PECO NUCLEAR

A Unit of PECO Energy

10 CFR 50.12

PECO Energy Company
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

January 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

Reference: Letter from PECO Energy to USNRC dated December 31, 1998

Dear Sir/Madam:

On December 31, 1998, PECO Energy Company (PECO Energy) submitted "Revision to Request for Exemption from Certain Requirements of 10 CFR 50, Appendix R, Section III.F, 'Automatic Fire Detection' ", in accordance with 10 CFR 50.12. Attached is our response to your request for additional information dated November 19, 1999, concerning this Exemption Request.

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

Very truly yours,

James A. Hutton
Director - Licensing

Enclosures: Affidavit; RAI Responses

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

A006

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 January 2000.

Diane B. Shortt
Notary Public

Notarial Seal
Diane B. Shortt, Notary Public
Folcroft Boro, Delaware County
My Commission Expires Sept. 2, 2000
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

Response to Request for Additional Information

RAI Question 1::
The exemption request states that all cables within the fire areas that are the subject of this exemption request meet flame retardant standards that are "similar" to the flame retardant rating specified in the Institute of Electrical and Electronic Engineers (IEEE) Standard 383-1974, "IEEE Standard for Type Test of Class 1E Electrical Cables, Field Splices and Connections for Nuclear Power Generating Stations," and therefore, (1) will not propagate a fire and are self-extinguishing, and (2) will not ignite or contribute to fire growth without a flame source. Provide a detailed description of the fire resistive test(s) including the acceptance criteria and any deviations from the IEEE 383 standard, that were used to qualify the cables in the subject fire areas. Provide a technical basis for the conclusion that the subject cables will "not ignite or contribute to fire growth without a flame source," as this is not part of the testing criteria specified in IEEE 383.

Response to RAI Question 1:
(The two questions in the RAI question 1 above are responded to separately below.)

Provide a detailed description of the fire resistive test(s) including the acceptance criteria and any deviations from the IEEE 383 standard, that were used to qualify the cables in the subject fire areas.

Peach Bottom Atomic Power Station Units 2 and 3 were constructed prior to the issuance of IEEE 383-1974, however, Philadelphia Electric (now PECO Energy) had strict fire protection requirements for cable insulation at the time. The requirements were developed in response to a fire which occurred at Peach Bottom Unit 1[1] during it's construction in 1965. In response to this fire, Philadelphia Electric Company developed the "Vertical Tray Flame Test". The "Vertical Tray Flame Test" is the oily rag test described in section 2.5.4.5 of IEEE 383-1974. This test was incorporated into IEEE 383-1974 primarily due to Philadelphia Electric employees participating in the standards' development (e.g., John Ferencsik and A. J. Simmons). All cables used during construction of Peach Bottom Atomic Power Station Units 2 and 3 were qualified under this test. Cables installed at Peach Bottom Atomic Power Station after the issuance of IEEE 383-1974 were required to meet the standard. Although the Vertical Tray Flame Test is IEEE 383-1974 section 2.5.4.5, the cables installed at Peach Bottom Atomic Power Station were not actually tested to IEEE 383-1974, therefore, the term "similar" was used in the exemption request.

Provide a technical basis for the conclusion that the subject cables will "not ignite or contribute to fire growth without a flame source," as this is not part of the testing criteria specified in IEEE 383.

The statement in the original exemption request that the cables will "not ignite or contribute to the fire growth without a flame source," was not intended to be solely attributable to the IEEE 383-1974 testing criteria. It was considered to be an extension of these criteria with consideration that the cables at Peach Bottom Atomic Power station are protected with coordinated fuses, breakers, etc. which would prevent them from igniting as a result of overcurrent or short circuiting. The industrial codes and standards, as well as PECO specific

---

[1] Peach Bottom Unit 1 was a small, experimental HTGR (45 Mw) owned by a Philadelphia Electric Company and 52 other electric utilities. The plant was operated by Philadelphia Electric Company.

codes and standards, provide substantial safety margins on the selection of cable/wire for the electrical loads which precludes them from becoming credible ignition sources.

RAI Question 2:
For the fire areas that are the subject of this exemption request that are provided or will be provided with automatic sprinkler protection, verify that sprinkler coverage is provided throughout the fire area and that the subject sprinkler systems are designed, installed, and maintained in accordance with the applicable standards published by the National Fire Protection Association (NFPA). Provide a technical justification for any deviations from the applicable NFPA standards.

Response to RAI Question 2:
This question was broken down into several separate issues as follows:

1. Verify that sprinkler coverage is provided throughout the fire area.

2. Were the subject sprinkler systems designed and installed in accordance with the applicable NFPA standard?

3. Are the subject sprinkler systems being maintained in accordance with the applicable NFPA standard?

Prior to responding to each of these issues, the sprinkler systems credited by the exemption request for providing detection capability are listed below.

Condenser Bays	Unit 2 - Fire Zone 50-78W Unit 3 - Fire Zone 50-78V
Turbine Equipment Hatch	Common Zone for Units 2 and 3 Fire Zone 50-78B
Main Turbine Lube Oil Storage Tank Rooms	Unit 2 - Fire Zone 50-88 Unit 3 - Fire Zone 50-89
Reactor Feedwater Turbine Area Corridors	Common Zone for Units 2 and 3 Fire Zone 50-78A

Issue 1: Verify sprinkler coverage is provided throughout the fire area.

Each of the sprinkler systems included in this exemption request are located in Fire Area 50. The Turbine Building Fire Area, (Fire Area 50, which includes both Unit 2 and Unit 3) includes the majority of the Turbine Building on each of the elevations. Full area sprinkler coverage is not provided in the Turbine Building Fire Area. However, full area protection is provided in a number of zones (i.e., hazard areas) within the Turbine Building including the ones that are identified in the exemption request as having sprinkler systems. Each of the sprinkler systems listed in the exemption request are discussed below.

Condenser Bay Sprinkler System. As a Boiling Water Reactor (BWR), the condensers are

enclosed in concrete walls that provide a fire break. These barriers are not being credited as rated fire barriers, but the heavy concrete construction will provide an obstacle to fire spread giving time for sprinkler system actuation.

Turbine Hatch Sprinkler System. The center area of the Turbine Building that is common to both Units contains a hatchway that extends from grade elevation, up to the Turbine Generator operating floor. This opening is designed to permit large loads to be lifted to the operating floor after delivery. The sprinkler system around the hatch area is located on the grade level (116' elevation) and the mezzanine level (135' elevation).

On the 116' elevation the sprinkler system covers the common area around the hatch. This coverage starts on the exterior wall in the east, to the concrete walls providing radiological separation on the north and south, to an area also protected by a sprinkler system on the west. On the 135' elevation, the Turbine Hatch area sprinkler system covers the common area. This coverage starts on the exterior wall on the east, to the concrete walls providing radiological separation on the north and south, to the fire rated barriers of the Switchgear and Battery Rooms and the Cable Spreading Room on the west. The operating floor of the Turbine Building in the area of the Turbine Generator is not provided with sprinkler protection. However, sprinkler heads ring the sides of the open hatch providing a directional spray into the opening. (The Turbine Generator bearings and under skirt area is provided with an automatic sprinkler system which addresses the primary oil hazard on this elevation.) The overall configuration of the Turbine Hatch area provides a basic enclosure for the entrapment of heat and smoke which will provide time for sprinkler actuation.

Main Turbine Lube Oil Storage Rooms. Each of these rooms are separated from the remainder of the Turbine Building by concrete walls, and from the exterior by steel walls. This separation provides an adequate enclosure to ensure sprinkler system actuation prior to fire spread.

Reactor Feedpump Turbine Area Corridors. Each Unit has three reactor feedpumps located on the 165' elevation of the Turbine Building. The Reactor Feedpump (RFP) Turbine is located in a room enclosed by partial height walls (but no ceiling), with the actual RFP located in a corridor area next to each RFP Turbine Room. A sprinkler system has been installed at the ceiling of the RFP corridor for each Unit. These sprinkler systems protect the RFP (both turbine and pump) as well as the general corridor area. In the Unit 2 configuration, the area protected by sprinklers is bounded on the north and west sides by fire rated concrete walls. The south and east sides are bounded by heavy concrete walls (which are not fire rated). Both the south and east walls have large doorway openings. However, these openings end well below the ceiling. Therefore, the ceiling area is bounded to provide a basic enclosure that will provide time for sprinkler actuation.

The sprinkler systems in each of the areas described above will be effective in providing "detection" of a fire prior to fire spread beyond the area. In each of the these areas, barriers enclose the sprinkler protected area, at least at the ceiling area, to ensure that heat will reach the sprinkler head (causing it to open and initiate an alarm) prior to the heat spreading to other areas.

Overall, the areas protected with sprinkler systems in the Turbine Building Fire Area are consistent with NFPA 803 (Standard for Fire Protection for Light Water Nuclear Power Plants).

Issue 2: Were the subject sprinkler systems designed and installed in accordance with the applicable NFPA standard?

Each of the sprinkler systems addressed by the exemption request, (except for the RFP corridor sprinkler systems), were designed and installed as part of original Peach Bottom construction. Therefore, each of these systems were designed and installed in the early 1970's. The RFP corridor systems were designed and installed in the late 1980's.

The design density (gallons per minute/floor area of protected area) varied by area. For large areas (over 10,000 ft^2), the design density was 0.2 gpm/ft^2 over the entire protected area. In the smaller areas, the design density ranged from 0.25 to 0.3 gpm/ft^2 for the entire protected area. These design density values are in the range of Ordinary Hazard Group 2 to Extra Hazard Group 1 which are appropriate for the types of areas being protected per the guidance provided in NFPA 13, Standard for the Installation of Sprinkler Systems. (Ordinary Hazard Group 2 and Extra Hazard Group 1 provide for the sprinkler design densities for areas containing combustible materials or liquids with high to very high heat release rates.)

The spacing of the sprinkler heads, based on a review of drawings and field observations of those systems that are accessible during power operations, was determined to be consistent with the guidance of NFPA 13. Deep beam pockets typically contained sprinkler heads, even when this reduced the overall spacing. Solid obstructions over four feet wide typically had sprinkler heads installed beneath the obstruction. Spacing of the sprinkler heads varied, particularly around the Turbine/Generator Pedestal due to the many obstructions, however, typically the spacing was under 100ft^2 per head. This spacing provides adequate overlap of sprinkler spray patterns, which helps mitigate the effects that pipes, cable trays, conduits, etc. may have on the spray pattern. This spacing will enhance the detection capability of the sprinkler system.

Each of the subject sprinkler systems in the Exemption Request are provided with an alarm check valve with a flow switch on the alarm trim that will provide an alarm indication to the control room in the event of water flow. This feature will provide the "detection" alarm capability in the event of a fire. In addition, each of the sprinkler systems has its own isolation valve (OS&Y) that is either locked open, or is provided with a tamper switch, (this switch provides a trouble alarm to the Control Room in the event the valve is moved from the full open position.)

Issue 3: Are the subject sprinkler systems being maintained in accordance with the applicable NFPA standard?

Maintenance needs of these sprinkler systems are determined primarily by the performance of periodic tests on the sprinkler systems to determine if key functions are operating as intended. If a test is performed and the results are unsatisfactory, then the sprinkler system is repaired in a timely fashion. These systems are not tested to an NFPA standard. Testing requirements for the Turbine Hatch sprinkler system are specifically addressed in the Peach Bottom Technical Requirements Manual (TRM). The tests performed on other sprinkler systems to determine if they are functioning are consistent with the TRM. Specifically, the TRM requires a simulated actuation of automatic valve(s) and system alarms every 24 months.

Each of the sprinkler systems has the alarm feature tested by creating water flow to the pressure switch. Some are performed by using an inspector's test connection, remote from

the Alarm Check Valve. Others create the flow by using the alarm test connection, (note that a 2" drain test is also performed when this option is used). Both methods are acceptable means of producing a test of the sprinkler system alarm.

The sprinkler systems in the Condenser Bay for each Unit have the alarm function tested every 24 months. (This frequency is necessary since the valves are located in high radiation areas and are not accessible for testing during power operations.)

The Turbine Hatch sprinkler system alarm function is tested every 18 months.

The Main Turbine Lube Oil Storage Rooms for each Unit have the alarm function tested every six months.

The RFP corridor sprinkler systems for each Unit have the alarm function tested annually.

In addition, the system isolation valves for each of the sprinkler systems listed in the exemption request is verified open once per quarter for the accessible valves and biennially for the valves in high radiation areas.

Conclusion.

While sprinkler systems are not installed throughout the entire Turbine Building fire area, individual sprinkler systems are installed in locations that are consistent with industry guidance. The areas protected by sprinkler systems described by the exemption request are adequately enclosed to ensure "detection" of the fire by the sprinkler system prior to spread of the fire outside of the sprinkler protected area. The sprinkler systems were designed to provide sprinkler coverage and water flow consistent with Ordinary Hazard Group 2 and Extra Hazard Group 1 coverage as described in NFPA 13 which is appropriate for the actual hazards being protected. Testing of the sprinkler systems is consistent with the requirements of the TRM, since the alarm function of each system is periodically tested, and the valve positions are periodically verified open.

RAI Question 3:
For several fire zones that are the subject of this request, credit is taken for smoke and or heat detection that is provided in "adjacent areas". Provide a technical justification for the conclusion that the detection provided in "adjacent areas" would be effective at detecting an incipient fire in the areas/zones that are the subject of this exemption request. Provide information on the spacing of these detectors in comparison to the listing/approval for the devices and the ventilation paths that communicate with these "adjacent areas."

Response to RAI Question 3:
The statement that detection is provided in "adjacent areas" is for information only. The detection in "adjacent areas" is not specifically designed to detect an incipient fire in the areas/zones that are the subject of this exemption request. Therefore, spacing, and listing/approval information is not being provided in this response to assess the capability of the "adjacent area" detection in detecting an incipient fire.

RAI Question 4:
The cost estimate submitted with the request for providing automatic detection estimates a total cost to achieve compliance of $4.9 million. The cost breakdown for each fire area/zone range from approximately $35 to $50 per square foot. Based on Means Repair and Remodeling Cost Data, typical costs for retrofitting automatic detection in industrial facilities range from $1 to $3 per square foot. Explain the method and assumptions used to prepare the cost estimates submitted with the exemption request.

Response to RAI Question 4:
Each of the fire areas/zones submitted in the exemption request were walked down to establish a preliminary design for each of the rooms. The following cost assumptions were then used in determining the cost to install automatic detection:

Description	Rate	Unit
Conduit	$ 0.50	per foot
Conduit Installation	$ 15.00	per foot
Core Bore (12" x 2"dia)	$ 1,000.00	per bore
Scaffolding, 60 ft, 3 Section	$ 25.78	per square foot
Scaffolding, 20 ft, 2 Section	$ 8.93	per square foot
Wire, 600V TFFN or THHN Single Strand	$ 0.05	per foot
Cable Installation	$ 15.00	per foot
Engineering Labor	$ 65.00	per hour
Labor Rate	$ 30.00	per hour
Alarm Panel	$ 5,000.00	per panel

These costs were also compared to the recent automatic detection installations that were performed as part of the Thermolag Resolution Project. Automatic detection was installed in four areas of the plant during this project. The cost for installation of automatic detection ranged from $50 - $70 per square foot for these installations. These installation figures are for the installation of spot type ionization detectors. This type of installation has been determined to be the most desirable installation type, because of its transparency to the rest of the site, and its ability to be tied into the current fire protection system. However, the overall installation costs would not significantly change with different types of detection, because the most significant cost associated with installation of detection in these areas is associated with scaffold erection. Most of the rooms in the exemption request have high ceilings, which greatly increases the cost of scaffold. Therefore, based upon the similarity with recent detection installations, it is believed that the figures submitted in the exemption request are closely representative of the actual costs to install automatic detection in these fire areas/zones.

RAI Question 5:
Peach Bottom Atomic Power Station (PBAPS) has been previously granted approximately 20 exemptions from the technical requirements specified in Appendix R to 10 CFR Part 50. Identify any fire areas or fire zones that are the subject of this request that have previously approved exemptions. For those areas/zones with previously approved exemptions, provide an assessment of the impact, if any, of the lack of automatic detection on the previously approved exemptions.

Response to RAI Question 5:
The following fire zones are not the subject of previously approved exemptions, therefore, there is no impact from the lack of detection on these zones (listed in the order they appear in exemption).

- Fire Zone 50-78W - U3 Condenser Bay
- Fire Zone 50-78V - U3 Condenser Bay
- Fire Zone 50-78A - U2 & U3 Reactor Feedpump Area Corridors
- Fire Zone 50-88 - U2 Turbine Lube Oil Storage Tank Room
- Fire Zone 50-89 - U3 Turbine Lube Oil Storage Tank Room
- Fire Zone 50-78EE - U3 Air Ejector Gland Seal Condenser Room
- Fire Zone 50-99 - U2 Feedwater Heater Room

The following fire zones are the subject of previously approved exemptions (listed in the order they appear in exemption). In each case the exemptions were requested and approved specifically for the fire areas which included the subject fire zones. The appropriate fire areas, not the zones themselves are the subject of the exemptions.

- Fire Zone 50-78B - U2 Feedwater Heater Room

  Exemption from Appendix R, Section III.G.2.a for lack of 3-hour rated barriers (rooms 126 and 186 only), was approved in SER dated October 3, 1991. The exemption is for two duct chases between the hallway on the 135' elevation (formally Fire Zone 2-147, now Fire Area 57) and the Switchgear area on 116' elevation.

  Exemption impact - None.

- Fire Zone 6S-5M - U2 Clean Up Backwash Transfer Pump Room

  Exemption from Appendix R, Section III.G.2 for lack of area suppression, was approved in SER dated March 15, 1985. The exemption discussion identifies only Fire Area 6 as being split into a north and south side for safe shutdown analysis purposes. The exemption specifically identifies the 135' elevation of the Reactor Building only, whereas, Fire Zone 6S-5M is located on the 165' elevation.

  Exemption impact - None.

- Fire Zone 6S-42 - U2 Non-Regenerative Heat Exchanger Room

  Exemption from Appendix R, Section III.G.2 for lack of area suppression, was approved in SER dated March 15, 1985. The exemption discussion identifies only Fire Area 6 as being split into a north and south side for safe shutdown analysis purposes. The exemption specifically identifies the 135' elevation of the Reactor Building only, whereas, Fire Zone 6S-42 is located on the 165' elevation.

  Exemption impact - None.

- Fire Zone 13N-13M - U2 Clean Up Backwash Transfer Pump Room

  Exemption from Appendix R, Section III.G.2 for lack of area suppression, was approved in SER dated March 15, 1985. The exemption discussion identifies only Fire Area 13 as being split into a north and south side for safe shutdown analysis purposes. The exemption specifically identifies the 135' elevation of the Reactor Building only, whereas, Fire Zone 13N-13M is located on the 165' elevation.

  Exemption impact - None.

- Fire Zone 13N-36 - U3 Non-Regenerative Heat Exchanger Room

  Exemption from Appendix R, Section III.G.2 for lack of area suppression, was approved in SER dated March 15, 1985. The exemption discussion identifies only Fire Area 13 as being split into a north and south side for safe shutdown analysis purposes. The exemption specifically identifies the 135' elevation of the Reactor Building only, whereas, Fire Zone 13N-36 is located on the 165' elevation.

  Exemption impact - None.

RAI Question 6:
The exemption request references the PBAPS Individual Plant Examination for External Events (IPEEE), however the Fire Area and Fire Zone designations in the IPEEE are different than the Fire Area and Fire Zone designations used in the subject request. Provide a cross-reference document for the Fire Areas and Fire Zones in the IPEEE to those that are the subject of this exemption request to enable the staff to assess the risk significance of the request.

Response to RAI Question 6:
The following Table identifies the following information (listed in the order they appear in exemption):

- The subject exemption Fire Area-Zones (under the current fire hazards analysis), and
- The respective IPEEE "fire compartment" designations (as originally submitted in the IPEEE report), and
- The FSSD analysis area designations, and
- The original "fire area-zone" designations in the March 1977 PBAPS fire hazards analysis

Exemption Fire Area-Zone (current FHA)	IPEEE Fire Compartment	FSSD Analysis Area	1977 FHA Fire Area-Zone
50-78W	50R-9b	50	78-W
50-78V	50R-9b	50	78-V
50-78B	50R-9b	50	78-B
50-88	50R-5	50	88
50-89	50R-6	50	89
50-78A	50R-1/2 and 50R-2/4	50	78-A
50-78EE	50G	50	78-EE
50-99	50K	50	99
6S-5M	6S	6S	5-M
6S-42	6S	6S	42
13N-13M	13N	13N	13-M
13N-36	13N	13N	36

RAI Question 7:
For the safe shutdown (SSD) cables in each of the fire zones that are the subject of this request, provide a description of the system(s) associated with the SSD cable(s).

Response to RAI Question 7:
See following chart for information. Also see acronym listing in back of chart.

Fire Zone	Fire Area	Room	FSSD Systems Affected	FSSD Comments
50-78W	50	22	U2 CST Level Indication.	Redundant cables/equipment are not located in this Fire Area.
50-78W	50	138	No FSSD cables or equipment in room.	

Fire Zone	Fire Area	Room	FSSD Systems Affected	FSSD Comments
50-78W	50	223	U2 CST Level Indication. U2 Drywell Pressure Indication. Control cables for #343-SU Offsite power to 4kv Switchgear. U2 RWCU Hi/Low interface.	Redundant cables/equipment are not located in this Fire Area.
50-78V	50	181	1. Control cables for SU-25 Offsite power to 4kv Switchgear. 2. Control cables for #343-SU Offsite power to 4kv Switchgear. 3. U3 CST Level Indication.	1. Circuit design prevents cable failures from affecting power supply to 4kv Switchgear. 2. Redundant equipment is not affected (SU-25). 3. Redundant cables/equipment are not located in this Fire Area.
50-78V	50	272	U3 CST Level Indication. U3 RWCU Hi/Low interface. U3 HPSW Indication. U3 HPCI. U3 RCIC.	U3 HPCI is not relied on for a fire in Fire Area 50. For the remaining systems, redundant cables/equipment are not located in this Fire Area.
50-78B	50	135	1. Control cables for SU-25 Offsite power to 4kv Switchgear. 2. Control cables for #343-SU Offsite power to 4kv Switchgear. 3. Control cables for Sluice Gates for A ESW Pump, U2 HPSW. 4. Control cables for U2 HPSW valve. 5. U2 HPSW Indication.	1. Circuit design prevents cable failures from affecting power supply to 4kv Switchgear. 2. Redundant equipment is not affected (SU-25). 3. ESW not relied upon for a fire in Fire Area 50. Redundant HPSW equipment is not affected by a fire in this Fire Area. 4. Redundant HPSW valves are not located in this Fire Area. 5. Redundant HPSW indication is not located in this Fire Area.
50-78B	50	184	Cables for U3 HPSW Pumps, U3 HPSW valves, U3 HPSW indication.	Redundant cables/equipment are not located in this Fire Area.

Fire Zone	Fire Area	Room	FSSD Systems Affected	FSSD Comments
50-78B	50	185	1. Control cables for SU-25 Offsite power to 4kv Switchgear. 2. Control cables for #343-SU Offsite power to 4kv Switchgear. 3. Power and Control cables for Sluice Gates (for A & B ESW Pumps and U2 & U3 HPSW Pumps.) 4. Control cables for U2 HPSW valve. 5. U2 & U3 HPSW Indication. 6. ESW Indication. 7. Power cables for A & B ESW Pumps 8. Power cables for 2A, 2B 2C, 2D, 3A, 3C HPSW pumps.	1. Circuit design prevents cable failures from affecting power supply to 4kv Switchgear. 2. Redundant equipment is not affected (SU-25). 3. ESW not relied upon for a fire in Fire Area 50. Redundant HPSW equipment is not affected by a fire in this Fire Area. 4. Redundant HPSW valves are not affected by a fire in this Fire Area. 5. Redundant HPSW indication is not located in this Fire Area. 6. ESW is not relied upon for a fire in Fire Area 50. 7. ESW is not relied upon for a fire in Fire Area 50. 8. Power cables for 2B & 3C HPSW pumps are encapsulated.
50-78B	50	228	1. Control cables for SU-25 Offsite power to 4kv Switchgear. 2. Control cables for #343-SU Offsite power to 4kv Switchgear. 3. Control cables for Sluice Gates for A ESW Pump, U2 HPSW. 4. Control cables for U2 & U3 HPSW valves. 5. U2 & U3 HPSW Indication. 6. U2 & U3 Reactor Coolant pressure & level indication. 7. U2 & U3 Torus Temperature indication.	1. Circuit design prevents cable failures from affecting power supply to 4kv Switchgear. 2. Redundant equipment is not affected (SU-25). 3. ESW not relied upon for a fire in Fire Area 50. Redundant HPSW equipment is not affected by a fire in this Fire Area. 4. Redundant HPSW valves are not affected by a fire in this Fire Area. 5. Redundant HPSW indication is not located in this Fire Area. 6. Redundant cables/equipment are not located in this Fire Area. 7. Redundant cables/equipment are not located in this Fire Area.

Fire Zone	Fire Area	Room	FSSD Systems Affected	FSSD Comments
50-78B	50	229	No FSSD cables or equipment in room.	
50-78B	50	274	No FSSD cables or equipment in room.	
50-78B	50	429	U2 Reactor Coolant Pressure & Level Indication. #343-SU Offsite power to 4kv Switchgear.	Redundant cables/equipment are not located in this Fire Area.
50-88	50	139	No FSSD Equip or cables in room.	
50-89	50	179	1. Control cables for SU-25 Offsite 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 is not affected (SU-25).
50-78A	50	414	U2 Reactor Coolant Pressure & Level Indication. U2 RWCU Hi/Low interface.	Redundant cables/equipment are not located in this Fire Area.
50-78A	50	457	U3 RWCU Hi/Low Pressure interface. U3 HPCI. U3 RCIC.	Redundant cables/equipment are not located in this Fire Area.
50-99	50	222	#343-SU Offsite power to 4kv Switchgear.	Redundant cables/equipment are not located in this Fire Area.
50-78EE	50	177	U3 CST Level Indication.	Redundant cables/equipment are not located in this Fire Area.
6S-5M	6S	410	U2 RWCU Hi/Low Pressure interface.	Redundant cables/equipment are not located in this Fire Area.
13N-13M	13N	452	U3 RWCU Hi/Low Pressure interface.	Redundant cables/equipment are not located in this Fire Area.
6S-42	6S	408	U2 RWCU Hi/Low Pressure interface.	Redundant cables/equipment are not located in this Fire Area.
13N-36	13N	449	U3 RWCU Hi/Low Pressure interface.	Redundant cables/equipment are not located in this Fire Area.

TABLE 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