues are provided to assist the operator in diagnosis of the need for operator actions.

The T-300 Fire Guides clearly identify the prompt actions (defined as those that must be completed in 30 minutes or less from the time the reactor is tripped due to the fire). The T-300 Fire Guides that contain prompt actions contain a specific note at the beginning of the document

to alert the Control Room operator that the fire guide contains a prompt action. The actions that are considered prompt are located at the front of the contingency list and the attachments that contain prompt actions are the first attachments. Furthermore, procedure ON-114 has been human factored to identify any fire areas for which prompt operator action may be required.

In addition to the T-300 Fire Guides, ON-114 is used to respond to fires. This procedure is entered once a fire has been confirmed. ON-114 directs the Control Room operator to enter the applicable T-300 Fire Guide. ON-114 contains a "NOTE" to direct operators to determine if the T-300 Fire Guide contains a "prompt" action. There are alarm response cards to provide instructions on responding to plant alarms, including fire alarms. Each fire area has a pre-fire strategy plan that is used by the fire brigade to facilitate fire fighting in the area. Many fire areas have individual pre-fire plans for fire zones located within the fire area to provide more detailed information for a smaller area. If fire conditions warrant a unit (or units) shutdown (or a shutdown occurs due to fire damage), then the T-300 Fire Guides will be used in conjunction with the TRIPs. The TRIPs use a symptom-based approach that is used for all transients including fire that the operators repeatedly use in training.

The operator manual actions covered by this exemption request are similar to activities performed by plant operators as part of normal work assignments. In addition, the operator manual actions addressed by this exemption request are similar to those performed for the Control Room evacuation shutdown procedure. Since these actions are similar to those performed as part of a typical work activity, these can be considered straightforward and training and demonstration demands are minimal. The physical actions addressed by this exemption request can be summarized as follows:

1) Opening (tripping) and closing breakers. Manipulation of electrical breakers is considered a required skill by plant operators, which is performed during normal work functions. Breakers are manipulated at the direction of the Control Room during normal plant operation. Breakers are also manipulated as part of applying clearances for safe work boundaries. This task is included as part of initial non-licensed operator training.
2) Removing (pulling) individual fuses and fuse blocks is considered a required skill by plant operators that is performed during normal work functions. Fuses are pulled while applying clearances to establish safe work boundaries. This task is included as part of initial non-licensed operator training.
3) Operating key switches and panel isolation switches is considered a required skill by plant operators that is performed during normal work functions. Panel switches are operated by plant operators to accomplish other plant functions. This is such a basic activity and performed so frequently, that no separate training is provided.
4) Operating mechanical valves. Operating valves is considered a required skill by plant operators that is performed during normal work functions. Valves are manipulated by operators as part of many work activities. This is such a basic activity and performed so frequently, that no separate training is provided.
5) Installing plug-in test switch. This activity is performed as part of certain surveillance tests. Operators have installed similar test switches to perform these surveillance tests. This is simply a plug-in switch using an existing receptacle on the outside of the panel, which places the logic system in "test." Installation and removal of test plugs is included as part of initial non-licensed operator training and is also covered every two years in requalification training.

Each of the manual actions consists of one or more of the actions described above.

Licensed operators are trained biennially on the use of the T-300 Fire Guides as they relate to the TRIP flow charts. This training is conducted using a simulator scenario that starts with a fire in a specific fire area. The operators have the ability to transition from the Off-Normal fire procedure (ON-114) through the fire maps to determine the required T-300 Fire Guide for the specific fire area.

j. STAFFING

PBAPS maintains three operators on each shift to perform safe shutdown duties in the event of a fire. These positions may be filled by equipment operators, reactor operators or senior reactor operators. Three operators are adequate to perform the operator manual actions that are required to be performed in the first 60 minutes of a fire induced safe shutdown event. This evaluation only credits minimum staffing levels. There are times where additional equipment operators are available to perform safe shutdown functions.

As part of the fire safe shutdown calculations, timelines were prepared using the three available operators. Since the purpose of the timeline calculation was to show that time was available to perform the actions, "Operator 1" is often assigned all the tasks for that fire area if they can be performed sequentially within the allotted time. "Operator 2" and "Operator 3" are brought into the timeline only when necessary to complete concurrent tasks. Since the operator manual action tasks assigned to the operators are straightforward, the calculation timelines only assigned one operator to complete a task. These timelines are not included in the T-300 Fire Guides, so they will not become a distraction, and will not interfere with the Control Room staff's need to prioritize actions based on the actual needs of the event. It remains within the Control Room staff's discretion to assign the second and third operator to assist "Operator 1", which could result in shortened action times. However, for the purposes of the operator manual actions addressed by this exemption request, only the operator assigned the task in the fire safe shutdown calculation timeline is assumed to perform the task.

A fire of the magnitude that would require plant shutdown is expected to result in the declaration an Emergency Action Level condition and activation of the Emergency Response Organization. Entry into the Emergency Plan would bring additional resources to the plant. Credit for the additional personnel that would respond to the plant as a result of the emergency declaration is not being explicitly taken for staffing purposes. However, from a practical standpoint additional personnel can be expected to help with shutdown activities within 90 to 120 minutes after the emergency declaration.

k. DEMONSTRATIONS

Demonstrations can provide a "test" to show that the operator manual actions can be performed within the times allotted by the fire safe shutdown calculations. Demonstrations can show reliability by achieving similar results when the operator manual actions are performed by different crews and at different times. PBAPS performed several demonstrations using what is considered to be the most challenging initiating fire area, the Turbine Building (Fire Area 50). The turbine fire area was selected since it encompasses both Unit 2 and Unit 3, includes an action that is a prompt action in other fire areas, and includes a number of operator manual actions to perform within the first 60 minutes. A description of the demonstration and results are provided below.

The demonstration was performed using the PBAPS simulator. As noted above, Fire Area 50, the Turbine Building was selected since the fire area analysis includes impact on both Unit 2 and Unit 3, and manual actions for both units. Since PBAPS has a one-unit simulator (a mimic of Unit 2) information for Unit 3 was provided to the operations crew manually, but Unit 2 information was provided using the simulator. The scenario involved the following:

- A fire alarm for the smoke detection system over the 13kV switchgear was received.
- Approximately 15 seconds later an alarm for the actuation of the 13kV pre-action sprinkler system was received along with a motor driven fire pump start alarm.
- About the same time a "phone call" was received in the Control Room from a Security officer on rounds in the area. Security and Operators are on constant rounds in the plant and will quickly discover a major fire in the plant.
- Approximately one minute after the original fire alarm, both units were to automatically SCRAM due to fire damage.
- Core Display showed that all rods had inserted.
- Approximately one minute after the SCRAM offsite power is lost and the panels providing power to Control Room annunciation is lost shortly after that.
- The scenario assumed that all the equipment and instrumentation that could be lost for a Turbine Building fire was lost.
- The clock to time manual actions was started at the SCRAM or when the reactor mode switch was taken to "Shutdown" (i.e. manual scram) whichever was first. This is consistent with PBAPS Appendix R safe shutdown analysis which considers Time=0 at shutdown.

This was considered a conservative scenario, since the time between the first fire indication and a dual-unit scram was approximately one minute. It is very unlikely that an actual fire will result in a two-unit shutdown in a minute after smoke detection actuation. As previously stated, all equipment that could be lost due to an Appendix R fire per the safe shutdown analysis was assumed to be lost.

This scenario was run two separate times (on different days) with two different crews. The first crew was a normal operating crew on their training week. This crew normally works and trains together. The second crew was composed primarily of licensed operators that were off-shift (but maintain their license through training) and do not work or train together on a regular basis. Using two different crews with such a different make-up was intended to determine reliability of the Fire Guides. If both a crew that regularly works and trains together and a crew that does not work or train together on a regular basis could show similar results, then reasonable assurance is provided that a normal on-shift crew could perform with similar results. The diagnosis time and dispatch time for removing the degraded voltage relay fuses varied by 15 seconds between the two crews. The diagnosis time and dispatch for the other actions varied from four to 37 minutes, but in each case the safe shutdown operator was dispatched with ample time to perform the action and the actions were completed within the required time frame. Given the number of actions a range of time to perform the diagnosis was expected.

For the purposes of the demonstrations, communication from the simulator to the "field" was actually made to the simulator controllers. The simulator controllers provided confirmation that a manual action had been completed using the longest time in the timeline to complete the actions. Subsequently, different crews of plant safe shutdown operators simulated performing the tasks in the field. Dispatch times from the two demonstrations were used as the start times. Two different starting locations were used. One starting point was the main Control Room

(where the operators are assumed to assemble during a fire event). The other starting point was the equipment operator break area, which is located of the plant in the administration building. Starting in the equipment operator break room was considered the most challenging starting point since the operators had to go outside to another plant entrance point due to the postulated Turbine Building fire. The time included obtaining copies of the procedures and actually opening the required cabinets (not just simulating opening the cabinets). The T-300 Fire Guide for Fire Area 50 currently requires eight fuses to be pulled. Each Fuse is in a different cabinet in a different Switchgear Room. This is the most challenging scenario, since other T-300 Fire Guides for other initiating fire areas with similar actions pull less fuses. In this demonstration, using either the Control Room or the equipment operator break room as the starting point, and using the dispatch times from the simulator exercise the action was completed within the first 30 minutes, well within the time specified by the FSSD calculation.

Based on the use of a challenging fire area (Turbine Building), the use of both a "normal" crew and an off-shift crew, and the use of a challenging starting point for the equipment operators, the demonstration was able to show that the conditions requiring operator manual actions were diagnosed, operators dispatched and actions completed within the timeline established by the safe shutdown calculations.

D. DEFENSE IN DEPTH

The principles of fire protection defense in depth are:

- To prevent fires from starting,
- To detect rapidly, control, and extinguish promptly those fires that do occur, and
- To provide protection for structures, systems and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.

PBAPS has a Fire Protection administrative control program that addresses controls on ignition sources, hot work activities, combustibles, and fire system impairments. These controls are reviewed by NRC Regional Inspectors, insurance inspectors and Nuclear Oversight auditors. The administrative control program is described in the PBAPS Fire Protection Program (FPP), which is incorporated into the Updated Final Safety Analysis Report.

PBAPS has fire detection in many areas of the plant. Plant areas with fire detection have been described to the NRC in prior correspondence and the locations are currently summarized in the PBAPS FPP. Those rooms without fire detection which contain safety related equipment, or safe shutdown cables or equipment have been addressed by approved exemption requests. Fire suppression systems are installed in plant areas with significant fire hazards, such as lube oil. Suppression systems have also been installed in areas with one-hour rated electrical raceway encapsulation. The locations of fire suppression systems have previously been described to the NRC in correspondence and are currently summarized in the PBAPS FPP.

PBAPS has been divided into fire areas, as described in the PBAPS FPP. Three-hour fire barriers are normally used to provide fire resistive separation between adjacent fire areas. In some cases, barriers with a fire resistance rating of less than three hours are credited but exemptions have been approved, or engineering evaluations performed in accordance with Generic Letter 86-10. The Peach Bottom FPP provides a summary of the rating of the fire barriers separating adjacent fire areas. Information regarding the specific fire protection

defense-in-depth features in each of the initiating fire areas addressed by this exemption request was discussed previously. This information is a summary to what is available in the PBAPS FPP.

III. ENVIRONMENTAL ASSESSMENT

The exemption request provides a formal vehicle for NRC approval of operator manual actions associated with Appendix R post-fire safe shutdown. The proposed exemption will not significantly increase the probability or consequences of accidents, no changes are being made in the types or quantities of any radiological effluents that may be released offsite, and there is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed exemption. In addition, the proposed exemption does not affect non-radiological plant effluents and has no other environmental impact. Therefore, there are no significant non-radiological impacts associated with the proposed exemption. As a result, in accordance with the requirements of 10 CFR 51.32, the proposed exemption will not have a significant effect on the quality of the human environment.

IV. CONCLUSION

The requested exemption will not result in undue risk to the public health and safety because Exelon has determined that the subject manual actions are feasible and reliable, and the level of defense in depth is adequate to meet the objectives of Appendix R. The intent of 10 CFR 50, Appendix R, Section III.G.2, is to ensure that one train of systems necessary to achieve and maintain hot shutdown will remain available in the event of a fire, as needed. The manual actions discussed in this exemption request provide that assurance. If manual actions are not used to meet the underlying purpose of the rule, modifications to: 1) provide additional fire suppression systems, detection systems, or fire barriers, or 2) reroute cables or wrap cables, that involve issues such as accessibility, dose, structural interferences, design limitations, ampacity derating, etc., would be required to achieve compliance. Such modifications represent an unwarranted burden on Exelon since they are not necessary to meet the underlying purpose of the rule. Therefore, the special circumstances for issuance of the exemption are satisfied in accordance with the requirements of 10 CFR 50.12(a)(2)(ii), since application of the rule is not necessary to achieve the underlying purpose of the rule. In addition, the requested exemption is authorized by law, and is consistent with the common defense and security.

V. REFERENCES

1. 10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979."

2. Regulatory Issue Summary (RIS) 2006-10, "Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions," dated June 30, 2006.

3. NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," dated October, 2007.

4. Letter from G. E. Gears, USNRC, to E. G. Bauer, Philadelphia Electric Company, "Exemption From Certain Requirements of Appendix R to 10 CFR 50," dated March 13, 1985.

5. Letter from G. F. Wunder, USNRC, to C. M. Crane, Exelon Generation Company, LLC, "Peach Bottom Atomic Power Station, Units 2 and 3 - Issuance of Amendment RE: Fire Protection Program Changes (TAC Nos. MC0987 and MC0988)," dated June 24, 2005.

6. Letter from M. P. Gallagher, Exelon Generation Company, LLC, to U.S. Nuclear Regulatory Commission, "License Amendment Request, Change to the Fire Protection Program Concerning Carbon Dioxide Fire Suppression Systems Actuation," dated September 26, 2003.