Station Support Department

10 CFR 50.12

PECO ENERGY

PECO Energy Company
Nuclear Group Headquarters
965 Chesterbrook Boulevard
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April 14, 2000

Docket No. 50-277
50-278

License No. DPR-44
DPR-56

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Peach Bottom Atomic Power Station, Units 2 & 3
Additional Information Concerning Exemption Request From
The Provisions of 10 CFR 50 Appendix R, Section III.F

References: 1) Letter from G. D. Edwards (PECO Energy Company) to USNRC dated December 31, 1998.

2) Letter from J. A. Hutton (PECO Energy Company) to USNRC dated January 14, 2000.

Dear Sir/Madam:

Since the submittal of our original exemption request (Reference 1 letter) extensive modifications and a re-analysis of our Safe Shutdown information have taken place at Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3 to meet the requirements of Generic Letter (GL) 92-08. A review of the original exemption request information was performed against current plant configurations and several discrepancies were identified. This issue was discussed in a telephone conference with members of the NRR staff on February 17, 2000. The following information may assist with the review of our exemption request.

Attachment 1 to this letter provides a description of the overall Fire Safe Shutdown (FSSD) strategy for each of the Fire Areas that are the subject of the exemption request (i.e., Areas 50, 6S, and 13N). The FSSD analysis is based on the Fire Area boundaries described in the PBAPS Fire Protection Program (FPP), of which the subject exemption request zones are a subset. Therefore, from a FSSD analysis perspective, the failure of FSSD cables and/or equipment in a subject fire zone are bounded by the failures assumed in the FSSD analysis for the entire Fire Area.

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Due to recent changes in FSSD strategies as a result of the company's resolution to GL 92-08, information in the FPP describing the FSSD strategies for individual Fire Areas has been affected. Minor editorial changes have been made to the overall shutdown strategies (Methods A, B, C, and D) described in FPP section 5.2, however the overall strategy of each method is not changed. Significant changes have been made which affect the individual Fire Area discussions provided in FPP section 5.3 and FPP Table A-1. FPP Table A-3 has been revised primarily to reflect the inclusion of offsite power within the FSSD analysis scope. FPP Table A-4 has been revised to reflect any additions or deletions in manual actions necessitated by the company's resolution of GL 92-08. Editorial revisions have been made to FPP Table A-5 to improve the discussion of several High/Low pressure interfaces.

Attachment 2 to this letter provides an update to PBAPS FPP Section 5.2 to assist in the review of the information in Attachment 1. These revisions were approved under the 10 CFR 50.59 process and are currently being incorporated into the PBAPS FPP. The final update will be transmitted to the NRC as part of the normal updating process, within the next few weeks.

Information contained in the Attachment 1 tables presents the FSSD systems and equipment that could potentially be affected by a fire in each of the specific rooms under consideration for this exemption request. Comments are provided describing the impact of these failures on the overall safe shutdown strategy provided for the entire fire area. To assure that the NRC reviewer(s) have been provided with the most complete information, a discussion is provided for each of the subject exemption areas, summarizing the FSSD capability currently provided for the area.

Attachment 3 to this letter is a copy of the supplemental information provided in the December 31, 1998, exemption request with revisions made to show the current plant configuration.

If you have any questions, please do not hesitate to contact us.

Very truly yours,

JMbufnagl for

James A. Hutton
Director - Licensing

Enclosures: Affidavit; Attachments

cc: H. J. Miller, Administrator, Region I, USNRC
A. C. McMurtray, USNRC Senior Resident Inspector, PBAPS

COMMONWEALTH OF PENNSYLVANIA :

: ss

COUNTY OF CHESTER :

J. W. Langenbach, being first duly sworn, deposes and says:

That he is Vice President, Station Support of PECO Energy Company; the Applicant herein; that he has read the attached additional information concerning Exemption Request From The Provisions of 10 CFR Part 50 Appendix R, Section III.F., for Peach Bottom Facility Operating Licenses DPR-44 and DPR-56, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

James W Langenbach

Vice President Station Support

Subscribed and sworn to

before me this 14th day

of April 2000.

Vivia V. Gallimore

Notary Public

Notarial Seal
Vivia V. Gallimore, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires Oct. 6, 2003
Member, Pennsylvania Association of Notaries

ATTACHMENT 1

PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 & 3

Docket No. 50-277
50-278

License Nos. DPR-44
DPR-56

REQUEST FOR EXEMPTION FROM THE PROVISIONS OF 10 CFR 50 APPENDIX R, SECTION III.F

Supplemental Information

Fire Area 50:

Fire Safe Shutdown Methods Protected:	Unit 2: Method 2A Unit 3: Method 3A
Rx Inventory control/makeup:	RCIC for Units 2 and 3 taking suction from the Torus.
Rx pressure control:	ADS valves A, B, C, G, K for Units 2 and 3.
Decay Heat Removal:	RHR Pumps 2DP35, 3CP35 for Units 2 and 3 respectively providing Suppression Pool Cooling and Alternative Shutdown Cooling.
Support Systems:	Power to 4kv Safeguard Switchgear provided from #2-SU Offsite Power source. Emergency Diesel Generators are not protected for this Fire Area. ESW cooling is not required for the FSSD systems relied upon for this Fire Area. HPSW Pumps 2BP42, 3CP42 for Units 2 and 3 respectively providing cooling for RHR heat exchangers. Instrumentation protected for monitoring the following parameters for Units 2 and 3: CST water level, Torus water level, Rx coolant level, Rx coolant pressure, Drywell pressure, Torus water temperature, Drywell Temperature, RCIC Flow, RCIC turbine RPM, RHR flow, HPSW pressure. Although CST water level indication is available for this Fire Area, the CST is not a required source of water for shutdown for this Fire Area.

Fire Zone	Fire Area	Room	FSSD Systems Potentially Affected	FSSD Comments
50-78W	50	22	U2 CST Level Indicator LI-2217	Redundant CST indicator LI-8453 is not affected by a fire in this Fire Area.
50-78W	50	138	No FSSD cables or equipment in room.	

Fire Zone	Fire Area	Room	FSSD Systems Potentially Affected	FSSD Comments
50-78W	50	223	1. U2 CST Level Indicator LI-2217 2. U2 Drywell Pressure Indicator PR-4805 3. Control cables for #343-SU Offsite power to 4kv Switchgear. 4. U2 RWCU Hi/Low interface valves MO2-12-053, MO2-12-056, MO2-12-057.	1. Redundant CST indicator LI-8453 is not affected by a fire in this Fire Area. 2. Redundant Drywell pressure indicators are not affected by a fire in this Fire Area (PR-8102A, PR-8102B). 3. Redundant equipment (#2-SU) is not affected by a fire in this Fire Area. 4. Redundant RWCU valves are not affected by a fire in this Fire Area (MO2-12-015, MO2-12-018, CV2-12-55).
50-78V	50	181	1. Control cables for #2-SU Offsite power to 4kv Switchgear. 2. Control cables for #343-SU Offsite power to 4kv Switchgear. 3. U3 CST Level Indicator LI-3217.	1. Circuit design prevents control cable failures from affecting #2-SU power supply to 4kv Switchgear. 2. Redundant equipment (#2-SU) is not affected by a fire in this Fire Area. 3. Redundant CST indicator (LI-9453) is not affected by a fire in this Fire Area.
50-78V	50	272	1. U3 CST Level Indicator LI-3217. 2. U3 RWCU Hi/Low interface valves MO3-12-056, MO3-12-057. 3. U3 HPSW Indicators PI-3330A, PI-3330B, PI-3330C, PI-3330D. 4. U3 HPCI logic wiring and Feedwater long-path recirc valve MO-3663. 5. U3 RCIC - Feedwater long-path recirc valve MO-3663. 6. U3 RCIC - MO3-23-024 HPCI/RCIC test return valve to CST affected by HPCI logic wiring.	1. Redundant CST indicator LI-9453 is not affected by a fire in this Fire Area. 2. Redundant RWCU valves are not affected by a fire in this Fire Area (MO3-12-015, MO3-12-053, CV3-12-55). 3. Redundant HPSW indicator DPI3-10-130A is not affected by a fire in this Fire Area. 4. U3 HPCI is not relied on for a fire in Fire Area 50. 5. Redundant, normally closed valve (MO3-02-038B) in series with MO-3663 is not affected by a fire in this Fire Area, preventing any diversion of RCIC injection flow. 6. Redundant, normally closed valve (MO-3-13-030) in series with MO3-23-024 is not affected by a fire in this Fire Area, preventing any diversion of RCIC injection flow.

Fire Zone	Fire Area	Room	FSSD Systems Potentially Affected	FSSD Comments
50-78B	50	135	1. Control cables for #2-SU Offsite power to 4kv Switchgear. 2. Control cables for #343-SU Offsite power to 4kv Switchgear. 3. U2 HPSW Flow Indicators FI2-10-177. 4. U2 HPSW loop 2A-2B cross-tie valve MO-2344 (control). 5. U2 pump structure sluice gates MO-2233A, MO-2233B (control).	1. Circuit design prevents cable failures from affecting power supply to 4kv Switchgear. 2. Redundant equipment (#2-SU) is not affected by a fire in this Fire Area. 3. FI2-10-177 supports HPSW flow indication at the Alternative Shutdown control panels, and is not required for a fire in this Fire Area. Redundant HPSW indicator DPI2-10-130D is not affected by a fire in this Fire Area. 4. Redundant, normally closed RHR heat exchanger valves in series with MO-2344 are not affected by a fire in this Fire Area, preventing any flow diversion of HPSW from the desired RHR Hx. 5. Sluice gates support 0AP57 ESW pump and 2AP42, 2BP42, 2CP42, 2DP42 HPSW pumps. ESW is not required for a fire in this Fire Area. These normally open sluice gates are configured in parallel, assuring cooling water is provided to the U2 HPSW pumps.
50-78B	50	184	1. U3 HPSW Pumps 3AP42, 3BP42, 3DP42. 2. U3 HPSW Indicators PI-3330A, PI-3330B, PI-3330C, PI-3330D. 3. U3 HPSW loop 3A-3B cross-tie valve MO-3344 (control).	1. Redundant HPSW pump 3CP42 is not affected by a fire in this Fire Area. Cables for 3CP42 are not located in room 184. Cables are encapsulated where they are routed through Fire Area 50. 2. Redundant HPSW indicator DPI3-10-130A is not affected by a fire in this Fire Area. 3. Redundant, normally closed RHR heat exchanger valves in series with MO-3344 are not affected by a fire in this Fire Area, preventing any flow diversion of HPSW from the desired RHR Hx.

Fire Zone	Fire Area	Room	FSSD Systems Potentially Affected	FSSD Comments
50-78B	50	185	1. Control cables for #2-SU Offsite power to 4kv Switchgear. 2. Control cables for #343-SU Offsite power to 4kv Switchgear. 3. U2 HPSW loop 2A-2B cross-tie valve MO-2344 (power & control). U3 HPSW loop 3A-3B cross-tie valve MO-3344 (power & control). 4. U2 HPSW Indicators FI2-10-132A, FI2-10-132B, FI2-10-177, FI2-10-97A, FI2-10-97B, PI-2330A, PI-2330B, PI-2330C, PI-2330D. U3 HPSW Indicators FI3-10-132A, FI3-10-132B, FI3-10-177, FI3-10-97A, FI3-10-97B. 5. U2 HPSW pump power cables for 2AP42, 2BP42, 2CP42, 2DP42. U3 HPSW pump power cables for 3AP42, 3CP42. 6. U2 pump structure sluice gates MO-2233A, MO-2233B (power & control). 7. U3 pump structure sluice gates MO-3233A, MO-3233B (power & control). 8. ESW Indicators PI-0236A, PI-0236B. 9. ESW pump power cables for 0AP57, 0BP57.	1. Circuit design prevents control cable failures from affecting power supply to 4kv Switchgear. 2. Redundant equipment (#2-SU) is not affected by a fire in this Fire Area. 3. Redundant, normally closed RHR heat exchanger valves in series with MO-2344 and MO-3344 are not affected by a fire in this Fire Area, preventing any flow diversion of HPSW from the desired RHR Heat exchangers. 4. FI2-10-177 and FI3-10-177 support HPSW flow indication at the Alternative Shutdown control panels, and are not required for a fire in this Fire Area. Redundant HPSW indicators DPI2-10-130D (U2) and DPI3-10-130A (U3) are not affected by a fire in this Fire Area. 5. Power cables for HPSW pumps 2BP42 and 3CP42 are encapsulated with 3-hour barriers in rm 185. The cables are embedded in this room, and are exposed in manholes in the floor slab. Within the manholes, the cables are encapsulated. 6. U2 Sluice gates support 0AP57 ESW pump and 2AP42, 2BP42, 2CP42, 2DP42 HPSW pumps. ESW is not required for a fire in this Fire Area. These normally open sluice gates are configured in parallel, assuring cooling water is provided to the U2 HPSW pumps. 7. U3 Sluice gates support 0BP57 ESW pump and 3AP42, 3BP42, 3CP42, 3DP42 HPSW pumps. ESW is not required for a fire in this Fire Area. These normally open sluice gates are configured in parallel, assuring cooling water is provided to the U3 HPSW pumps. 8. ESW is not relied upon for a fire in this Fire Area. 9. ESW is not relied upon for a fire in this Fire Area.

Fire Zone	Fire Area	Room	FSSD Systems Potentially Affected	FSSD Comments
50-78B	50	228	1. Control cables for #2-SU Offsite power to 4kv Switchgear. 2. Control cables for #343-SU Offsite power to 4kv Switchgear. 3. U2 pump structure sluice gates MO-2233A, MO-2233B (control). 4. U2 HPSW loop 2A-2B cross-tie valve MO-2344 (control). U3 HPSW loop 3A-3B cross-tie valve MO-3344 (control). 5. U2 HPSW Indicators FI2-10-132A, FI2-10-132B, PI-2330A, PI-2330B, PI-2330C, PI-2330D. U3 HPSW Indicators FI3-10-132A, FI3-10-132B, FI3-10-177, PI-3330A, PI-3330B, PI-3330C, PI-3330D. 6. U2 Reactor Coolant Level & Pressure Indicators LI2-2-3-113, PI2-6-90A, PI2-6-90B, PR2-6-96. 7. U3 Reactor Coolant Level & Pressure Indicators LI3-2-3-113, PI3-6-90A, PI3-6-90B, PR3-6-96. 8. ESW Indicators PI-0236A, PI-0236B. 9. U2 Torus Temperature indicators TI-2445, TRS2-10-131. 10. U3 Torus Temperature indicator TRS3-10-131.	1. Circuit design prevents cable failures from affecting power supply to 4kv Switchgear. 2. Redundant equipment (#2-SU) is not affected by a fire in this Fire Area. 3. U2 Sluice gates support 0AP57 ESW pump and 2AP42, 2BP42, 2CP42, 2DP42 HPSW pumps. ESW is not required for a fire in this Fire Area. These normally open sluice gates are configured in parallel, assuring cooling water is provided to the U2 HPSW pumps. 4. Redundant, normally closed RHR heat exchanger valves in series with MO-2344 and MO-3344 are not affected by a fire in this Fire Area, preventing any flow diversion of HPSW from the desired RHR Heat exchangers. 5. FI3-10-177 supports U3 HPSW flow indication at the Alternative Shutdown control panel, and is not required for a fire in this Fire Area. Redundant HPSW indicators DPI2-10-130D (U2) and DPI3-10-130A (U3) are not affected by a fire in this Fire Area. 6. Redundant indicators are not affected by a fire in this Fire Area (LI2-2-3-85A, LI2-2-3-85B, LR2-2-3-110A, LR2-2-3-110B, PR2-2-3-404A, PR2-2-3-404B). 7. Redundant indicators are not affected by a fire in this Fire Area (LI3-2-3-86, LI3-2-3-85A, LI3-2-3-85B, LR3-2-3-110A, LR3-2-3-110B, PR3-2-3-404A, PR3-2-3-404B). 8. ESW is not relied upon for a fire in this Fire Area. 9. Redundant U2 Torus Temperature indicators are not affected by a fire in this Fire Area (TIS-2-2-71A, TIS-2-2-71B). 10. Redundant U3 Torus Temperature indicators are not affected by a fire in this Fire Area (TI-3445, TIS-3-2-71A, TIS-3-2-71B).
50-78B	50	229	No FSSD cables or equipment in room.	
50-78B	50	274	No FSSD cables or equipment in room.	

Fire Zone	Fire Area	Room	FSSD Systems Potentially Affected	FSSD Comments
50-78B	50	429	1. U2 Reactor Coolant Level & Pressure Indicators LI2-2-3-113, PR2-6-96. 2. #343-SU Offsite power to 4kv Switchgear.	1. Redundant indicators are not affected (LI2-2-3-85A, LI2-2-3-85B, LR2-2-3-110A, LR2-2-3-110B, PR2-2-3-404A, PR2-2-3-404B). 2. Redundant equipment (#2-SU) is not affected by a fire in this Fire Area.
50-88	50	139	No FSSD Equip or cables in room.	
50-89	50	179	1. Control cables for #2-SUOffsite power to 4kv Switchgear. 2. Control and control power cables for #343-SU Offsite power to 4kv Switchgear.	1. Circuit design prevents cable failures from affecting power supply to 4kv Switchgear. 2. Redundant equipment (#2-SU) is not affected by a fire in this Fire Area.
50-78A	50	414	1. U2 Reactor Coolant Level & Pressure Indicators LI2-2-3-113, PR2-6-96. 2. U2 RWCU Hi/Low interface valves MO2-12-053, MO2-12-056, MO2-12-057.	1. Redundant indicators are not affected (LI2-2-3-85A, LI2-2-3-85B, LR2-2-3-110A, LR2-2-3-110B, PR2-2-3-404A, PR2-2-3-404B). 2. Redundant RWCU valves are not affected by a fire in this Fire Area (MO2-12-015, MO2-12-018, CV2-12-55).
50-78A	50	457	1. U3 RWCU Hi/Low Pressure interface valves MO3-12-056, MO3-12-057. 2. U3 HPCI - Feedwater long-path recirc valve MO-3663. 3. U3 RCIC - Feedwater long-path recirc valve MO-3663.	1. Redundant RWCU valves are not affected by a fire in this Fire Area (MO3-12-015, MO3-12-053, CV3-12-55). 2. U3 HPCI is not relied upon for a fire in this Fire Area. 3. Redundant, normally closed valve (MO3-02-038B) in series with MO-3663 is not affected by a fire in this Fire Area, preventing any diversion of RCIC injection flow.
50-99	50	222	#343-SU Offsite power to 4kv Switchgear.	Redundant equipment (#2-SU) is not affected by a fire in this Fire Area.
50-78EE	50	177	U3 CST Level Indicator LI-3217.	Redundant indicator LI-9453 is not affected by a fire in this Fire Area.

Fire Area 6S:

Fire Safe Shutdown Methods Protected:	Unit 2: Method 2B Unit 3: Methods 3A, 3B, 3C
Rx Inventory control/makeup:	Unit 2: HPCI taking suction from either the CST or the Torus. Unit 3: RCIC or HPCI taking suction from either the CST or the Torus, LPCI using RHR pumps 3CP35 or 3DP35, or Core Spray using pumps 3AP37, 3BP37, 3CP37, or 3DP37.
Rx pressure control:	Unit 2: Safety/Relief valves E, H, J Unit 3: ADS valves A, B, C, G, K.
Decay Heat Removal:	Unit 2: RHR pump 2DP35 providing Suppression Pool Cooling and Alternative Shutdown Cooling. Unit 3: RHR pump 3CP35 or 3DP35 providing Suppression Pool Cooling and Alternative Shutdown Cooling. Core Spray pumps 3AP37, 3BP37, 3CP37, or 3DP37 may also be used for Alternative Shutdown Cooling if desired.
Support Systems:	Power to 4kv Safeguard Switchgear provided from #343-SU Offsite Power source. Emergency Diesel Generators are not protected for this Fire Area. ESW pump 0AP57 or 0BP57 providing pump cooling for U3 Core Spray pumps if in use. Unit 2: HPSW pump 2BP42 or 2DP42 providing cooling for RHR heat exchanger. Unit 3: HPSW pump 3AP42, 3BP42, 3CP42, or 3DP42 providing cooling for RHR heat exchanger(s). Instrumentation protected for monitoring the following parameters for Units 2 and 3: CST water level, Torus water level, Rx coolant level, Rx coolant pressure, Drywell pressure, Torus water temperature, Drywell Temperature, U2 & U3 HPCI Flow & turbine RPM, U3 RCIC Flow & turbine RPM, RHR flow, HPSW flow & pressure, ESW pressure, U3 Core Spray Flow.

Fire Zone	Fire Area	Room	FSSD Systems Potentially Affected	FSSD Comments
6S-5M	6S	410	U2 RWCU Hi/Low Pressure interface valves CV2-12-55, MO2-12-053, MO2-12-056, MO2-12-057.	For a fire affecting all of Fire Area 6S (the bounding Appendix R case), acceptability of postulated spurious operation of this Hi/Low pressure interface is discussed in FPP Table A-5. The postulated blowdown flow rate is within the makeup capability of the HPCI system. No piping rupture would occur. The safe shutdown capability would not be jeopardized. For a fire limited to this room, no RWCU blowdown is postulated. 3-phase 480Vac power cables to MOVs MO2-12-053, MO2-12-056, MO2-12-057 are each routed in conduit in this room. No other 480Vac cables are contained in these conduit, preventing the spurious operation of these valves due to a fire in this room. RWCU suction containment isolation valves MO2-12-015, MO2-12-018 are not affected by a fire in this room.
6S-42	6S	408	Controller I/P2-12-110 for U2 RWCU Hi/Low Pressure interface valve CV2-12-55.	For a fire affecting all of Fire Area 6S (the bounding Appendix R case), acceptability of postulated spurious operation of this Hi/Low pressure interface is discussed in FPP Table A-5. The postulated blowdown flow rate is within the makeup capability of the HPCI system. No piping rupture would occur. The safe shutdown capability would not be jeopardized. For a fire limited to this room, several RWCU valves (MO2-12-056, MO2-12-057, MO2-12-015, MO2-12-018, MO2-12-053) would remain unaffected, preventing the possibility of a RWCU blowdown.

Fire Area 13N:

Fire Safe Shutdown Methods Protected:	Unit 2: Method 2A, 2B, 2C Unit 3: Method 3A
Rx Inventory control/makeup:	Unit 2: HPCI or RCIC taking suction from either the CST or the Torus, LPCI using RHR pumps 2AP35, or 2BP35, or Core Spray using pumps 2AP37, 2BP37, 2CP37, or 2DP37. Unit 3: RCIC taking suction from the Torus.
Rx pressure control:	Unit 2: ADS valves A, B, C, G, K. Unit 3: ADS valves A, B, C, G, K.
Decay Heat Removal:	Unit 2: RHR pump 2AP35 or 2BP35 providing Suppression Pool Cooling and Alternate Shutdown Cooling. Core Spray pumps 2AP37, 2BP37, 2CP37, or 2DP37 may also be used for Alternate Shutdown Cooling if desired. Unit 3: RHR pump 3AP35 providing Suppression Pool Cooling and Alternate Shutdown Cooling.
Support Systems:	Power to 4kv Safeguard Switchgear provided from #2-SU and/or #343-SU Offsite Power source. Emergency Diesel Generators are not protected for this Fire Area. ESW pump 0AP57 providing pump cooling for U2 Core Spray pumps if in use. Unit 2: HPSW pump 2AP42, 2BP42, 2CP42 or 2DP42 providing cooling for RHR heat exchanger(s). Unit 3: HPSW pump 3AP42, or 3CP42 providing cooling for RHR heat exchanger. Instrumentation protected for monitoring the following parameters for Units 2 and 3: CST water level, Torus water level, Rx coolant level, Rx coolant pressure, Drywell pressure, Torus water temperature, Drywell Temperature, U2 HPCI Flow & turbine RPM, U2 & U3 RCIC Flow & turbine RPM, RHR flow, HPSW flow & pressure, ESW pressure, U2 Core Spray Flow.

Fire Zone	Fire Area	Room	FSSD Systems Potentially Affected	FSSD Comments
13N-13M	13N	452	U3 RWCU Hi/Low Pressure interface valves CV3-12-55, MO3-12-053, MO3-12-056, MO3-12-057.	For a fire affecting all of Fire Area 13N (the bounding Appendix R case), acceptability of postulated spurious operation of this Hi/Low pressure interface is discussed in FPP Table A-5. 3-phase 480VAC power cable for MO3-12-053 is routed in dedicated conduit in this Fire Area, preventing spurious operation. With MO3-12-053 closed, the postulated blowdown flow rate is within the makeup capability of the RCIC system. No piping rupture would occur. The safe shutdown capability would not be jeopardized. For a fire limited to this room, no RWCU blowdown is postulated. 3-phase 480Vac power cables to MOVs MO3-12-053, MO3-12-056, MO3-12-057 are each routed in conduit in this room. No other 480Vac cables are contained in these conduit, preventing the spurious operation of these valves due to a fire in this room. RWCU suction containment isolation valves MO3-12-015, MO3-12-018 are not affected by a fire in this room.
13N-36	13N	449	Controller I/P3-12-110 for U3 RWCU Hi/Low Pressure interface valve CV3-12-55.	For a fire affecting all of Fire Area 13N (the bounding Appendix R case), acceptability of postulated spurious operation of this Hi/Low pressure interface is discussed in FPP Table A-5. 3-phase 480VAC power cable for MO3-12-053 is routed in dedicated conduit in this Fire Area, preventing spurious operation. With MO3-12-053 closed, the postulated blowdown flow rate is within the makeup capability of the RCIC system. No piping rupture would occur. The safe shutdown capability would not be jeopardized. For a fire limited to this room, several RWCU valves (MO3-12-056, MO3-12-057, MO3-12-015, MO3-12-018, MO3-12-053) would remain unaffected, preventing the possibility of a RWCU blowdown.

TABLE OF ACRONYMS

CST	Condensate Storage Tank
FSSD	Fire Safe Shutdown
HPCI	High Pressure Coolant Injection
HPSW	High Pressure Service Water
RCIC	Reactor Core Isolation Cooling
RWCU	Reactor Water Clean Up
ESW	Emergency Service Water
FSSD	(Post) Fire Safe Shutdown
ADS	Automatic Depressurization System
FPP	Fire Protection Program (part of UFSAR)

ATTACHMENT 2

PEACH BOTTOM ATOMIC POWER STATION

UNITS 2 & 3

Docket No. 50-277
50-278

License Nos. DPR-44
DPR-56

REQUEST FOR EXEMPTION FROM THE PROVISIONS OF

10 CFR 50 APPENDIX R, SECTION III.F

Supplemental Information

5.2 DESCRIPTION OF REACTOR SHUTDOWN METHODS

The following sections provide descriptions of methods that can be used for reactor shutdown and cooldown. Although the safe shutdown analysis for the various fire areas places primary emphasis on achievement of reactor shutdown using the methods described below, other means of achieving shutdown might be available. Use of safety-related and nonsafety-related systems not addressed in the safe shutdown analysis, plus manual operation of certain equipment and controls, could provide numerous combinations of systems with adequate capability to safely shut the plant down.

5.2.1 Reactor Shutdown With Balance of Plant Cooling Systems Available

After the turbine-generator has been tripped and all control rods inserted into the reactor core during the course of a normal shutdown and cooldown, reactor decay heat and sensible heat is removed by bypassing main steam to the condenser. Heat is removed from the condenser by the circulating water system and rejected to the atmosphere by the cooling towers. Makeup water is supplied to the reactor vessel by the condensate and feedwater system, taking suction on the condenser hotwell. When the reactor has been depressurized below a nominal 75 psig, the RHR system is initiated in the normal shutdown cooling mode of operation. In this mode, reactor water is circulated through the RHR heat exchangers, where it is cooled by the HPSW system. Heat is rejected to the environment by discharging water from the HPSW system to the river. The reactor vent valves are opened when reactor pressure reaches atmospheric.

If malfunctions due to the effects of a fire occur in any of the systems that are normally used to achieve reactor shutdown with balance of plant cooling systems available, one of the shutdown methods described in Section 5.2.2 will be used to complete the shutdown.

5.2.2 Reactor Shutdown Without Balance of Plant Cooling Systems Available

For the purpose of this safe shutdown analysis, four methods of shutdown that are operable without balance of plant cooling systems available were selected for detailed study. Each of the four shutdown methods includes systems and components necessary to accomplish the major functions of (a) providing makeup water to the reactor vessel, (b) depressurizing the reactor vessel, and (c) removing decay heat and sensible heat from the reactor and primary containment. Without offsite power, cold shutdown is achieved using the alternate shutdown cooling mode, which minimizes the equipment required for obtaining cold shutdown. This mode precludes depressurizing the reactor to atmospheric pressure, since the reactor pressure must be maintained above the minimum closing pressure of the relief valves. Although the reactor is not vented (see reference 24 in Appendix C), adequate decay heat removal capability is available, to assure that the reactor coolant temperature can be maintained below 212°F. The systems in each shutdown method that are directly relied on for accomplishing these functions are as follows:

Shutdown Method	Makeup	Depressurization	Heat Removal
A	RCIC	RVs	RHR in the suppression pool cooling mode; and RHR or Core Spray in the alternate shutdown cooling mode
B	HPCI	RVs	RHR in the suppression pool cooling mode; and RHR or Core Spray in the alternate shutdown cooling mode
C	RHR in the LPCI mode OR core spray	RVs	RHR in the suppression pool cooling mode; and RHR or Core Spray in the alternate shutdown cooling mode
D	HPCI	RVs	RHR in the suppression pool cooling and alternate shutdown cooling modes (alternative shutdown)

The individual components that are used for safe shutdown are listed in Table A-3, together with their corresponding fire area locations and safe shutdown system(s). The safe shutdown analysis was performed from a function/system standpoint, as opposed to a safeguard channel standpoint. Functions and support functions were not restricted to the same safeguard channel as the system used to provide reactor inventory. Therefore, some components are associated with only one shutdown method, while most components are associated with all four shutdown methods. Although these components are associated with all four methods, they are not necessarily required to be available for all cases in which a given shutdown method is relied on, depending on the location of the postulated fire. This flexibility exists because of the redundancies that have been provided at the system and component levels.

The following sections identify the methods used for safe shutdown in each fire area. In those areas where more than one method of safe shutdown is available, the preferred priority of shutdown methodology is A, then B, and then C. Only the first listed method is needed for safe shutdown capability.

A description of each of the four shutdown methods is provided below.

Method A

After closure of the main steam isolation valves, pressure in the reactor vessel is limited by operation of the relief valves which open in the mechanical relief mode when their pressure setpoints are reached. The steam discharged through the relief valves is condensed in the suppression pool. Water level in the reactor vessel is maintained by the RCIC system, using either the suppression pool or the condensate storage tank as the source of water supply. The operation of the RCIC system also removes energy from the reactor in the form of steam used to drive the RCIC turbine. In order to limit the temperature rise of the suppression pool due to the steam discharged into it from the RCIC system and the relief valves, one loop of the RHR system is operated in the suppression pool cooling mode. In this mode, water from the suppression pool is circulated through an RHR heat exchanger and then returned to the suppression pool.

In order to initiate operation of the alternate shutdown cooling mode, it is necessary to depressurize the reactor below a nominal pressure of 150 psia. This is accomplished with the relief valves, in the manually controlled mode, to discharge steam to the suppression pool. After the reactor pressure has been stabilized between 150 and 100 psia, the alternate shutdown cooling mode can be placed into operation. This mode of operation is defined slightly differently depending on whether the RHR system or the core spray system is used to provide coolant makeup to the reactor vessel. If the RHR system is being used to provide coolant makeup, the RHR flow path downstream of the heat exchanger is realigned so that water is discharged into the reactor vessel (via the recirculation loop) as well as into the suppression pool, to maintain rated flow through the RHR heat exchanger. This allows one loop of the RHR system to provide makeup to the vessel in the alternate shutdown cooling mode and also provide suppression pool cooling. Water from the reactor vessel is returned to the suppression pool by maintaining one or more of the relief valves in the open position. If the core spray system is being used to provide make-up to the reactor vessel, the operating loop of the RHR system must remain in the suppression pool cooling mode for decay heat removal. Prior to initiating alternate shutdown cooling, the RCIC turbine is tripped, and the water level in the reactor vessel is increased to the main steam line nozzles, allowing water to fill the main steam lines and then flow through the open relief valves and down the relief valve discharge lines to the suppression pool.

In both the suppression pool cooling mode and the alternate shutdown cooling mode, the heat is transferred from the RHR system to the HPSW system via the RHR heat exchanger. The HPSW system provides the means for dissipating decay heat from the reactor, to maintain it in a cold shutdown condition.

Depending on the location of a fire within the plant, certain operations that are used in shutdown method A may need to be performed manually from outside of the control room. The specific operations involved are identified in Table A-4. Emergency lighting with at least an 8-hour battery power supply has been provided in all areas needed for operation of safe shutdown equipment and access and egress routes thereto.

Method B

After closure of the main steam isolation valves, pressure in the reactor vessel is limited by operation of the relief valves, which open in the mechanical relief mode when their pressure setpoints are reached.

The steam discharged through the relief valves is condensed in the suppression pool. Water level in the reactor vessel is maintained by the HPCI system, using either the suppression pool or the condensate storage tank as the source of water supply. The operation of the HPCI system also removes energy from the reactor in the form of steam used to drive the HPCI turbine. In order to limit the temperature rise of the suppression pool due to the steam discharged into it from the HPCI system and the relief valves, one loop of the RHR system is operated in the suppression pool cooling mode. In this mode, water from the suppression pool is circulated through an RHR heat exchanger and then returned to the suppression pool.

In order to initiate operation of the alternate shutdown cooling mode, it is necessary to depressurize the reactor below a nominal pressure of 150 psia. This is accomplished with the relief valves, in the manually controlled mode, to discharge steam to the suppression pool. After the reactor pressure has been stabilized between 150 and 100 psia (to avoid permaturely tripping the HPCI turbine due to low steam supply pressure), the alternate shutdown cooling mode can be placed into operation. This mode of operation is defined slightly differently depending on whether the RHR system or the core spray system is used to provide coolant makeup to the reactor vessel. If the RHR system is being used to provide coolant makeup, the RHR flow path downstream of the heat exchanger is realigned so that water is discharged into the reactor vessel (via the recirculation loop) as well as into the suppression pool, to maintain rated flow through the RHR heat exchanger. This allows one loop of the RHR system to provide makeup to the vessel in the alternate shutdown cooling mode and also provide suppression pool cooling. Water from the reactor vessel is returned to the suppression pool by maintaining one or more of the relief valves in the open position. If the core spray system is being used to provide make-up to the reactor vessel, the operating loop of the RHR system must remain in the suppression pool cooling mode for decay heat removal. Prior to initiating alternate shutdown cooling, the HPCI turbine is tripped, and the water level in the reactor vessel is increased to the main steam line nozzles, allowing water to fill the main steam lines and then flow through the open relief valves and down the relief valve discharge lines to the suppression pool.

In both the suppression pool cooling mode and the alternate shutdown cooling mode, heat is transferred from the RHR system to the HPSW system via the RHR heat exchanger. The HPSW system provides the means for dissipating decay heat from the reactor, to maintain it in a cold shutdown condition.

Depending on the location of a fire within the plant, certain operations that are used in shutdown method B may need to be performed manually from outside of the control room. The specific operations involved are identified in Table A-4. Emergency lighting with at least an 8-hour battery power supply has been provided in all areas needed for operation of safe shutdown equipment and access and egress routes thereto.

Method C

If neither the RCIC system nor the HPCI system is available to maintain the water level in the reactor vessel, method C is relied on to shut the plant down. This method involves depressurizing the reactor vessel sufficiently so that either the

RHR system or the core spray system can inject water into the vessel.

After closure of the main steam isolation valves, pressure in the reactor vessel is limited by operation of the relief valves, which open in the mechanical relief mode when their pressure setpoints are reached. The steam discharged through the relief valves is condensed in the suppression pool. The reactor vessel is depressurized by using three or more relief valves, in the manually controlled mode, to discharge steam to the suppression pool. Coolant injection to the reactor vessel cannot be initiated until vessel pressure has been reduced below the pressure interlock setpoint of the coolant makeup system (core spray or RHR) and below the pump shutoff head of the system. The pressure interlock setpoint is 450 psig for both systems. The pump will start injecting when reactor pressure is 295 psig for the LPCI mode of the RHR system and 289 psig for the core spray system. If the RHR system is used for providing coolant makeup, one loop of the system is placed in the LPCI mode of operation. If the core spray system is to be used for providing coolant makeup, one loop of the system is placed in operation, using either or both of the pumps in that loop.

Depressurization of the reactor vessel during the period before coolant makeup becomes available will cause a decrease in reactor water level. Although the upper portion of the reactor core may be uncovered briefly during this transient, the effect of steam cooling in the core region will limit the fuel cladding temperatures to acceptable values. Therefore, no fuel damage will result from the temporary uncovering of the core.

When the reactor has been depressurized below a nominal pressure of 150 psia, the alternate shutdown cooling mode can be placed into operation. This mode of operation is defined slightly differently depending on whether the RHR system or the core spray system is used to provide coolant makeup to the reactor vessel. In both cases, however, the reactor water level is raised above the main steam line nozzles, allowing water to fill the main steam lines and then flow through the open relief valves and down the relief valve discharge lines to the suppression pool. This establishes a complete loop for liquid flow from the suppression pool to the reactor vessel and back to the suppression pool. Reactor pressure is maintained by opening or closing relief valves as necessary.

If the RHR system is being used to provide coolant makeup to the reactor vessel, HPSW flow must be established to the RHR heat exchanger in the operating loop. In addition, the RHR flow path downstream of the RHR heat exchanger is realigned so that water is discharged into the suppression pool as well as into the reactor vessel, to maintain rated flow through the RHR heat exchanger. This allows one loop of the RHR system to provide makeup to the vessel in the alternate shutdown cooling mode and also provide suppression pool cooling. If the core spray system is being used to provide coolant makeup to the reactor vessel, one loop of the RHR system must be placed in the suppression pool cooling mode, and HPSW flow must be established to the RHR heat exchanger in that loop. In either case, heat from the water in the suppression pool is transferred to the HPSW system. The HPSW system provides the means for dissipating decay heat from the reactor, to maintain it in a cold shutdown condition.

Depending on the location of a fire within the plant, certain operations that are used in shutdown method C may need to be performed manually from outside of the control room. The specific operations involved are identified in Table A-4. Emergency lighting with at least an 8-hour battery power supply has been provided in all areas needed for operation of safe shutdown equipment and access and egress routes thereto.

Method D

A fire occurring in the control room, the cable spreading room, the computer room, or the emergency shutdown panel area has the potential to prevent safe shutdown from the control room. Therefore, alternative shutdown capability has been provided to ensure that safe shutdown can be achieved in the event of a fire in any of these four zones. Alternative shutdown is referred to as shutdown method D and relies on the use of four types of alternative control stations. Each alternative control station (ACS) includes transfer/isolation switches than can be used to transfer control of the safe shutdown components from the control room to the control switches located on the ACS. The transfer/isolation switches also provide electric circuit isolation between alternative shutdown circuits and circuits that could be affected by a fire in one of the four areas of concern.

The four types of alternative control stations are described as follows:

a. HPCI Alternative Control Stations

There is a HPCI alternative control station for each unit, located in the recirculation pump M-G set room of each unit at elevation 135 feet of the radwaste building. The following features are located on the HPCI ACS:

(1) Control switches, transfer/isolation switches, and a flow controller for the HPCI system.

(2) Control switches and transfer/isolation switches for one loop of the RHR and HPSW systems. The B loop of RHR and HPSW is used for Unit 2. The D loop of RHR and HPSW is used for Unit 3.

(3) Diagnostic instrumentation for the HPCI, RHR, HPSW, and ESW systems.

(4) Reactor process monitoring instrumentation.

(5) Control switches for two relief valves (A and B).

b. Emergency Switchgear Alternative Control Stations

There are two switchgear alternative control stations for each unit. The stations are located in the B and D 4 kV emergency switchgear rooms, at switchgear units 20A16 and 20A18 for Unit 2 and at switchgear units 30A16 and 30A18 for Unit 3. The following ACS features are located on the front panels of the respective switchgear cubicles:

(1) Transfer/isolation switches and control switches for the diesel generator circuit breakers (safeguard channels B and D).

(2) Transfer/isolation switches and control switches for the load center circuit breakers (safe guard channels B and D).

(3) Transfer/isolation switch and control switch for the 2B and 3D RHR pumps (safeguard channels 2B and 3D, respectively).

(4) Transfer/isolation switch and control switch for the 2B and 3D HPSW pumps (safeguard channels 2B and 3D, respectively).

(5) Transfer/isolation switch and control switch for the A ESW pump (Unit 2 only).

c. Diesel Generator Alternative Control Stations

Alternative control stations are provided for the B and D diesel generators. Since the diesel generators are common to both units, the alternative control stations for the diesel generators are also common to both units. The ACS for the B diesel generator is located in the Unit 2 B 4 kV emergency switchgear room. The ACS for the D diesel generator is located in the Unit 2 D 4 kV emergency switchgear room. Each ACS includes transfer/isolation switches and provides means for manually controlling diesel start, diesel stop, voltage adjustment, and governor speed adjustment.

d. Automatic Depressurization System (Relief Valve) Alternative Control Stations

There are two ADS alternative control stations for each unit each consisting of two panels. The stations are located in the A and B 4 kV emergency switchgear rooms. The following features are located on the alternative control stations:

(1) Transfer/isolation switches for two relief valves (A and B) that isolate potentially damaged circuits and transfer control of these valves to the HPCI ACS.

Isolation switches for 3 relief valves (E, H, and J) that isolate potentially damaged circuits.

(2) An isolation switch for one relief valve (K) that isolates potentially damaged circuits from the control room.

Isolation switches for 5 relief valves (C, D, F, G, and L) that isolate potentially damaged circuits.

When the decision has been made to shut the plant down from outside the control room because of a fire in either the control room, cable spreading room, computer room, or emergency shutdown panel area, the operators will scram the reactor and close the main steam isolation valves before leaving the control room. The operators will then proceed to the various alternative control stations and operate the transfer/isolation switches to take manual control of the systems needed for achieving safe shutdown.

After closure of the main steam isolation valves, pressure in the reactor vessel is limited by operation of the relief valves, which open in the mechanical relief mode when their pressure setpoints are reached. The steam discharged through the relief valves is condensed in the suppression pool. Water level in the reactor vessel is maintained by the HPCI system, using either the suppression pool or the condensate storage tank as the source of water supply. The operation of the HPCI system also removes energy from the reactor in the form of steam used to drive the HPCI turbine. In order to limit the temperature rise of the suppression pool due to the steam discharged into it from the HPCI system and the relief valves, one loop of the RHR system is operated in the suppression pool cooling mode. In this mode, water from the suppression pool is circulated through an RHR heat exchanger and then returned to the suppression pool.

In order to initiate operation of the alternate shutdown cooling mode of the RHR system, it is necessary to depressurize the reactor below a nominal pressure of 150 psia. This is accomplished by using the relief valves, in the manually controlled mode, to discharge steam to the suppression pool. After the reactor pressure has been stabilized between 150 and 100 psia (to avoid prematurely tripping of the HPCI turbine due to low steam supply pressure), the operating loop of the RHR system is switched from the suppression pool cooling mode to the alternate shutdown cooling mode. This is accomplished by realigning the flow path downstream of the RHR heat exchanger so that water is discharged into the reactor vessel (via the recirculation loop) as well as into the suppression pool, to maintain rated flow through the RHR heat exchanger. This allows one loop of the RHR system to provide makeup to the vessel in the alternate shutdown cooling mode and also provide suppression pool cooling. Water from the reactor vessel is returned to the suppression pool by maintaining one or more of the relief valves in the open position. The water level in the reactor vessel rises to the main steam line nozzles, allowing water to fill the main steam lines and then flow through the open relief valves and down the relief valve discharge lines to the suppression pool.

Once the alternate shutdown cooling mode has been placed into operation, the HPCI system is shut down.

In both the suppression pool cooling mode and the alternate shutdown cooling mode, heat is transferred from the RHR system to the HPSW system via the RHR heat exchanger. The HPSW system provides the means for dissipating decay heat from the reactor, to maintain it in a cold shutdown condition.

Emergency lighting with at least an 8-hour battery power supply has been provided in all areas needed for operation of safe shutdown equipment and access and egress routes thereto.

The Alternative Control Stations are provided with station battery-backed lights. The batteries and their chargers are protected from a fire in the control room, the cable spreading room, the computer room, or the emergency shutdown panel area.

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ATTACHMENT 3

PEACH BOTTOM ATOMIC POWER STATION

UNITS 2 & 3

Docket No. 50-277
50-278

License Nos. DPR-44
DPR-56

REQUEST FOR EXEMPTION FROM THE PROVISIONS OF

10 CFR 50 APPENDIX R, SECTION III.F

Supplemental Information

- **Manual Fire Fighting (Reference pages 7 and 8 of 39)**
  Manual fire fighting at PBAPS is performed by the Shift Fire Brigade comprised of a Fire Brigade Leader and a minimum of four (4) Fire Brigade members. Fire Brigade members are qualified by the completion of classroom training, passing a physical examination, operational certification with respiratory protection devices and completion of Fire Brigade initial live fire-ground training. The leader must be qualified as a Fire Brigade member and receives additional advanced training on fire incident command. Annual re-qualification is required for all Brigade members. This re-qualification includes additional classroom and live fire-ground training at the PECO Energy Fire Academy. The PECO Energy Fire Academy is Emergency Management Accreditation and Certification System (EMACS) certified (1994). Objective evidence of the fire fighting capabilities and effectiveness is discussed below.

  The Fire Brigade Leader (Incident Commander) and brigade members do not include those individuals who have operational responsibility for performing manual actions associated with the safe shutdown of the plant during a fire emergency.

  The Fire Brigade is knowledgeable of the physical arrangement of the site. To aid the Fire Brigade Leader and Brigade members, PECO Energy maintains detailed pre-fire strategy plans (PF procedures) which provide identification of doorways to each plant fire zone and a detailed map of each zone. Access routes that involve locked doors are specifically identified in the strategies, with appropriate precautions and methods for access identified. The PF maps also include the location of fire fighting equipment, fire and safety hazards, and important plant equipment. Written descriptions accompany each map which list information important to successfully combat a fire such as hazards, tactics, ventilation, construction information, and available suppression equipment. A Class III standpipe system is installed throughout the plant, and portable fire extinguishers are available to assist the Brigade in fire fighting activities.

  Upon being alerted to a fire at PBAPS, Control Room personnel, via Off Normal (ON) procedures utilize pre-fire strategy plans. These procedures are designed to provide fire fighting guidance to plant personnel in the event of a fire. Operations personnel are provided guidance on the decision to initiate safe shutdown. If reactor shutdown is required, fire area specific Fire Guide (T-300 series, TRIP) procedures are entered. The Fire Guides are used in conjunction with plant operating procedures to achieve safe shutdown. The specific safe shutdown methodologies, including instructions for manual actions and repairs are detailed in these plant procedures. The fire fighting pre-fire strategy plans, Fire Guides and operating procedures, when used in combination, provide the Control Room and Fire Brigade personnel with a comprehensive plan and methodology for mitigating the consequences of a fire in the plant.

  During the PBAPS Individual Plant Evaluation for External Events (IPEEE) Fire Risk Analysis, an evaluation of Fire Brigade response times to plant areas was performed. The results of the evaluation showed that the Fire Brigade is routinely able to respond to a fire in any plant area and initiate fire suppression activities within 10 minutes of notification. Fire extinguishment was established to occur within 30 minutes of fire notification.

Historically, NRC Inspection Reports have recognized the effectiveness of the PBAPS Fire Brigade in controlling and extinguishing fire and the PBAPS pre-fire strategy plans in providing fire area data. The history of fire protection inspections and audits at PBAPS shows that PECO Energy's responsiveness and overall control and performance of the PBAPS Fire Protection Program has been very good. This trend of continued good performance is reflected in the consistent positive evaluations during NRC Systematic Assessment of Licensee Performance (SALP) evaluations.

<u>5.1.2 Fire Zone Description:</u> (Reference page 15 of 39)

These fire zones are located on several elevations of the Unit 2 and 3 Turbine Buildings and are configured similarly for each unit.

Fire Zone 78W (Unit 2): The Condenser Pit (Room 22, Elevation 102'-0"), the Moisture Separator Area (Room 138, Elevation 116'-0"), and the Unit 2 Piping Area (Room 223, Elevation 135'-0") are located in fire zone 78W. The overall area of Fire Zone 50-78W is approximately 34,371 sq. ft. in floor area and approximately 2,062,260 cu. ft. in volume (ceiling height approximately~60 ft.).

Fire Zone 78V (Unit 3): The Moisture Separator Area (Room 181, Elevation 116'-0") and the Unit 3 Piping Area (Room 272, Elevation 135'-0") are located in fire zone 78V. Fire zone 78V has approximately 34,371 sq. ft. in floor area and approximately 1,306,098 cu. ft. in volume (ceiling height approximately~38 ft.).

5.1.3.1 Fire Zone 50-78W (Rooms 22, 138 & 223) (Reference page 16 of 39)

These are locked high radiation rooms. Plant equipment located in this area includes the Unit 2 West Condensers, Moisture Separators and the Piping Area. Ventilation for this elevation is provided by the Unit 2 and 3 Turbine Building Air Handling Systems which provides approximately 14 air changes per hour.

5.1.3.2 Fire Zone 50-78V (Rooms 181 & 272) (Reference page 16 of 39)

These are locked high radiation rooms. Plant equipment located in this area includes the Unit 3 West Condenser Pit, Moisture Separators, Condenser Assemblies and the Pipe Area. Ventilation for this elevation is provided by the Unit 2 and 3 Turbine Building Air Handling Systems which provides approximately 14 air changes per hour.

<u>5.1.6 Fire Detection & Suppression Capability:</u> (Reference page 17 of 39)

There is automatic wet pipe sprinkler protection for each of these rooms in the Turbine Building. This same automatic sprinkler system protects the turbine lube oil piping that is routed throughout these areas. The automatic wet pipe sprinkler system would provide alarm indication to the MCR as a result of actuation due to the postulated fire in the zone.

Manual fire fighting capability is initiated with a manual or automatic alarm to the MCR. The Fire Brigade is dispatched to extinguish the fire using guidance provided in the area specific pre-fire strategy plans. Active and passive ventilation paths exist to mitigate the effects of smoke and hot gases that may accumulate and there are no physical obstructions to access the rooms. Several hose stations for manual fire fighting are available in the Turbine Building adjacent to these rooms, which are capable of providing an effective hose stream into each area. Hand-held fire extinguishers, 350 pound dry chemical wheeled fire extinguishers and 30 gallon foam hose carts are available for use by the fire brigade.

5.2.1 Fire Zone(s) Defense In Depth: (Reference page 19 of 39)

The fire zones and specific rooms discussed in Section 5.2 have the following fire protection characteristics and features that provide defense-in-depth protection:

Prevent Fires from Starting:

- The primary in-situ combustible loading is cable insulation.
- No uncontrolled transient combustibles are permitted in these rooms.
- There are no fire initiators/ignition sources within these rooms that are unprotected.
- All electrical equipment is ground and fault protected.

Detect and Suppress Fires that Do Occur:

- There are no unprotected special fire hazards.
- The hydrogen seal oil units are protected by automatic deluge systems.
- There is general area automatic detection by smoke/heat detectors in adjacent areas.
- There is general area automatic wet pipe sprinkler protection for the 116'-0" and 135'-0" elevations.
- Manual fire fighting activities provided by the Fire Brigade.

Designing Plant Systems:

- The ability to safely shutdown the plant would not be impacted from a fire resulting in a loss of SSD cable in these rooms.
- Cable trays have horizontal and vertical separation from any adjacent fire exposures.
- MCCs and electrical cabinets are enclosed and are not considered an ignition source to external materials.

5.2.6 Fire Detection & Suppression Capability: (Reference page 22 of 39)

There is automatic wet pipe sprinkler protection for the 116'-0" and the 135'-0" elevations of these areas of the Turbine Building. The automatic wet pipe sprinkler system provides alarm indication to the MCR as a result of actuation due to the postulated fire in the zone.

Manual fire fighting is initiated with a manual or automatic alarm to the MCR. The Fire Brigade is dispatched to extinguish the fire using guidance provided in the area specific pre-fire strategy plans. Active and passive ventilation paths exist to mitigate the effects of smoke and hot gases that may accumulate and there are no physical obstructions to access the rooms. Several hose stations for manual fire fighting are available in the turbine and Reactor Building adjacent to these rooms, which are capable of providing an effective hose stream into each area. Hand-held fire extinguishers, 350 pound dry chemical wheeled fire extinguishers and 30 gallon foam hose carts are available for use by the fire brigade.

5.2.7 Safety Train Information: (Reference page 22 and 23 of 39)

A small number of Appendix R SSD components are located in these zones. The SR/SSD related cable in trays and conduit on the 116'-0" elevation traverse this fire zone near the perimeter of the equipment hatch. The trays and conduit are at an elevation of approximately 125'-0" to 128'-0" and 131'-0" at various points. These rooms also contain cables that provide offsite power to the onsite power distribution system.

At the 135'-0" elevation, the SR/SSD related cable in tray and conduit are located at approximately column line 19-20 M and runs west adjacent to the perimeter of the equipment hatch, past the 480V load centers and MCCs, to approximately column line 20 M then turns north and south along the Switchgear room wall. To the north it runs approximately to column line 21-22 M and to the south it runs to approximately column line 19 M.

At the 165'-0" elevation, the SR/SSD related cable trays and conduit are located at approximately column line 18-20 M with several conduits at approximately column line 21 M. The trays run a distance of approximately 40 ft. to the MCCs and are located approximately 28 ft. from the turbine generator.

5.3.5 Fire Barriers & Adjacent Fire Exposures: (Reference page 26 of 39)

The substantial construction features of the walls, floor and ceiling assemblies would not be challenged by a fire in these areas. All of the barriers in these rooms have been upgraded to rated barriers as a result of a commitment made by the IPEEE fire risk analysis. Each room is enclosed with access doors to the adjacent corridor and there are no adjacent fire exposures that would be considered a threat to these rooms. The automatic wet pipe sprinkler system has been modified to protect the HELB opening in the barrier.

5.3.6 Fire Detection & Suppression Capability: (Reference page 26 of 39)

There is an automatic wet pipe sprinkler system in each of these rooms. The automatic wet pipe sprinkler system provides protection for the oil and cable tray hazards. Manual fire fighting activities would be initiated by a manual or automatic alarm to the MCR.

The automatic wet pipe sprinkler system would actuate quickly as a result of an oil based fire and would thereby notify the MCR and control the exposure fire. Due to the size of the anticipated fire, addition of automatic detection in these fire areas will not significantly improve fire brigade response time over the existing fire protection features currently provided. This is due to the ability of the sprinklers to actuate quickly, initiate an alarm and control the fire until the arrival of the Fire Brigade.

The Fire Brigade is dispatched to extinguish the fire using guidance provided in the area specific pre-fire strategy plans. Active and passive ventilation paths exist to mitigate the effects of smoke and hot gases that may accumulate and there are no physical obstructions to access the rooms. Several hose stations for manual fire fighting are available in the Turbine Building adjacent to these rooms, which are capable of providing an effective hose stream into each area. Hand-held fire extinguishers, 350 pound dry chemical wheeled fire extinguishers and 30 gallon foam hose carts are available for use by the fire brigade.

5.3.7 Safety Train Information: (Reference page 27 of 39)

There are no Appendix R SSD cables or equipment in room 139. Room 139 contains RPS instruments and RPS cable in conduit. The RPS cables traverse the ceiling from their point of entry to the instrument racks located on the south wall.

Room 179 contains Appendix R SSD cables in conduit and ladder-type tray. The cables are routed in the north end of room 179. They enter from the Yard at the north wall and exit to the West. Room 179 also contains RPS instruments and RPS cable in conduit. The RPS cables traverse the ceiling from their point of entry to the instrument racks located on the north wall.

5.4.6 Fire Detection & Suppression Capability: (Reference page 30 of 39)

There is an automatic wet pipe sprinkler system throughout these areas. The wet pipe sprinkler system protects both this and open adjacent cubicles that contain the reactor feed pump turbine room and related pump rooms. Manual fire fighting activities would be initiated by a manual or automatic alarm to the MCR.

The automatic wet pipe sprinkler system would actuate quickly in the event of an oil based fire to notify the MCR and control the exposure fire. Due to the size of the anticipated fire, addition of automatic detection in these fire areas will not significantly improve fire brigade response time over the existing fire protection features currently provided. This is due to the ability of the sprinklers to actuate quickly initiating an alarm and controlling the fire until the arrival of the Fire Brigade.

The Fire Brigade is dispatched to extinguish the fire using guidance provided in the area specific pre-fire strategy plans. Active and passive ventilation paths exist to mitigate the effects of smoke and hot gases that may accumulate and there are no physical obstructions to access the rooms. Several hose stations for manual fire fighting are available in the Turbine Building adjacent to these fire zones, which are capable of providing an effective hose stream into each area. Hand-held fire extinguishers, 350 pound dry chemical wheeled fire extinguishers and 30 gallon foam hose carts are available for use by the fire brigade.

5.5.6 Fire Detection & Suppression Capability: (Reference page 35 of 39)

There is no automatic fire detection or automatic fire suppression for these rooms. However, there is automatic smoke/heat detection throughout the 165'-0" elevation of each Reactor Building at the ceiling level.

Manual fire fighting capability is initiated with a manual or automatic alarm to the MCR. The Fire Brigade is dispatched to extinguish the fire using guidance provided in the area specific pre-fire strategy plans. Active and passive ventilation paths exist to mitigate the effects of smoke and hot gases that may accumulate and there are no obstructions to access the rooms. Several hose stations for manual fire fighting are available in the reactor and diesel buildings adjacent to these rooms, which are capable of covering the entire area. Hand-held fire extinguishers, 350 pound dry chemical wheeled fire extinguishers and 30 gallon foam hose carts are available for use by the fire brigade.

SUB-AREA	FIRE AREA-ZONE	Room	DESCRIPTION	SR/SSD COMPONENT FUNCTION	SSD METHODS PROTECTED (*)	FIRE PROTECTION SYSTEMS (**)	FIRE HAZARD	ESTIMATED COST OF DETECTION SYSTEM
Unit 2 and Unit 3 Condenser Bay Section 5.1								
Unit 2	50-78W	22	CONDENSER PIT	SSD cable in conduit.	U2:A U3:A	Automatic Sprinkler Portable Extinguisher	Cable Insulation	$204,369
Unit 2	50-78W	138	MOIST SEP AREA	RPS & SSD cable in conduit & tray. Offsite power cables in tray.	U2:A U3:A	Automatic Sprinkler Hose Station	Cable Insulation	$317,137
Unit 2	50-78W	223	MOIST SEP AREA	RPS & PCIS instruments, RPS, PCIS & SSD cables in conduits & tray. Offsite power cables in tray.	U2:A U3:A	Automatic Sprinkler	Cable Insulation	$266,553
Unit 3	50-78V	181	MOIST SEP AREA	RPS & SSD cable in conduit & tray.	U2:A U3:A	Automatic Sprinkler Hose Station	Cable Insulation	$317,137
Unit 3	50-78V	272	MOIST SEP AREA	RPS & PCIS instruments, RPS, PCIS & SSD cables in conduits & tray. Offsite power cables in tray.	U2: A U3: A	Automatic Sprinkler	Cable Insulation	$266,553
Cost Subtotal								$1,371,749
Main Equipment Hatchway and Adjourning Equipment Section 5.2								
	50-78B	135	GEN. STATOR, CLR & H2 EQUIP	SSD cable in tray. Offsite power cables in tray.	U2:A U3:A	Automatic Sprinkler	Cable Insulation Lube Oil	$95,723
	50-78B	184	GEN. STATOR, CLR & H2 EQUIP	SSD cable in conduit.	U2:A U3:A	Automatic Sprinkler	Cable Insulation Lube Oil	$95,723
	50-78B	185	LAYDOWN AREA	SSD flow instrument for HP Service Water. SSD cable in conduit and tray.	U2:A U3:A	Automatic Sprinkler	Cable Insulation	$359,492
	50-78B	228	LAYDOWN AREA	SSD power inverter. RPS cables in conduit. SSD cables in conduit and tray.	U2:A U3:A	Automatic Sprinkler	Cable Insulation	$499,600
	50-78B	229	GENERATOR EQ AREA	RPS instruments and cable in conduit.	U2:A U3:A	Automatic Sprinkler	Cable Insulation	$93,125

Note: SR - Safety Related, SSD - Fire Safe Shutdown, RPS - Reactor Protection System, PCIS - Primary Containment Isolation System
* - Letters A, B, C and D denote the Safe Shutdown Method available for a particular Fire Area as described in detail in the Fire Protection Program.
** - All areas are accessible with hose stations and potable fire extinguishers.

SUB-AREA	FIRE AREA-ZONE	Room	DESCRIPTION	SR/SSD COMPONENT FUNCTION	SSD METHODS PROTECTED (*)	FIRE PROTECTION SYSTEMS (**)	FIRE HAZARD	ESTIMATED COST OF DETECTION SYSTEM
	50-78B	274	GENERATOR EQ AREA	RPS instruments and cable in conduit.	U2:A U3:A	Automatic Sprinkler	Cable Insulation	$759,910
	50-78B	429	LAYDOWN AREAS	SSD cable in conduit and tray. Offsite power cable in tray.	U2:A U3:A	None	Cable Insulation	$759,910
Cost Subtotal								$2,663,483
Main Turbine Lube Oil Storage Section 5.3								
Unit 2	50-88	139	T. LUBE OIL STOR	RPS instruments and cable in conduit.	U2:A U3:A	Automatic Sprinkler Hose Station Portable Extinguisher	Cable Insulation Lube Oil	$71,220
Unit 3	50-89	179	T. LUBE OIL STOR	RPS instruments and cable in conduit. SSD cable in conduit and tray. Offsite power cable in tray.	U2:A U3:A	Automatic Sprinkler Hose Station Portable Extinguisher	Cable Insulation Lube Oil	$71,245
RFPT Area Corridors Section 5.4								
Unit 2	50-78A	414	RFPT CORRIDOR	SSD cable in conduit and tray.	U2:A U3:A	Automatic Sprinkler	Cable Insulation Lube Oil	$307,393
Unit 3	50-78A	457	RFPT CORRIDOR	SSD cable in tray.	U2:A U3:A	Automatic Sprinkler	Cable Insulation Lube Oil	$307,393
3B SJAE Room Section 5.5								
	50-78EE	177	3B SJAE ROOM	SSD cable in conduit.	U2: A U3: A	None	Cable Insulation	$22,444
Unit 2 Feedwater Htx Room Section 5.5								
	50-99	222	FEEDWATER HEATER	SSD cable in tray.	U2:A U3:A	None	Cable Insulation	$29,715
Unit 2 Rx Building Rooms Section 5.6								
	6S-5M	410	RWCU BACKWASH TANK TRANSFER PUMPTX	3 SSD cables in conduit and 2 SSD valves for RWCU dump to RW or Main Condenser	U2: B U3: ABC	None	None	$18,256

Note: SR - Safety Related, SSD - Fire Safe Shutdown, RPS - Reactor Protection System, PCIS - Primary Containment Isolation System
* - Letters A, B, C and D denote the Safe Shutdown Method available for a particular Fire Area as described in detail in the Fire Protection Program.
** - All areas are accessible with hose stations and potable fire extinguishers.

SUB-AREA	FIRE AREA-ZONE	Room	DESCRIPTION	SR/SSD COMPONENT FUNCTION	SSD METHODS PROTECTED (*)	FIRE PROTECTION SYSTEMS (**)	FIRE HAZARD	ESTIMATED COST OF DETECTION SYSTEM
	6S-42	408	RWCU NON-REGENERATIVE HT EXCHANGER TX	SSD cable in conduit and SSD signal converter instrument	U2: B U3: BC	None	None	$14,981
Unit3 Rx Building Rooms Section 5.6								
	13N-13M	452	RWCU BACKWASH TANK TRANSFER PUMPTX	3 SSD cables in conduit and 2 SSD valves for RWCU dump to RW or Main Condenser	U2: A U3: A	None	None	$18,256
	13N-36	449	RWCU NON-REGENERATIVE HT EXCHANGER	SSD cable in conduit and SSD signal converter instrument	U2:A U3: A	None	None	$14,981

Note: SR - Safety Related, SSD - Fire Safe Shutdown, RPS - Reactor Protection System, PCIS - Primary Containment Isolation System
* - Letters A, B, C and D denote the Safe Shutdown Method available for a particular Fire Area as described in detail in the Fire Protection Program.
** - All areas are accessible with hose stations and potable fire extinguishers.