January 28, 2011

MEMORANDUM TO: Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Alexander R. Klein, Chief ***/RA by Dan Frumkin for***
Fire Protection Branch
Division of Risk Assessment
Office of Nuclear Reactor Regulation

SUBJECT: FIRE PROTECTION INPUT FOR REQUEST FOR EXEMPTION FROM TITLE 10 OF THE *CODE OF FEDERAL REGULATIONS* PART 50, APPENDIX R, SECTION III.G, "FIRE PROTECTION OF SAFE SHUTDOWN CAPABILITY" (PHASE 1) (TAC NO. ME0756)

By letter dated March 3, 2009, "Request for Exemption from Title 10 of the *Code of Federal Regulations* Part 50 (10 CFR 50), Appendix R, Section III.G, 'Fire Protection of Safe Shutdown Capability' (Phase 1)" available at Agencywide Documents Access and Management System (ADAMS), Accession No. ML090630132, and supplemented by letter dated April 2, 2010, "Response to Request for Additional Request for Exemption from Section III.G, 'Fire Protection of Safe Shutdown Capability'" (ML100920370), Exelon Generation Company, LLC (Exelon) requested an exemption for Oyster Creek Nuclear Generating Station (OCGNS), from certain technical requirements of Title 10 of the *Code of Federal Regulations* Part 50, Appendix R, Section III.G (III.G) for the use of operator manual actions (OMAs) in lieu of meeting the circuit separation and protection requirements contained in Section III.G.2 for the following 21 plant Fire Areas CW-FA-14, OB-FA-9, OB-FZ-6A , OB-FZ-6B, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, OB-FZ-10A, RB-FZ-1D, RB-FZ-1E, RB-FZ-1F3, RB-FZ-1F5, RB-FZ-1G, TB-FA-3A, TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FZ-11F, and TB-FZ-11H.

The Fire Protection Branch (AFPB) has reviewed the exemption request and Exelon's April 2, 2010, response to the staff's request for additional information. Enclosed is our draft exemption.

Docket No: 50-219
Operating License: DPR-16

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Based on our review, the AFPB staff has concluded that the OMAs listed in this exemption for a postulated fire in Fire Areas CW-FA-14, OB-FA-9, OB-FZ-6A , OB-FZ-6B, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, OB-FZ-10A, RB-FZ-1D, RB-FZ-1E, RB-FZ-1F3, RB-FZ-1F5, RB-FZ-1G, TB-FA-3A, TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FZ-11F, and TB-FZ-11H meet the requirements of 10 CFR 50.12(a)(1), in that it is authorized by law, will not present an undue risk to the public health and safety, and it is consistent with common defense and security and meets the requirements of 10 CFR 50.12(a)(2)(ii) in that the application of the regulation, specifically meeting the deterministic requirements of III.G.2, is not necessary to achieve the underlying purpose of the rule.

This completes our action on TAC No. ME0756. If you have any questions regarding this input, please contact us.

Enclosure:
As stated

Based on our review, the AFPB staff has concluded that the OMAs listed in this exemption for a postulated fire in Fire Areas CW-FA-14, OB-FA-9, OB-FZ-6A , OB-FZ-6B, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, OB-FZ-10A, RB-FZ-1D, RB-FZ-1E, RB-FZ-1F3, RB-FZ-1F5, RB-FZ-1G, TB-FA-3A, TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FZ-11F, and TB-FZ-11H meet the requirements of 10 CFR 50.12(a)(1), in that it is authorized by law, will not present an undue risk to the public health and safety, and it is consistent with common defense and security and meets the requirements of 10 CFR 50.12(a)(2)(ii) in that the application of the regulation, specifically meeting the deterministic requirements of III.G.2, is not necessary to achieve the underlying purpose of the rule.

This completes our action on TAC No. ME0756. If you have any questions regarding this input, please contact us.

Enclosure:
As stated

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

EXELON GENERATING COMPANY, LLC

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

EXEMPTION

1.0 BACKGROUND

The Exelon Generation Company, LLC (the licensee, Exelon) is the holder of Renewed Facility Operating License Nos. DPR-16, which authorizes the operation of the Oyster Creek Nuclear Generating Station (OCNGS). The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect.

The facility consists of a single unit Mark 1, General Electric (GE) 2, boiling water reactor (BWR) located in Ocean County, New Jersey.

2.0 REQUEST/ACTION

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 48 (50.48), requires that nuclear power plants that were licensed before January 1, 1979, satisfy the requirements of 10 CFR Part 50, Appendix R, “Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979,” Section III.G, “Fire protection of safe shutdown capability.” OCNGS was licensed to operate prior to January 1, 1979. As such, the licensee’s Fire Protection Program (FPP) must provide the established level of protection as intended by Section III.G of 10 CFR Part 50, Appendix R.

ENCLOSURE

By letter dated March 3, 2009, "Request for Exemption from 10 CFR 50, Appendix R, Section III.G, 'Fire Protection of Safe Shutdown Capability (Phase 1)'" available at Agencywide Documents Access and Management System (ADAMS), Accession No. ML090630132, and supplemented by letter dated April 2, 2010, "Response to Request for Additional Information Request for Exemption from 10 CFR 50, Appendix R, Section III.G, 'Fire Protection of Safe Shutdown Capability'" (ML100920370), the licensee requested an exemption for OCNGS from certain technical requirements of 10 CFR Part 50, Appendix R, Section III.G.2 (III.G.2) for the use of operator manual actions (OMAs) in lieu of meeting the circuit separation and protection requirements contained in III.G.2 for the following 21 plant Fire Areas CW-FA-14, OB-FA-9, OB-FZ-6A , OB-FZ-6B, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, OB-FZ-10A, RB-FZ-1D, RB-FZ-1E, RB-FZ-1F3, RB-FZ-1F5, RB-FZ-1G, TB-FA-3A, TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FZ-11F, and TB-FZ-11H. In their April 2, 2010, submittal, the licensee withdrew a number of OMAs and fire areas that were included in their original March 3, 2009, request. The 21 plant areas noted above are the remaining plant areas that credit OMAs that are the subject of this exemption.

3.0 DISCUSSION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when: (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. The licensee has stated that special circumstances are present in that the application of the regulation in this particular circumstance is not necessary to achieve

the underlying purpose of the rule, which is consistent with the language included in 10 CFR 50.12(a)(2)(ii).

In their March 3, 2009, and April 2, 2010, letters, the licensee discussed financial implications associated with plant modifications that may be necessary to comply with the regulation. 10 CFR 50.12(a)2(iii) states that if such costs have been shown to be significantly in excess of those contemplated at the time the regulation was adopted, or are significantly in excess of those incurred by others similarly situated, this may be considered a basis for considering an exemption request. However, financial implications were not considered in the regulatory review of their request since no substantiation was provided regarding such financial implications. Even though no financial substantiation was provided, the licensee did submit sufficient regulatory basis to support a technical review of their exemption request in that the application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule.

In accordance with 10 CFR 50.48(b), nuclear power plants licensed before January 1, 1979, are required to meet Section III.G, of 10 CFR Part 50, Appendix R. The underlying purpose of Section III.G of 10 CFR Part 50, Appendix R, is to ensure that the ability to achieve and maintain safe shutdown is preserved following a fire event. The regulation intends for licensees to accomplish this by extending the concept of defense-in-depth (DID) to:

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

The stated purpose of 10 CFR Part 50, Appendix R, Section III.G.2 (III.G.2) is to ensure that one of the redundant trains necessary to achieve and maintain hot shutdown conditions

remains free of fire damage in the event of a fire. III.G.2 requires one of the following means to ensure that a redundant train of safe shutdown cables and equipment is free of fire damage, where redundant trains are located in the same fire area outside of primary containment:

a. Separation of cables and equipment by a fire barrier having a 3-hour rating;

b. Separation of cables and equipment by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards and with fire detectors and an automatic fire suppression system installed in the fire area; or

c. Enclosure of cables and equipment of one redundant train in a fire barrier having a 1-hour rating and with fire detectors and an automatic fire suppression system installed in the fire area.

Exelon has requested an exemption from the requirements of III.G.2 for OCNGS to the extent that redundant trains of systems necessary to achieve and maintain hot shutdown are not maintained free of fire damage in accordance with one of the required means prescribed in III.G.2.

Each OMA included in this review consists of a sequence of tasks that occur in various fire areas. The OMAs are initiated upon confirmation of a fire in a particular fire area. Listed in the order of the fire area of fire origin, the OMAs included in this review are as follows:

TABLE 1

	Area of Fire Origin	Area Name	Actions	OMA #
1	CW-FA-14	Circulatory Water Intake	Manually open valve (V) V-9-2099 and V-11-49 and close V-11-63 and V-11-41.	7
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
2	OB-FA-9	Office Building (Bldg.) Elev. 23'-6", 35'-0", 46'-6"	Locally read Condensate Storage Tank level at level indicator (LI) LI-424-993 due to damage to control circuits.	2
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12

TABLE 1				
	Area of Fire Origin	**Area Name**	**Actions**	**OMA #**
3	OB-FZ-6A	Office Bldg. “A” 480V Switchgear (SWGR) Room Elev. 23’-6”	Locally read condensate storage tank (CST) level at LI-424-993 due to damage to control circuits.	2
			Use Remote Shutdown Panel (RSP) to control equipment: RSP, Control Rod Drive (CRD) Hydraulic Pump NC08B and 480V USS 1B2 Incoming breaker (Operate USS 1B2/CRD Transfer Switch (Partial initiation) to "Alternate" and operate Control Switches for USS-1B2 Main Breaker and B CRD Pump).	9
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
4	OB-FZ-6B	Office Bldg. ”B” 480V SWGR Room Elev. 23’-6”	Manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41.	7
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI) FI-225-2 and close V-15-52.	12
5	OB-FZ-8A	Office Bldg. Reactor Recirculation Motor Generator (MG) Set Room Elev. 23’-6”	Manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41.	7
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
6	OB-FZ-8B	Office Bldg. Mechanical Equipment Room Elev. 35’-0”	Manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41.	7
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
7	OB-FZ-8C	Office Bldg. A/B Battery Room, Tunnel and Electrical Tray Room Elev. 35’-0”	Locally read Condensate Storage Tank level at LI-424-993 due to damage to control circuits.	2
			Manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41.	7
			Use Local Shutdown Panels to control equipment as follows: LSP-1A2, CRD Hydraulic PP NC08A and 480V USS 1A2 Incoming breaker (Operate transfer switch "Alternate" and operate Control Switch for USS-1A2 Main Breaker 1A2M and A CRD Pump).	8
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12

TABLE 1				
	Area of Fire Origin	**Area Name**	**Actions**	**OMA #**
			Trip all five Reactor Recirculation Pumps (NG01-A, NG01-B, NG01-C, NG01D and NG01E). Also, lockout the 4160V breakers using the 69 Switch.	16
8	OB-FZ-10A	Office Bldg. Monitor and Change Room Area and Operations Support Area Elev. 35'-0" & 46'-6"	Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
9	RB-FZ-1D	Reactor Bldg. Elev. 51'-3"	Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
10	RB-FZ-1E	Reactor Building Elev. 23'-6"	Read CRD local flow gauge FI-225-998.	11
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
11	RB-FZ-1F3	Reactor Bldg. Northwest Corner Elev.-19'-6"	Open Core Spray System II manual valves V-20-1 and V-20-2 and close V-20-4.	13
12	RB-FZ-1F5	Reactor Bldg. Torus Room Elev. -19'-6"	Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
13	RB-FZ-1G	Reactor Bldg. Shutdown Cooling Room Elev. 38'-0" & 51'-3"	Read CRD local flow gauge FI-225-998.	11
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52	12
14	TB-FA-3A	Turbine Bldg. 4160V Emergency SWGR Vault 1C Elev. 23'-6"	Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
15	TB-FA-26	Turbine Bldg. 125V DC Battery Room C Elev. 23'-6"	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D.	1
			Manually control 1B3M Breaker from LSP-1B3.	3
			Manually re-close motor control center (MCC) 1B32 Feeder Breaker at USS 1B3	6
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12

TABLE 1				
	Area of Fire Origin	**Area Name**	**Actions**	**OMA #**
16	TB-FZ-11B	Turbine Bldg. Lube Oil Storage, Purification and Pumping Area Elev. 0'-0", 27'-0", and 36'-0"	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D	1
			Locally read Condensate Storage Tank level at LI-424-993	2
			Manually control 1B3M Breaker from LSP-1B3.	3
			Local Shutdown Panels used to control equipment as follows: LSP-1B32 Condensate Transfer Pump 1-2 (Operate transfer switch to "Alternate" and operate Control Switch for Condensate Transfer Pump 1-2).	4
			Manually re-close MCC 1B32 Feeder Breaker at USS 1B3	6
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
			Trip all five Reactor Recirculation Pumps (NG01-A, NG01-B, NG01-C, NG01D and NG01E). Also, lockout the 4160V breakers using the 69 Switch.	16
17	TB-FZ-11C	Turbine Bldg. SWGR Room 1A and 1B Elev. 23'-6"	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D.	1
			Manually control 1B3M Breaker from LSP-1B3.	3
			Manually re-close MCC 1B32 Feeder Breaker at USS 1B3.	6
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
18	TB-FZ-11D	Turbine Bldg. Basement Floor South End Elev. 3'-6"	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480VBreakers locally at LSP-1D.	1
			Manually control 1B3M Breaker from LSP-1B3.	3
			Local Shutdown Panels are used to control equipment as follows: LSP-DG2, EDG2 and its Switchgear (Operate transfer Switches (3 total) to "Alternate" and operate Control Switch on Diesel Panel to start diesel).	5
			Manually re-close MCC 1B32 Feeder Breaker at USS 1B3	6
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
19	TB-FZ-11E	Turbine Bldg. Condenser Bay Area Elev. 0'-0"	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D.	1
			Locally read Condensate Storage Tank level at LI-424-993	2

TABLE 1				
	Area of Fire Origin	**Area Name**	**Actions**	**OMA #**
			Manually control 1B3M Breaker from LSP-1B3.	3
			Local Shutdown Panels used to control equipment as follows: LSP-1B32 Condensate Transfer Pump 1-2 (Operate transfer switch to "Alternate" and operate Control Switch for Condensate Transfer Pump 1-2).	4
			Local Shutdown Panels are used to control equipment as follows: LSP-DG2, EDG2 and its Switchgear (Operate transfer Switches (3 total) to "Alternate" and operate Control Switch on Diesel Panel to start diesel).	5
			Manually re-close MCC 1B32 Feeder Breaker at USS 1B3	6
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
			Trip all five Reactor Recirculation Pumps (NG01-A, NG01-B, NG01-C, NG01D and NG01E) Also, lockout the 4160V breakers using the 69 Switch.	16
20	TB-FZ-11F	Turbine Bldg. Feedwater Pump Room Elev. 0'-0" & 3'-6"	Manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41.	7
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12
21	TB-FZ-11H	Turbine Bldg. Demineralizer Tank and Steam Jet Air Ejector Area Elev. 3'-6" & 23'-6"	Manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41.	7
			Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52.	12

In their submittals the licensee described elements of their fire protection program that provide their justification that the concept of defense-in-depth that is in place in the above fire areas is consistent with that intended by the regulation. To accomplish this, the licensee utilizes various protective measures to accomplish the concept of defense-in-depth. Specifically, the licensee stated that the purpose of their request was to credit the use of OMAs, in conjunction

with other defense-in-depth features, in lieu of the separation and protective measures required by III.G.2 for a fire in the fire areas stated above.

In their April 2, 2010, letter the licensee provided an analysis that described how fire prevention is addressed for each of the fire areas for which the OMAs may be required. The licensee developed a Fire Hazards Analysis (FHA) for each fire area or zone identified in its exemption request. For each fire area or zone, the FHA describes the physical location and arrangement of equipment, combustible loading, ignition sources, fire protection features, and proximity of redundant safe shutdown equipment to in situ hazards and identifies deviations from fire protection codes and previously approved exemptions. In addition, for each fire area or zone the licensee's response includes a tabulation of potential ignition sources as well as the equipment that may exhibit high energy arcing faults. For each fire area or zone, the FHA states that the fire protection configuration achieves a level of protection commensurate with that intended by III.G.2.

The 21 areas or zones identified in the request have limited or low combustible fuel loading with fuel sources consisting primarily of fire retardant cable insulation and limited floor based combustibles except areas OB-FZ-6A, OB-FZ-6B, and TB-FZ-11B, which contain quantities of transformer liquid or lubricating oil. Combustible fuel loading in most areas is classified as low by the licensee while Fire Areas OB-FZ-6A and OB-FZ-6B have been classified as having a low to moderate combustible fuel loading and TB-FZ-11B has been classified as having a high combustible fuel loading. In addition, the licensee has stated that they maintain a robust administrative program (e.g., hot work permits, fire watches for hot work, and supervisory controls) to limit and control transient combustible materials and ignition sources in the areas. The fire areas included in the exemption are not shop areas so hot work

activities are infrequent and the administrative control programs are in place if hot work activities do occur.

The licensee also stated that 98% of the OCNGS cables are jacketed with Vulkene, which passes the horizontal flame test of the Underwriter's Laboratory (UL), therefore reducing the likelihood of the cables themselves contributing to a fire hazard. Furthermore, the areas or zones are of noncombustible construction with typical utilities installed, lighting, ventilation, etc. and three-hour fire resistance-rated barriers normally used to provide fire resistive separation between adjacent fire areas. In some cases, barriers with a fire resistance rating of less than three hours are credited but exemptions have been approved or the licensee has stated they have performed engineering evaluations in accordance with Generic Letter 86-10 to demonstrate that the barriers are sufficient for the hazard. Walls separating rooms and zones within fire areas are typically constructed of heavy concrete. This compartmentalization of the areas reduces the likelihood for fire events in a particular area to spread to or impact other adjacent areas.

Many fire areas included in this exemption have automatic detection systems installed, although the licensee indicated that not all systems are installed in accordance with a recognized standard with regard to spacing in all areas. In such cases, the licensee has stated that the detectors are located near equipment such that they are likely to detect a fire. Upon detecting smoke, the detectors initiate an alarm in the constantly staffed control room. In addition to the automatic suppression systems noted below, equipment operators are trained fire brigade members and may identify and manually suppress or extinguish a fire using the portable fire extinguishers and manual hose stations located throughout the fire areas if a fire is identified in its early stages of growth.

The licensee stated that the postulated fire events that may require the use of the OMAs would include multiple failures of various components or equipment. In most cases, it is considered unlikely that the sequence of events required to necessitate the OMAs would fully evolve because of the fire prevention, fire protection, and physical separation features in place. However, in the event that the sequence does evolve, the OMAs are available to provide assurance that safe shutdown can be achieved. For each of the fire areas included in this exemption, the postulated fire scenarios and pertinent details are summarized in the table below.

Each of the fire areas or zones included in this exemption is analyzed below with regard to how the concept of defense-in-depth is achieved for each area or zone and the role of the OMAs in the overall level of safety provided for each area or zone.

3.1	**CW-FA-14 Circulatory Water Intake**
3.1.1	**Fire Prevention**
The licensee stated that combustible loading is not tracked in this area since it is an outside area. The licensee also stated that the primary combustible materials in the area are transformer liquid and electrical motors; although the amount is not quantified since the area is open to the atmosphere with no walls or ceiling to contain the heat or smoke that may be produced during a fire event. Additionally, the main combustible in this area that could result in the need for the OMAs is Dow Corning 561 Silicon transformer liquid, which the licensee states has characteristics that minimize the likelihood of a fire involving the insulating liquid itself.	
3.1.2	**Detection, Control, and Extinguishment**
CW-FA-14 is not equipped with automatic fire detection or suppression systems but since it is an outdoor area with no walls or ceiling, it is not expected that such systems would enhance this element of defense-in-depth in this area since the area is open to the atmosphere with no walls or ceiling to contain the heat or smoke that may be produced during a fire event. However, the licensee stated that a security tower monitors this area continuously; therefore, any fire of significance would be detected and responded to appropriately by the station fire brigade. Manual suppression is also provided by a fire hydrant and fire hose house located approximately 75 feet from the principal fire hazards.	
3.1.3	**Preservation of Safe Shutdown Capability**
Since Fire Area CW-FA-14 is an outdoor space with no walls or ceiling, smoke and heat would not accumulate within the fire area to cause damage to components remote to the initiating fire or obstruct operator actions.	
3.1.4	**OMAs Credited for a Fire In This Area**

3.1.4.1	*OMA #7 - Align the Fire Water System to the Isolation Condenser*

In order for OMA #7 to be necessary, the loss of the "B" Train of power would have to occur due to fire damage. USS 1B3 is located in the outside area on the west side of the power block on a raised concrete foundation that sits approximately 5 feet above grade. USS 1B3 is considered as a potential ignition source as well as its associated adjacent transformer, USS 1A3, which is located approximately 15 feet west of USS 1B3. Both of these unit substations are located approximately 20 feet from any plant operating equipment (e.g., circulating water pump motor, etc.). Additionally, the need to perform this OMA would likely be apparent in the control room based on the loads that are lost (e.g., control room ventilation, service water pump, etc.) and a fire at USS 1B3 would be visible from the security tower monitoring the area.

In the unlikely event that a fire does occur and causes the loss of USS 1B3 or its associated cables, OMA #7 is available to manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41 to align the fire water system for make-up water to Isolation Condenser "B" since there is no power ("B" Train) available to the Condensate Transfer System. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 45 minutes, which provides a 22-minute margin.

3.1.4.2	*OMA #12 – Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that they conservatively assume that instrument air is lost for all Appendix R fires based on the fact that instrument air lines run throughout many areas of the plant. The licensee's analysis assumes that the air line solder connections could potentially fail in approximately 45 minutes when exposed to the postulated fire.

The licensee also stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

The licensee stated that OMA #12 essentially duplicates the Emergency Operating Procedure (EOP) actions for reactor pressure vessel (RPV) level control. Therefore, if a fire did occur and was not immediately discovered, any delay in the entry into the appropriate Fire Support Procedure (FSP) or delay in suppression of the fire would not significantly affect the performance of this OMA, since the EOPs would direct the same action to be performed if required.

3.1.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources, and open nature of the area, it is unlikely that a fire would occur and go undetected or unsuppressed by the personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #7 and #12 are available to provide additional assurance that safe shutdown capability is

maintained.

3.2	**OB-FA-9 Office Bldg. Elev. 23'-6", 35'-0", 46'-6"**
3.2.1	**Fire Prevention**
The licensee has classified the fire loading in this fire zone as low. The licensee also stated that OB-FA-9 has an administrative fire loading limit of less than 1.5 hours as determined by the ASTM E119 time-temperature curve and that the major combustibles in the multiplexer (MUX) Corridor are cable insulation and a wood ceiling on top of the MUX enclosure.	
3.2.2	**Detection, Control, and Extinguishment**
The licensee stated that OB-FA-9 has a partial area coverage wet pipe sprinkler system installed. The licensee further stated that the area is not provided with a detection system but that there is an installed detection system in the main hallways and inside of the MUX room enclosure and that it is a high traffic area so a fire would likely be detected by personnel. The wet pipe sprinkler system, when actuated, will alarm in the control room to notify operators of a potential fire event. Extinguishment of a fire in the majority of this area will be accomplished by the plant fire brigade.	
3.2.3	**Preservation of Safe Shutdown Capability**
The licensee stated that OB-FA-9 has a ceiling height of approximately 10'-6" and an approximate floor area of 513 square feet in the MUX corridor where the safe shutdown equipment is located so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.	
3.2.4	**OMAs Credited for a Fire In This Area**
3.2.4.1	*OMA #2* - Read Condensate Storage Tank Local Level Indicator LI-424-993
In order for OMA #2 to be necessary, the primary CST level indicator (5F-27) would have to fail as a result of the fire. Should this occur, indication can only be obtained by reading the local indicator (LI-242-993) located at the CST. The licensee stated that the safe shutdown success path SSC cable for the level indicator is routed in a cable tray located approximately 12 feet above the floor in this area (MUX corridor). The cable enters the room in the northwest corner and is routed in a cable tray for approximately 15 feet. It then air drops vertically down into a cabinet inside a small enclosed room known as the MUX Enclosure. The credited cable is routed in a cable tray with other cables and is routed through the wooden ceiling, which also has some rubber piping insulation on top of the ceiling, thus putting the cable it in close proximity to in situ combustibles. However, there are no ignition sources in this area. Therefore, due to the lack of ignition sources, it is not expected that a fire would occur in this area and it is unlikely that the OMA would be required. In the unlikely event that a fire does occur and causes the loss of the primary CST level indicator, OMA #2 is available to locally read Condensate Storage Tank (CST) level at the local level indicator, LI-424-993. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 7 minutes while the time available is 73 minutes, which provides a 36-minute margin.	
3.2.4.2	*OMA #12 – Establish CRD Flow to Reactor*
In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.	

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.2.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources, and volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the sprinkler system noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #2 and #12 are available to provide additional assurance that safe shutdown capability is maintained.

3.3	**OB-FZ-6A Office Bldg. "A" 480V Switchgear (SWGR) Room Elev. 23'-6"**
3.3.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as moderate. The licensee also stated that this area has an administrative fire loading limit of less than three-hours as determined by the ASTM E119 time-temperature curve. The main combustibles in this area are cable insulation (approximately 80% of loading) and Dow Corning 561 Silicon transformer liquid (approximately 15% of loading). The transformer liquid has characteristics that minimize the likelihood of a fire involving the insulating liquid itself.

3.3.2	**Detection, Control, and Extinguishment**

The licensee stated that OB-FZ-6A has an automatic smoke detection system, a total flooding automatic Halon 1301 System, and manual fire fighting capabilities (portable extinguishers and hose stations).

3.3.3	**Preservation of Safe Shutdown Capability**

The licensee stated that OB-FA-6A has a ceiling height of approximately 10'-8" and an approximate floor area of 1,157 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.3.4	**OMAs Credited for a Fire In This Area**
3.3.4.1	*OMA #2* - Read Condensate Storage Tank Local Level Indicator LI-424-993

In order for OMA #2 to be necessary, the primary CST level indicator (5F-27) would have to fail as a result of the fire. Should this occur, indication can only be obtained by reading the local indicator (LI-242-993) located at the CST. The licensee stated that the safe shutdown success path SSC cable for the level indicator is routed in a conduit that leaves a 120 VAC distribution panel and travels approximately 5 feet vertically to a cable tray that is approximately 9 feet above the floor. The cable is routed with other cables in the cable tray for approximately 15 feet at which point the cable tray travels up through the ceiling. The liquid filled transformer is located approximately 10 feet north of the cable. However, there is a partial non-rated concrete block wall between the transformer and cable tray that would provide some protection of direct flame impingement or radiant heat transfer on the cable tray. The ignition sources in this fire zone consist of enclosed metal electrical cabinets (120 VAC and 125 VDC circuits) and the liquid filled transformer (4160 VAC to 480 VAC).

In the unlikely event that a fire does occur and damages the primary CST level indicator, OMA #2 is available to locally read CST level at local indicator LI-424-993. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 7 minutes while the time available is 73 minutes, which provides a 36-minute margin.

3.3.4.2 *OMA #9 - Manually Control 480V Breakers from Remote Shutdown Panel*

In order for OMA #9 to be necessary, damage to the credited and redundant cables would have to occur due to a fire. The licensee stated that the credited and redundant cables are located in the same cable tray with additional cables and that the tray is located approximately 7 feet above the floor. Other than the cables themselves, the primary combustible in this area is a liquid filled transformer, which is located approximately 7 feet from the cable tray. The licensee also stated that the ignition sources in this fire zone consist of electrical cabinets (120 VAC and 125 VDC circuits) and the liquid filled transformer (4160 VAC to 480 VAC). The electrical cabinets are enclosed metal cabinets, which are located approximately 2 feet from the credited and redundant cables in some locations.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #9 is available to manually control the 480V USS 1B2 breakers for CRD Pump NC08B and 1B2M from the Remote Shutdown Panel. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 180 minutes, which provides a 137-minute margin.

3.3.4.3 *OMA #12 – Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.3.5 Conclusion

Given the limited amount of combustible materials, ignition sources, and the volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or Halon system noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #2, #9, and #12 are available to provide additional assurance that safe shutdown capability is maintained.

3.4 OB-FZ-6B Office Building "B" 480V SWGR Room Elev. 23'-6"

3.4.1 Fire Prevention

The licensee has classified the fire loading in this fire zone as moderate. The licensee also stated that this area has an administrative fire loading limit of less than 2 hours as determined by the ASTM E119 time-temperature curve. The main combustibles in this area are

cable insulation (approximately 30% of loading), Thermo-Lag (approximately 30% of loading) and Dow Corning 561 Silicon transformer liquid (approximately 30% of loading). The transformer liquid has characteristics that minimize the likelihood of a fire involving the insulating liquid itself.

3.4.2 Detection, Control, and Extinguishment

The licensee stated that OB-FZ-6B has an automatic smoke detection system, a total flooding Halon 1301 System, and manual fire fighting capabilities (portable extinguishers and hose stations).

3.4.3 Preservation of Safe Shutdown Capability

The licensee stated that OB-FA-6B has a ceiling height of approximately 10'-8" and an approximate floor area of 679 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.4.4 OMAs Credited for a Fire In This Area

3.4.4.1 *OMA #7 - Align the Fire Water System to the Isolation Condenser*

In order for OMA #7 to be necessary, the loss of the "B" Train of power would have to occur due to fire damage. MCC 1B21 is located approximately 5 feet from USS 1B2. The licensee indicated that a credited power cable for the static charger enters the fire zone through the ceiling of the corridor and then enters the main portion of the room through the north wall approximately 9 feet above the floor. It then runs east and down into MCC 1B21. The cable is located approximately 2 feet above the potential ignition source, USS 1B2, and runs directly into ignition source MCC1B21. The credited power cable for MCC 1B21 is routed from USS 1B2 to MCC 1B21 in a cable tray. This cable tray runs approximately 10 feet above the floor and approximately 2 feet above the potential ignition sources, USS 1B2 and MCC 1B21, but it also enters into both as indicated above. However, both of these ignition sources are contained in enclosed metal cabinets and are not high voltage. The cable tray is also located approximately 10 feet from the ignition source of the USS 1B2 transformer, which is located near the west end of the room.

The licensee also indicated that the "A" train of power is credited and available for this fire zone and that the redundant cable is associated with the "C" battery charger, which is fire wrapped with a 1-hour barrier in this fire zone. It is unlikely that a fire would develop and cause damage to multiple redundant pieces of equipment given the spatial relationship between the credited equipment and ignition sources, the presence of the automatic Halon system, and the protected "C" battery charger cable.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #7 is available to manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41 to align the fire water system for make-up water to Isolation Condenser "B" since there is no power ("B" Train) available to the Condensate Transfer System. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 45 minutes, which provides a 22-minute margin.

3.4.4.2 *OMA #12 – Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to

be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

In the unlikely event that a fire does occur and damages multiple redundant trains, OMAs #7 and #12 are available to align the fire water system to the isolation condenser and establish CRD flow. The locations of these OMAs are in separate fire areas from Fire Area OB-FZ-6B so a fire in Fire Area OB-FZ-6B would not impact the locations of the actions.

3.4.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources, and the volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or Halon system noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #7 and #12 are available to provide additional assurance that safe shutdown capability is maintained.

3.5	**OB-FZ-8A Office Bldg. Reactor Recirculation MG Set Room & OB-FZ-8B Mechanical Equipment Room Elev. 23'-6" & 35'-0"**
3.5.1	**Fire Prevention**

Fire Zones OB-FZ-8A and 8B are evaluated together for the combustible loading and fire safe shutdown (FSSD) analysis. The licensee has classified the fire loading in these fire zones as low. The licensee also stated that these fire zones have an administrative fire loading limit of less than 45 minutes as determined by the ASTM E119 time-temperature curve. There are minimal combustibles in Fire Zone OB-FZ-8B. The major combustibles in Fire Zone OB-FZ-8A are lubricating oil (approximately 80% of loading) and cable insulation (approximately 10% of loading).

3.5.2	**Detection, Control, and Extinguishment**

The licensee stated that OB-FZ-8A has a partial wet-pipe sprinkler system with a flow alarm that notifies the control room and that the area does not have a smoke detection system however, a duct smoke detector is located in the exhaust duct of fan EF-1-20. Since operation of the sprinkler system will alarm in the control room, prompt notification of and response by, the fire brigade for any required manual fire fighting activities is expected.

3.5.3	**Preservation of Safe Shutdown Capability**

The licensee stated that OB-FZ-8A has a ceiling height of approximately 10'-10" and an approximate floor area of 2,128 square feet and OB-FZ-8B has a ceiling height of approximately 11'-0" and an approximate floor area of 479 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.5.4	**OMAs Credited for a Fire In This Area**
3.5.4.1	*OMA #7 - Align the Fire Water System to the Isolation Condenser*

In order for OMA #7 to be necessary, the loss of the "B" Train of power would have to occur due to fire damage. The licensee indicated that the cable for the 125 VDC control power is in conduit that enters this zone through the ceiling in the northwest corner and then travels south along the ceiling near the west wall approximately 9 feet above the floor and

approximately 7 feet from the primary ignition sources in the area, the MG Sets, and then leaves through the floor, where it runs within 2 feet of the “E” MG-Set. The licensee also indicated that the “A” train of power is credited and available for this fire zone and that the redundant cable is associated with the “C” battery and this cable is not located in this fire zone.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #7 is available to manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41 to align the fire water system for make-up water to Isolation Condenser "B" since there is no power ("B" Train) available to the Condensate Transfer System. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 45 minutes, which provides a 22-minute margin.

3.5.4.2	*OMA #12 – Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.5.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources, and the large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or sprinkler systems noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #7 and #12 are available to provide additional assurance that safe shutdown capability is maintained.

3.6	**OB-FZ-8C Office Bldg. A/B Battery Room, Tunnel and Electrical Tray Room Elev. 35’-0”**
3.6.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this fire zone has an administrative fire loading limit of less than 1.5 hours as determined by the ASTM E119 time-temperature curve. The major combustibles in Fire Zone OB-FZ-8C are water-filled plastic battery cases and racks (approximately 56% of loading) and cable insulation (approximately 39% of loading).

3.6.2	**Detection, Control, and Extinguishment**

The licensee stated that OB-FZ-8C has a fixed, total-flooding, Halon 1301 extinguishing system, area-wide smoke detection that is installed at the ceiling level and cross-zoned to sound a local alarm, and an alarm in the control room upon actuation of one detector. Actuation of a second detector will sound a local alarm, discharge the Halon system, trip supply and exhaust fans, and close dampers.

3.6.3	**Preservation of Safe Shutdown Capability**

The licensee stated that OB-FZ-8C has a ceiling height of approximately 11'-0" and an approximate floor area of 1,292 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.	
3.6.4	**OMAs Credited for a Fire In This Area**
3.6.4.1	*OMA #2 - Read Condensate Storage Tank Local Level Indicator LI-424-993*
In order for OMA #2 to be necessary, damage to the primary CST level indicator (5F-27) cable would have to occur due to a fire. Should this occur, indication can only be obtained by reading the local indicator (LI-242-993) located at the CST. Although there is no redundant train of equipment for the credited source of obtaining CST level Indication, the licensee stated that the tray containing the credited train is located in the Electric Tray Room portion of the zone, which is separated from the main battery room by a cable tunnel that is approximately 25 feet long cable. The licensee also stated that the credited cable runs in a cable tray with other cables, thus putting it in close proximity to in-situ hazards, however, due to the size and use of the room, there are no other credible hazards including transient combustibles. In the unlikely event that a fire does occur and causes the loss of the primary CST level indicator, OMA #2 is available to locally read Condensate Storage Tank (CST) level at the local level indicator, LI-424-993. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 7 minutes while the time available is 73 minutes, which provides a 36-minute margin.	
3.6.4.2	*OMA #7 – Align Fire Water to Isolation Condenser*
In order for OMA #7 to be necessary, the loss of the "B" Train of power would have to occur due to fire damage. The licensee indicated that the credited cable is located in the A/B Battery Room portion (main portion) of this fire zone and that the credited cable runs in a conduit that begins at 125V DC Distribution Panel B. The cable is routed in a conduit that runs approximately 1 foot above a series of vertical cable trays, approximately 8 feet above the "B" MG Set, and approximately 3 feet over the top of the 125V DC "B" Distribution Center. However, the "B" MG Set is not normally energized since the static charger is utilized normally for charging the "B" Battery. The licensee also indicated that the battery banks are another potential ignition source in the room but that they are located greater than 15 feet from the particular conduit in question but that the failure of the battery itself may also require the OMA. The "A" train of power is credited and available for this fire zone. The redundant cable, "C" battery, "C" Distribution center, etc. are not located in this fire zone. In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #7 is available to manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41 to align the fire water system for make-up water to Isolation Condenser "B" since there is no power ("B" Train) available to the Condensate Transfer System. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 45 minutes, which provides a 22-minute margin.	
3.6.4.3	*OMA #8 - Manually Control USS 1A2 "A" CRD Pump & 1A2M from LSP-1A2*
In order for OMA #8 to be necessary, damage to the credited control cables, 1A2M & A CRD Pump, and the redundant control cables, 1B2M and B CRD Pump, would have to occur due to a fire. The licensee stated that the credited and redundant cables are run in the same cable tray with additional cables in the Electric Tray Room portion of this fire area and are separated from the main battery room by a cable tunnel that is approximately 25 feet long. With the exception of the cables themselves, there are no other combustibles or ignition sources and the storage of transient combustibles in this portion of the fire zone is remote since it is a small	

room with only one door for access or egress.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #8 is available to manually control the 480V USS 1A2 breakers for "A" CRD Pump and 1A2M from LSP-1A2. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 8 minutes while the time available is 60 minutes, which provides a 22-minute margin.

3.6.4.4 *OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.6.4.5 *OMA #16 - Manually Trip Rx Recirculation Pumps at 4160V Switchgear*

In order for OMA #16 to be necessary, damage to the credited cables for tripping the recirculation pumps or the loss of the 125 VDC “B” Battery and “B” Distribution Center would have to occur due to a fire. The licensee stated that the cable tray configuration in the A/B Battery Room is a series of vertical trays closely stacked together and that the trays containing the required equipment are located approximately 4 feet from the “B” MG Set. However, the “B” MG Set is not normally energized since the static charger is utilized normally for charging the “B” Battery. The licensee also stated that other than the cables themselves, there are no other combustibles or ignition sources in the area and that the placement of transient combustibles is remote since access is limited and the rooms are small in size.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #16 is available to manually trip Reactor Recirculation Pumps (“A," “C," and “E”) 4160V Switchgear 1A and 1B. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 30 minutes, which provides a 7-minute margin.

3.6.5 **Conclusion**

Given the limited amount of combustible materials, ignition sources, and the large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or Halon systems noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #2, #7, #8, #12 and #16 are available to provide additional assurance that safe shutdown capability is maintained.

3.7 **OB-FZ-10A Office Bldg. Monitor and Change Room and Operations Support Area Elev. 35’-0” & 46’-6”**

3.7.1 **Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also

stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. This limit is tied to an NRC-accepted approach for dealing with fire zone boundaries (refer to the licensee's April 2, 2010 response to RAI-04.3). The major combustibles in this area are cable insulation (approximate 25% of loading), rubber flooring (approximately 30% of loading), miscellaneous plastics (approximately 15% of loading) and Protective Clothing (PC) supplies (approximately 20% of loading). However, since the PCs have been placed in metal cans with self-closing lids they are no longer considered a contribution to the combustibles in this area.	
3.7.2	**Detection, Control, and Extinguishment**
The licensee stated that OB-FZ-10A has an area-wide smoke detection system and a wet-pipe automatic sprinkler system installed throughout the area. In addition, a hose station located nearby, outside the control room, provides manual suppression capability.	
3.7.3	**Preservation of Safe Shutdown Capability**
The licensee stated that OB-FZ-10A has a ceiling height of approximately 13'-0" and an approximate floor area of 2,019 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.	
3.7.4	**OMAs Credited for a Fire In This Area**
3.7.4.1	*OMA #12 - Establish CRD Flow to Reactor*
In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage. In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 18 minutes, while the time available is 204 minutes, which provides a 156-minute margin.	
3.7.5	**Conclusion**
Given the limited amount of combustible materials, ignition sources, and the large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or sprinkler systems noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMA #12 is available to provide additional assurance that safe shutdown capability is maintained.	

3.8	**RB-FZ-1D Reactor Bldg. Elev. 51'-3"**
3.8.1	**Fire Prevention**
The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The main combustible in this area is attributed to cable insulation (approximately 85% of loading).	
3.8.2	**Detection, Control, and Extinguishment**

The licensee stated that RB-FZ-1D has an area-wide smoke detection system and an automatic fixed deluge water spray system installed over cable trays and open hatches. The deluge suppression system protecting safety related cable trays is automatically activated by a cross-zoned detection system consisting of linear heat detection wire located on top of the cables in each original safety related cable trays and smoke detectors are located in each beam pocket at the ceiling.

3.8.3	**Preservation of Safe Shutdown Capability**

The licensee stated that RB-FZ-1D has a ceiling height of approximately 21'-0" and an approximate floor area of 9,100 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.8.4	**OMAs Credited for a Fire In This Area**
3.8.4.1	*OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.8.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources, and the large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or localized water deluge systems noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMA #12 is available to provide additional assurance that safe shutdown capability is maintained.

3.9	**RB-FZ-1E Reactor Bldg. Elev. 51'-3"**
3.9.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The main combustible in this area is attributed to cable insulation (approximately 85% of loading).

3.9.2	**Detection, Control, and Extinguishment**

The licensee stated that RB-FZ-1E has an area-wide smoke detection system and an automatic fixed deluge water spray system installed over cable trays and open hatches. The deluge suppression system protecting safety related cable trays is automatically activated by a cross-zoned detection system consisting of linear heat detection wire located on top of the cables in each original safety related cable trays and smoke detectors are located in each beam pocket at the ceiling.

3.9.3	**Preservation of Safe Shutdown Capability**
The licensee stated that RB-FZ-1E has a ceiling height of approximately 26'-9" and an approximate floor area of 12,140 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.	
3.9.4	**OMAs Credited for a Fire In This Area**
3.9.4.1	*OMA #11 - Locally Read CRD Flow Gauge FI-225-998*
In order for OMA #11 to be necessary, the normal local gauge for CRD flow, FI-225-2, would have to be damaged by fire. The licensee stated that there are no in-situ combustibles present in the immediate area surrounding the gauge and that the placement of transient combustibles is remote since the gauge is surrounded by piping and tubing. The licensee also stated that the nearest ignition source is MCC 1A21B, which is located approximately 8 feet from the flow gauge. However, the solid steel rear of the MCC faces the flow gauge making it highly unlikely that this potential ignition source would adversely impact the flow gauge. OMA #11 would require re-entry into Fire Zone RB-FZ-1E to manually control CRD System valves V-15-237, V-15-30 and V-15-52 located in this fire zone while monitoring flow at FI-225-998 to establish CRD flow to the reactor due to the loss of instrument air to the CRD flow control valve. Fusing of the unprotected CRD valves by heat from a fire resulting in the valves becoming inoperable is not considered credible because of the low fire loading, the provision of automatic fire detection and suppression capability and the heat sink capability of the water filled piping connected to the valve. Operation of one of the valves that is in close proximity to these valves was previously approved in the exemption discussed above. In the unlikely event that a fire occurs and this flow gauge becomes unreadable, OMA #11 is available to locally read flow gauge FI-225-998, which is the redundant instrument that provides the same data and is mounted on an instrument rack located in Fire Zone RB-FZ-1D. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 100 minutes, including a 90-minute allowance before re-entry, while the time available is 204 minutes, which provides a 74-minute margin.	
3.9.4.2	*OMA #12 - Establish CRD Flow to Reactor*
In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage. In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to reenter RB-FZ-1E and manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 100 minutes, including a 90-minute allowance before re-entry, while the time available is 204 minutes, which provides a 74-minute margin.	
3.9.5	**Conclusion**
Given the limited amount of combustible materials, ignition sources, and the large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or localized water deluge systems noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #11 and #12 are	

available to provide additional assurance that safe shutdown capability is maintained.

3.10	**RB-FZ-1F3 Reactor Bldg. Northwest Corner Elev. -19'-6"**
3.10.1	**Fire Prevention**
The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The major combustibles in this area are cable insulation (approximately 60% of loading), ladders (approximately 15% of loading) and lubricating oil in pumps (approximately 15% of loading).	
3.10.2	**Detection, Control, and Extinguishment**
The licensee stated that RB-FZ-1F3 has smoke detectors which alarm locally and in the control room installed over hazards rather than mounted at the ceiling. Fire extinguishers are also provided for manual fire fighting backup. Hose lines are available from outside hydrants and hose houses.	
3.10.3	**Preservation of Safe Shutdown Capability**
The licensee stated that RB-FZ-1F3 has a ceiling height of approximately 41'-6" and an approximate floor area of 560 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.	
3.10.4	**OMAs Credited for a Fire In This Area**
3.10.4.1	*OMA #13 - Manually Align Core Spray to CST to provide Reactor Coolant Makeup*
In order for OMA #13 to be necessary, both CRD pumps located in this area would have to become damaged due to a fire. The licensee stated that the pumps are separated by a horizontal distance of approximately 6 feet and that the associated cables and conduits are in close proximity to each other. The licensee also stated that the primary ignition sources in the area, aside from the pumps themselves, are located approximately 18 feet from the CRD pumps. In the unlikely event that a fire occurs and causes damage to both pumps, OMA #13 is available to re-enter this fire zone and manually open Core Spray valves V-20-1 and V-20-2 and close V-20-4 (V-20-2 and V-20-4 are located in Fire Zone RB-FZ-1F2) to provide Reactor Coolant Makeup from the Condensate Storage Tank for Fire Zone RB-FZ-1F3. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 35 minutes while the time available is 204 minutes, which provides a 139-minute margin.	
3.10.5	**Conclusion**
Given the limited amount of combustible materials, ignition sources, and large volume of the space it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection system or personnel and damage the safe shutdown equipment. Even if such circumstances exist, OMA #13 is available to provide additional assurance that safe shutdown capability is maintained.	

3.11	**RB-FZ-1F5 Reactor Bldg. Torus Room Elev. -19'-6"**
3.11.1	**Fire Prevention**
The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as	

determined by the ASTM E119 time-temperature curve. The major combustibles in this area are cable insulation (approximately 20% of loading) and gratings (approximately 75% of loading). The grating, which is the largest plastic material in this area, has a flame spread rating of less than 25.	
3.11.2	**Detection, Control, and Extinguishment**
The licensee stated that RB-FZ-1F5 does not have a detection or suppression systems. However, due to the negligible combustible loading and the nature of the combustibles a fire in this zone is not expected to be of significant size or duration.	
3.11.3	**Preservation of Safe Shutdown Capability**
The licensee stated that RB-FZ-1F5 is a voluminous area with an approximate floor area of 11,450 square feet and a ceiling height of approximately 41'-6" therefore, it is unlikely that smoke and heat from a fire in the area would accumulate at the location of the instrument air line and cause a loss of instrument air.	
3.11.4	**OMAs Credited for a Fire In This Area**
3.11.4.1	*OMA #12 - Establish CRD Flow to Reactor*
In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage. In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.	
3.11.5	**Conclusion**
Given the limited amount of combustible materials, ignition sources, and the large volume of the area, it is unlikely that a fire would occur and go undetected or unsuppressed by personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMA #12 is available to provide additional assurance that safe shutdown capability is maintained.	

3.12	**RB-FZ-1G Reactor Bldg. Shutdown Cooling Room Elev. 38'-0" & 51'-3"**
3.12.1	**Fire Prevention**
The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The main combustibles in this area are cable insulation (approximately 15% of loading), plastic (approximately 55% of loading) and Class A combustibles (approximately 15% of loading). The grating, which is the majority of the plastic material in this area, has a flame spread rating of less than 25.	
3.12.2	**Detection, Control, and Extinguishment**
The licensee stated that RB-FZ-1G is provided with a smoke detection system that alarms locally and in the control room to provide prompt notification of a potential fire event.	
3.12.3	**Preservation of Safe Shutdown Capability**

The licensee stated that RB-FZ-1G has a ceiling height of approximately 21', measured from the 51'-3" elevation, and an approximate floor area of 1,609 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.12.4	**OMAs Credited for a Fire In This Area**
3.12.4.1	*OMA #11 - Locally Read CRD Flow Gauge FI-225-998*

In order for OMA #11 to be necessary, the normal local gauge for CRD flow, FI-225-2, located in Fire Zone RB-FZ-1E or its associated cables, would have to be damaged by fire. The licensee stated that there are no in-situ combustibles present in the immediate area surrounding the gauge and that the placement or storage of transient combustibles is remote since the gauge is surrounded by piping and tubing. The licensee also stated that the nearest ignition source is MCC 1A21B, which is located approximately 8 feet from the flow gauge. However, the solid steel rear of the MCC faces the flow gauge making it highly unlikely that this potential ignition source would adversely impact the flow gauge.

In the unlikely event that a fire occurs and this flow gauge becomes unreadable, OMA #11 is available to locally read flow gauge FI-225-998, which is the redundant instrument that provides the same data and is mounted on an instrument rack located in Fire Zone RB-FZ-1D. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 100 minutes, including a 90-minute allowance before re-entry, while the time available is 204 minutes, which provides a 74-minute margin.

3.12.4.2	*OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 100 minutes, including a 90-minute allowance before re-entry, while the time available is 204 minutes, which provides a 74-minute margin.

3.12.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources, and large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection system or personnel and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #11 and #12 are available to provide additional assurance that safe shutdown capability is maintained.

3.13	**TB-FA-3A Turbine Bldg. 4160V Emergency Switchgear Vault 1C Elev. 23'-6"**
3.13.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. There are minimal amounts of cable

insulation (approximately 5% of loading) miscellaneous plastic (approximately 75% of loading) and class A combustibles such as paper for procedures (approximately 20% of loading) in this area.

3.13.2	**Detection, Control, and Extinguishment**

The licensee stated that TB-FA-3A is provided with an area-wide smoke detection system and a total-flooding, manually actuated CO_2 system.

3.13.3	**Preservation of Safe Shutdown Capability**

The licensee stated that TB-FA-3A has a ceiling height of approximately 21' and an approximate floor area of 336 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.13.4	**OMAs Credited for a Fire In This Area**
3.13.4.1	*OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.13.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources, and large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or CO_2 systems, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMA #12 is available to provide additional assurance that safe shutdown capability is maintained.

3.14	**TB-FA-26 Turbine Bldg. 125V DC Battery Room C Elev. 23'-6"**
3.14.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 90 minutes as determined by the ASTM E119 time-temperature curve. The major combustibles in this area are plastic, which is contributed by the battery cases (approximately 90% of loading) and cable insulation (approximately 5% of loading).

3.14.2	**Detection, Control, and Extinguishment**

The licensee stated that TB-FA-26 has an area-wide automatic pre-action sprinkler system and an area-wide smoke detection system installed.

3.14.3	**Preservation of Safe Shutdown Capability**

The licensee stated that there are no specific cables in this fire area associated with the OMAs identified for Fire Area TB-FA-26 and that the only FSSD component and cable located in

this fire area is associated with the "C" battery.	
3.14.4	**OMAs Credited for a Fire In This Area**
The licensee stated that this fire area is wholly contained within Fire Zone TB-FZ-11C (A and B 4160V Room) and that all cables to TB-FA-26 must traverse TB-FZ-11C. Therefore, TB-FA-26 and TB-FZ-11C were analyzed together for safe shutdown purposes and the OMAs are duplicated for these two plant areas. Refer to Section 3.16 below for the discussion of OMAs #1, #3, #6, and #12, which are common to both areas.	
3.14.5	**Conclusion**
Given the limited amount of combustible materials, ignition sources, and lack of multiple safe shutdown trains, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or sprinkler systems, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #1, #3, #6, and #12 are available to provide additional assurance that safe shutdown capability is maintained.	

3.15	**TB-FZ-11B Turbine Bldg. Lube Oil Storage, Purification and Pumping Area Elev. 0'-0", 27'-0", and 36'-0"**
3.15.1	**Fire Prevention**
The licensee has classified the fire loading in this fire zone as high. The licensee also stated that this fire zone has administrative controls such that additional combustible materials are not introduced into this zone and defense-in-depth features to control a potential oil fire in this zone The major combustibles in this area are lubricating oil (approximately 99% of loading) and cable insulation (approximately 1% of loading). The amount of oil contained in the lube oil storage tanks in this fire zone drives the combustible loading in this fire zone to approximately 14 hours.	
3.15.2	**Detection, Control, and Extinguishment**
The licensee stated that TB-FZ-11B has automatic suppression systems installed over principal combustibles and a rate of rise/fixed temperature fire detection system installed at the lube oil tank. A closed head automatic sprinkler system protects cable trays and open head water spray deluge system protects oil handling equipment and the oil storage tank. Thermal detectors are located in close proximity to the lube oil tank so that a lube oil fire would be quickly detected, which in turn would activate the deluge system for extinguishment.	
3.15.3	**Preservation of Safe Shutdown Capability**
The licensee stated that the ceiling heights in the area are approximately 9'-0" in the basement hallway, approximately 19'-0" in the basement stairs, approximately 26'-0" on the first floor of the area, and approximately 42'-0" on the second floor of the area. Additionally, the licensee stated that the floor area, measured at the 0'-0" elevation is approximately 3,175 square feet.	
3.15.4	**OMAs Credited for a Fire In This Area**
3.15.4.1	*OMA #1 - Manually Trip 4160V 1D Breakers and Control USS 1B2 & 1B3 Breakers Locally at LSP-1D*
In order for OMA #1 to be necessary, damage to the credited and redundant cables would have to occur due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located approximately 14 feet above the floor. The licensee also stated that the cables pass over the top of potential ignition sources MCC 1A12 and MCC 1B12 and that the cables are located approximately 6 feet above these ignition sources. Additionally, the lube oil tanks are located below the cables, although not directly	

below, with a distance of approximately 26 feet separating the cables and the tanks. The cables are also located approximately 20 feet from ignition sources MCC 1A12A and 1B12A.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #1 is available to manually trip the 4160V 1D breakers and control USS 1B2 and the 1B3 480V breakers locally at LSP-1D. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 19 minutes while the time available is 45 minutes, which provides a 16-minute margin.

3.15.4.2 *OMA #2 - Read Condensate Storage Tank Local Level Indicator LI-424-993*

In order for OMA #2 to be necessary, damage to the primary CST level indicator (5F-27) cable would have to occur due to a fire. The licensee stated that this cable is located approximately 20 feet above the floor and that the nearest primary ignition source in the area, the lube oil tank, is located approximately 7 feet below the cable. With the exception of the cables themselves, there are no other ignition sources or combustibles located near the cables.

In the unlikely event that a fire does occur and damages the primary CST level indicator, OMA #2 is available to locally read CST level at the local indicator, LI-424-993, located at the CST. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 7 minutes while the time available is 73 minutes, which provides a 36-minute margin.

3.15.4.3 *OMA #3 - Manually Control 1B3M Breaker at LSP-1B3*

In order for OMA #3 to be necessary, the credited and redundant cables would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located approximately 14 feet above the floor. The licensee also stated that the cables pass over the top of potential ignition sources MCC 1A12 and MCC 1B12 and that the cables are located approximately 6 feet above these ignition sources. Additionally, the lube oil tanks are located below the cables, although not directly below, with a distance of approximately 26 feet separating the cables and the tanks. The cables are also located approximately 20 feet from ignition sources MCC 1A12A and 1B12A.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #3 is available to manually control the 1B3M breaker locally from LSP-1B3. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 10 minutes while the time available is 45 minutes, which provides a 25-minute margin.

3.15.4.4 *OMA #4 - (Manually Control Condensate Transfer Pump 1-2 from LSP-1B32*

In order for OMA #4 to be necessary, damage to the credited and redundant cables for the Condensate Transfer Pump 1-2 would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located approximately 20 feet above the floor and approximately 7 feet above the lube oil tank.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #4 is available to manually control Condensate Transfer Pump 1-2 locally from LSP-1B32. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 10 minutes while the time available is 45 minutes, which provides a 25-minute margin.

3.15.4.5 *OMA #6 - Manually Reclose Feeder Breaker MCC 1B32 at USS 1B3*

In order for OMA #6 to be necessary, power to USS 1B3 or the 1B 4160V switchgear would have to be lost due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located approximately 14 feet above the floor. The licensee also stated that the cables pass over the top of potential ignition sources MCC 1A12

and MCC 1B12 and that the cables are located approximately 6 feet above these ignition sources. Additionally, the lube oil tanks are located below the cables, although not directly below, with a distance of approximately 26 feet separating the cables and the tanks. The cables are also located approximately 20 feet from ignition sources MCC 1A12A and 1B12A.

In the unlikely event that a fire does occur and causes a loss of power to USS 1B3 or a loss of the 1B 4160V switchgear, OMA #6 is available to manually re-close Feeder Breaker MCC 1B32 at USS 1B3 due to an under voltage trip. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 6 minutes while the time available is 45 minutes, which provides a 29-minute margin.

3.15.4.6	*OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.15.4.7	*OMA #16 - Manually Trip Rx Recirculation Pumps at 4160V Switchgear*

In order for OMA #16 to be necessary, the credited and redundant cables would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located approximately 14 feet above the floor. The licensee also stated that the cables pass over the top of potential ignition sources MCC 1A12 and MCC 1B12 and that the cables are located approximately 6 feet above these ignition sources. Additionally, the lube oil tanks are located below the cables, although not directly below, with a distance of approximately 26 feet separating the cables and the tanks. The cables are also located approximately 20 feet from ignition sources MCC 1A12A and 1B12A.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #16 is available to manually trip Reactor Recirculation Pumps (“A," “B," “C," “D” and “E”) 4160V Switchgear 1A and 1B. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 30 minutes, which provides a 7-minute margin.

3.15.5	**Conclusion**

Given the limited amount of combustible materials. ignition sources, and large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the suppression or thermal detection systems noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #1, #2, #3, #4, #6, #12, and #16 are available to provide additional assurance that safe shutdown capability is maintained.

3.16	**TB-FZ-11C Turbine Bldg. 4160V SWGR Room 1A and 1B Elev. 23’-6”**
3.16.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The main combustible loading is attributed to cable insulation (approximately 75% of loading) and plastic (approximately 15% of loading).

3.16.2 Detection, Control, and Extinguishment

The licensee stated that TB-FZ-11C has an area-wide smoke detection system and an area-wide automatic fixed pre-action sprinkler system installed (except in the small caged area located to the east of Fire Area TB-FA-3A).

3.16.3 Preservation of Safe Shutdown Capability

The licensee stated that TB-FZ-11C has a ceiling height of approximately 21'-8" and an approximate floor area of 2,666 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.16.4 OMAs Credited for a Fire In This Area

3.16.4.1 *OMA #1 - Manually Trip 4160V 1D Breakers and Control USS 1B2 & 1B3 Breakers Locally at LSP-1D*

In order for OMA #1 to be necessary, the credited cables for USS 1B2 and 1B3 4160V breakers and the redundant cables for USS 1A2 and 1A3 breakers would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located at least 17 feet above the floor. The licensee also stated that the tray passes over the top of potential ignition source "B" 4160V switchgear and that the cables are located approximately 9 feet above this ignition source and 3 feet above the iso-phase bus duct at their closest point.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #1 is available to manually trip the 4160V 1D breakers and control USS 1B2 and the 1B3 480V breakers locally at LSP-1D. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 24 minutes while the time available is 45 minutes, which provides a 11-minute margin.

3.16.4.3 *OMA #3 - Manually Control 1B3M Breaker at LSP-1B3*

In order for OMA #3 to be necessary, the credited and redundant cables would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located at least 17 feet above the floor. The licensee also stated that the tray passes over the top of potential ignition source "B" 4160V switchgear and that the cables are located approximately 9 feet above this ignition source and 3 feet above the iso-phase bus duct at their closest point.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #3 is available to manually control the 1B3M breaker locally from LSP-1B3. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 10 minutes while the time available is 45 minutes, which provides a 25-minute margin.

3.16.4.5 *OMA #6 - Manually Reclose Feeder Breaker MCC 1B32 at USS 1B3*

In order for OMA #6 to be necessary, power to USS 1B3 or the 1B 4160V switchgear would have to be lost due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located at least 17 feet above the floor. The licensee also stated that the tray passes over the top of potential ignition source "B" 4160V switchgear and that the cables are located approximately 9 feet above this ignition source and 3

feet above the iso-phase bus duct at their closest point. In the unlikely event that a fire does occur and causes a loss of power to USS 1B3 or a loss of the 1B 4160V switchgear, OMA #6 is available to manually re-close Feeder Breaker MCC 1B32 at USS 1B3 due to an under voltage trip. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 6 minutes while the time available is 45 minutes, which provides a 29-minute margin.
3.16.4.6 *OMA #12 - Establish CRD Flow to Reactor*
In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage. In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.
3.16.5 Conclusion
Given the limited amount of combustible materials, ignition sources, and large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the smoke detection or sprinkler systems noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #1, #3, #6, and #12 are available to provide additional assurance that safe shutdown capability is maintained.

3.17	**TB-FZ-11D Turbine Bldg. Basement Floor South End Elev. 3'-6"**
3.17.1	**Fire Prevention**
The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The major combustibles in this area are cable insulation (approximately 30% of loading), Dow Corning 561 Silicon transformer liquid (approximately 15% of loading) and lubricating oil (approximately 40% of loading).	
3.17.2	**Detection, Control, and Extinguishment**
The licensee stated that an automatic wet-pipe sprinkler system and an automatic water spray system located at the hydrogen seal oil unit are installed in the area.	
3.17.3	**Preservation of Safe Shutdown Capability**
The licensee stated that TB-FZ-11D has a ceiling height of approximately 19' and an approximate floor area of 9,668 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.	
3.17.4	**OMAs Credited for a Fire In This Area**
3.17.4.1	*OMA #1 - Manually Trip 4160V 1D Breakers and Control USS 1B2 & 1B3 Breakers Locally at LSP-1D*
In order for OMA #1 to be necessary, the credited cables for USS 1B2 and 1B3 4160V	

breakers and the redundant cables for USS 1A2 and 1A3 breakers would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located at least 15 feet above the floor. The primary combustible fuel load in the area is the cables themselves and storage of transient combustibles is limited due to a sump and abandoned acid/caustic tanks located in the area.

The licensee also stated that the primary ignition sources in the area near the cable trays are the Turbine Building Closed Cooling Water Pumps and USS 1A1 and its associated transformer (4160V to 480V transformer). However, the Turbine Building Closed Cooling Water Pumps contain less than 5 gallons of oil and are enclosed in metal casings and the cable tray containing the cables is approximately 13 feet from the top of the pumps/motors. The top of USS 1A1 and its associated transformer are located approximately 30 feet diagonally from the credited cables and approximately 15 feet diagonally from the redundant cables. Additionally, there is a concrete ceiling beam, with a water curtain sprinkler system attached, which would provide some shielding for the cables from potential products of combustion generated by this ignition source. Sprinkler heads are also located in a ceiling pocket between the concrete ceiling beam and the USS 1A1 and transformer.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #1 is available to manually trip the 4160V 1D breakers and control USS 1B2 and the 1B3 480V breakers locally at LSP-1D. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 24 minutes while the time available is 45 minutes, which provides a 11-minute margin.

3.17.4.2 | *OMA #3 - Manually Control 1B3M Breaker at LSP-1B3*

In order for OMA #3 to be necessary, the credited and redundant cables would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located at least 15 feet above the floor. The primary combustible fuel load in the area is the cables themselves and storage of transient combustibles is limited due to a sump and abandoned acid/caustic tanks located in the area.

The licensee also stated that the primary ignition sources in the area near the cable trays are the Turbine Building Closed Cooling Water Pumps and USS 1A1 and its associated transformer (4160V to 480V transformer). However, the Turbine Building Closed Cooling Water Pumps contain less than 5 gallons of oil and are enclosed in metal casings and the cable tray containing the cables is approximately 13 feet from the top of the pumps/motors. The top of USS 1A1 and its associated transformer are located approximately 30 feet diagonally from the credited cables and approximately 15 feet diagonally from the redundant cables. Additionally, there is a concrete ceiling beam, with a water curtain sprinkler system attached, which would provide some shielding for the cables from potential products of combustion generated by this ignition source. Sprinkler heads are also located in a ceiling pocket between the concrete ceiling beam and the USS 1A1 and transformer.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #3 is available to manually control the 1B3M breaker locally from LSP-1B3. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 10 minutes while the time available is 45 minutes, which provides a 25-minute margin.

3.17.4.3 | *OMA #5 - Manually Control Diesel Generator #2 from LSP-DG2*

In order for OMA #5 to be necessary, damage to the credited and redundant cables for Diesel Generator #1 and #2 would have to occur due to a fire. The licensee stated that the credited and redundant cables are located in the same cable trays, in some areas, with

additional cables and that the cable trays are approximately 17 feet above the floor. The primary combustible fuel load in the area is the cables themselves and storage of transient combustibles is limited due to a sump and abandoned acid/caustic tanks located in the area.

The licensee also stated that the primary ignition sources in the area are the Turbine Building Closed Cooling Water Pumps and USS 1A1 and its associated transformer. The licensee stated that the Turbine Building Closed Cooling Water Pumps contain less than 5 gallons of oil, are enclosed in metal casings, and are located approximately 13 feet from the cable tray containing the credited and redundant cables. Additionally, USS 1A1 and its associated transformer are located approximately 8 feet directly below some of the credited cables for Diesel Generator #2, however, the redundant cables are approximately 25 feet from this portion of the credited cables.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #5 is available to manually control Emergency Diesel Generator #2 from LSP-DG2. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 14 minutes while the time available is 45 minutes, which provides a 21-minute margin.

3.17.4.4 *OMA #6 - Manually Reclose Feeder Breaker MCC 1B32 at USS 1B3*

In order for OMA #6 to be necessary, power to USS 1B3 or the 1B 4160V switchgear would have to be lost due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located at least 15 feet above the floor. The primary combustible fuel load in the area is the cables themselves and storage of transient combustibles is limited due to a sump and abandoned acid/caustic tanks located in the area.

The licensee also stated that the primary ignition sources in the area near the cable trays are the Turbine Building Closed Cooling Water Pumps and USS 1A1 and its associated transformer (4160V to 480V transformer). However, the Turbine Building Closed Cooling Water Pumps contain less than 5 gallons of oil and are enclosed in metal casings and the cable tray containing the cables is approximately 13 feet from the top of the pumps/motors. The top of USS 1A1 and its associated transformer are located approximately 30 feet diagonally from the credited cables and approximately 15 feet diagonally from the redundant cables. Additionally, there is a concrete ceiling beam, with a water curtain sprinkler system attached, which would provide some shielding for the cables from potential products of combustion generated by this ignition source. Sprinkler heads are also located in a ceiling pocket between the concrete ceiling beam and the USS 1A1 and transformer.

In the unlikely event that a fire does occur and causes a loss of power to USS 1B3 or loss of the 1B 4160V switchgear, OMA #6 is available to manually re-close Feeder Breaker MCC1B32 at USS 1B3 due to an under voltage trip. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 6 minutes while the time available is 45 minutes, which provides a 29-minute margin.

3.17.4.5 *OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that although the USSs powering the air compressors are located 35 feet apart from each other, the power cables are located in the same cable trays for at least 45 feet and that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to

be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.17.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources and the volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the suppression systems noted above, or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #1, #3, #5, #6, and #12 are available to provide additional assurance that safe shutdown capability is maintained.

3.18	**TB-FZ-11E Turbine Bldg. Condenser Bay Area Elev. 0'-0"**
3.18.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this Fire Zone (Condenser Bay) is procedurally controlled as a transient combustible free area in procedure OP-AA-201-009 while the plant is operating. This area is a high radiation area during plant operation and is not normally accessed. The area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The major combustibles in this area are cable insulation (approximately 40% of loading) and plastic (approximately 60% of loading). The grating, which is the largest plastic material in this area, is dispersed throughout this fire zone (not concentrated) and has a flame spread of less than 25.

3.18.2	**Detection, Control, and Extinguishment**

The licensee stated that a closed head automatic sprinkler and spray systems protect the south end basement area and the hydrogen seal oil unit. An exemption was granted from the requirements of Appendix R Section III.G.2 in SERs dated March 24, 1986, and June 25, 1990, for not having fixed fire detection in this area. The primary basis for this exemption is the presence of the automatic wet pipe sprinkler system, low fire loading and the one-hour barrier protection for safe shutdown circuits. Also, the flow alarm will notify the control room of any sprinkler system activation. Since the Condenser Bay is procedurally controlled as a transient combustible free area in procedure OP-AA-201-009 while the plant is operating. Extinguishment of a fire will be accomplished by the automatic fixed suppression system and the plant fire brigade. A closed head automatic sprinkler system was recently expanded to provide fire suppression over the cables in cable trays in the northeast side of the condenser bay.

3.18.3	**Preservation of Safe Shutdown Capability**

The licensee stated that TB-FZ-11E has a ceiling height of at least 40' and an approximate floor area of 26,427 square feet so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.18.4	**OMAs Credited for a Fire In This Area**
3.18.4.1	*OMA #1 - Manually Trip 4160V 1D Breakers and Control USS 1B2 & 1B3 Breakers Locally at LSP-1D*

In order for OMA #1 to be necessary, the credited and redundant cables would have to

be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located approximately 40 feet above the floor. With the exception of the cables themselves, there are no other ignition sources or combustibles located near the cables.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #1 is available to manually trip the 4160V 1D breakers and control USS 1B2 and the 1B3 480V breakers locally at LSP-1D. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 19 minutes while the time available is 45 minutes, which provides a 16-minute margin.

3.18.4.2 *OMA #2 - Read Condensate Storage Tank Local Level Indicator LI-424-993*

In order for OMA #2 to be necessary, damage to the primary CST level indicator (5F-27) cable would have to occur due to a fire. The licensee stated that this cable is located approximately 16 feet above the floor. With the exception of the cables themselves, there are no other ignition sources or combustibles located near the cables.

In the unlikely event that a fire does occur and damages the primary CST level indicator, OMA #2 is available to locally read CST level at the local indicator, LI-424-993, located at the CST. The licensee also stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 7 minutes while the time available is 73 minutes, which provides a 36-minute margin.

3.18.4.3 *OMA #3 - Manually Control 1B3M Breaker at LSP-1B3*

In order for OMA #3 to be necessary, the credited and redundant cables would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located approximately 40 feet above the floor. With the exception of the cables themselves, there are no other ignition sources or combustibles located near the cables.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #3 is available to manually control the 1B3M breaker locally from LSP-1B3. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 10 minutes while the time available is 45 minutes, which provides a 25-minute margin.

3.18.4.4 *OMA #4 - Manually Control Condensate Transfer Pump 1-2 from LSP-1B32*

In order for OMA #4 to be necessary, damage to the credited and redundant cables for the Condensate Transfer Pump 1-2 would have to be damaged due to a fire. The licensee stated that these cables are located in the same tray with additional cables and are generally located approximately 18 feet above the floor. With the exception of the cables themselves, there are no other ignition sources or combustibles located near the cables.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #4 is available to manually control Condensate Transfer Pump 1-2 locally from LSP-1B32. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 10 minutes while the time available is 45 minutes, which provides a 25-minute margin.

3.18.4.5 *OMA #5 - Manually Control Diesel Generator #2 from LSP-DG2*

In order for OMA #5 to be necessary, damage to the credited and redundant cables would have to occur due to a fire. The licensee stated that the credited and redundant cables are located in separate cable trays separated by a horizontal distance of at least 90 feet. The licensee also stated that there are no ignition sources near the redundant cables and that the primary ignition sources that could affect the credited cables are the moisture separator drain

pumps and area sump pumps, which are located on the floor approximately 20 feet horizontally and 17 feet vertically from the credited cables.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #5 is available to manually control Emergency Diesel Generator #2 from LSP-DG2. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 14 minutes while the time available is 45 minutes, which provides a 21-minute margin.

3.18.4.6 *OMA #6 - Manually Reclose Feeder Breaker MCC 1B32 at USS 1B3*

In order for OMA #6 to be necessary, power to USS 1B3 or the 1B 4160V switchgear would have to be lost due to a fire. The licensee stated that the cables that could cause the loss of USS 1B3 are located in the same tray with additional cables and are generally located approximately 40 feet above the floor. With the exception of the cables themselves, there are no other ignition sources or combustibles located near the cables.

In the unlikely event that a fire does occur and causes a loss of power to USS 1B3 or loss of the 1B 4160V switchgear, OMA #6 is available to manually re-close Feeder Breaker MCC1B32 at USS 1B3 due to an under voltage trip. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 6 minutes while the time available is 45 minutes, which provides a 29-minute margin.

3.18.4.7 *OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that although the USSs powering the air compressors are located 35 feet apart from each other, the power cables are located in the same cable trays for at least 45 feet and that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.18.4.8 *OMA #16 - Manually Trip Rx Recirculation Pumps at 4160V Switchgear*

In order for OMA #16 to be necessary, the credited and redundant cables would have to be damaged due to a fire. The licensee stated that the credited cables for tripping the recirculation pumps are located in the same tray, or adjacent tray, with additional cables and are generally located approximately 40 feet above the floor. With the exception of the cables themselves, there are no other ignition sources or combustibles located near the cables.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #16 is available to manually trip Reactor Recirculation Pumps (“A," “B," “C," “D” and “E”) 4160V Switchgear 1A and 1B. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 30 minutes, which provides a 7-minute margin.

3.18.5 **Conclusion**

Given the limited amount of combustible materials, ignition sources, and large volume of

the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the suppression system noted above or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #1, #2, #3, #4, #5, #6, #12, and #16 are available to provide additional assurance that safe shutdown capability is maintained.

3.19	**TB-FZ-11F Turbine Bldg. Feedwater Pump Room Elev. 0'-0" & 3'-6"**
3.19.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The major combustible load consists of cable insulation (approximately 15% of loading), lubricating oil (approximately 40% of loading), rubber (approximately 20% of loading) and plastics (approximately 15% of loading). The licensee states that the majority of the combustible loading attributed to rubber and plastic was due to the storage of hoses which are now no longer in the area.

3.19.2	**Detection, Control, and Extinguishment**

The licensee stated that TB-FZ-11F has an area-wide thermal fire detection system. Extinguishment of the fire will be accomplished by the plant fire brigade.

3.19.3	**Preservation of Safe Shutdown Capability**

The licensee stated that TB-FZ-11F has a ceiling height of approximately 16' in approximately 70% of the area and approximately 19'-6" in the remainder of the area. With an approximate floor area of 5,650 square feet, it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.19.4	**OMAs Credited for a Fire In This Area**
3.19.4.1	*OMA #7* - Align Fire Water to Isolation Condenser

In order for OMA #7 to be necessary, the loss of the "B" Train of power would have to occur due to fire damage. The loss of the "B" Train of power is attributed to the fact that the 125 VDC control power could be lost to the 1D 4160V Switchgear or the 1D 4160V main breaker could trip due to cables that traverse through this fire zone. The licensee stated that the cables for the 125 VDC control power and the control circuit for the 1D main breaker are contained in separate conduits but are routed within approximately 6 inches of each other in a portion of this zone and that the conduits are located approximately 5 to 6 feet above the floor. Additionally, the licensee stated that the total length of the conduits in this area is approximately 20 feet.

The licensee also stated that there are no ignition sources in the area and that combustible loading is limited since the area is a stairway area. Transient combustibles are controlled by administrative procedures and although the accumulation of transient combustibles below the conduits could potentially impact the cables, it is unlikely because the area is a stairway and part of the floor is blocked by a large ventilation duct. The "A" train of power is credited and available for this fire zone. The redundant cable, "C" battery, "C" Distribution center, etc. are not located in this fire zone.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #7 is available to manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41 to align the fire water system for make-up water to Isolation Condenser "B" since there is no power ("B" Train) available to the Condensate Transfer System. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 45 minutes, which provides a 22-minute margin.

3.19.4.2	*OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that although the USSs powering the air compressors are located 35 feet apart from each other, the power cables are located in the same cable trays for at least 45 feet and that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.19.5	**Conclusion**

Given the limited amount of combustible materials, ignition sources, and large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the thermal detection system noted above or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #7 and #12 are available to provide additional assurance that safe shutdown capability is maintained.

3.20	**TB-FZ-11H Turbine Bldg. Demineralizer Tank and Steam Jet Air Ejector Area Elev. 3'-6" & 23'-6"**
3.20.1	**Fire Prevention**

The licensee has classified the fire loading in this fire zone as low. The licensee also stated that this area has an administrative fire loading limit of less than 30 minutes as determined by the ASTM E119 time-temperature curve. The major combustibles are cable insulation (approximately 25% of loading), ladders and other miscellaneous plastics (approximately 55% of loading) and miscellaneous ordinary combustibles.

3.20.2	**Detection, Control, and Extinguishment**

The licensee stated that TB-FZ-11H has a partial area thermal fire detector system. The system alarms locally and in the control room. Manual extinguishment of fire will be accomplished by the plant fire brigade.

3.20.3	**Preservation of Safe Shutdown Capability**

The licensee stated that TB-FZ-11H has a ceiling height of approximately 7'-0", measured at the 3'-6" elevation, and approximately 19'-0", measured at the 23'-6" elevation with an approximate floor area of 3,944 square feet and 4,366 square feet, respectively, so it is unlikely that smoke and heat would accumulate at the height of the safe shutdown equipment and cause a failure due to fire damage.

3.20.4	**OMAs Credited for a Fire In This Area**
3.20.4.1	*OMA #7* - Align Fire Water to Isolation Condenser

In order for OMA #7 to be necessary, the loss of the "B" Train of power would have to occur due to fire damage. The loss of the "B" Train of power is attributed to the fact that the 125 VDC control power could be lost to the 1D 4160V Switchgear or the 1D 4160V main breaker could trip due to cables that traverse through this fire zone. The licensee stated that the cables

for the 125 VDC control power and the control circuit for the 1D main breaker are contained in separate conduits but are routed within approximately 6 inches of each other in a portion of this zone and that the conduits are located approximately 5 to 18 feet above the floor. Additionally, the licensee stated that the 125 VDC control cable leaves the zone through the east wall into Fire Zone RB-FZ-1F2 while the 1D main breaker control cable continues along the east wall near the floor through the remaining portion of this zone and rises up to approximately 6 feet from the floor where it exits the zone.

The licensee also stated that the primary ignition sources in the area are the feedwater pumps and motors, which are located approximately 10 feet from the conduits. Transient combustibles are controlled by administrative procedures and although the accumulation of transient combustibles along the east wall of the area could potentially impact the cables, the majority of the conduits are routed such that it would be unlikely that a fire in this area would adversely impact the cables in the conduit. The “A” train of power is credited and available for this fire zone. The redundant cable, “C” battery, “C” Distribution center, etc. are not located in this fire zone.

In the unlikely event that a fire does occur and damages the credited and redundant cables, OMA #7 is available to manually open V-9-2099 and V-11-49 and close V-11-63 and V-11-41 to align the fire water system for make-up water to Isolation Condenser "B" since there is no power ("B" Train) available to the Condensate Transfer System. The licensee also stated that they have assumed a 10-minute diagnosis period and that the required time to perform the action is 13 minutes while the time available is 45 minutes, which provides a 22-minute margin.

3.20.4.2 *OMA #12 - Establish CRD Flow to Reactor*

In order for OMA #12 to be necessary, a loss of instrument air to the CRD flow control valve would have to occur due to fire damage. The licensee stated that although the USSs powering the air compressors are located 35 feet apart from each other, the power cables are located in the same cable trays for at least 45 feet and that the normal CRD flow control valve is a single component without a redundant counterpart. Because of this, a manual bypass is provided to maintain flow around the CRD flow control valves that fail closed upon loss of instrument air or control cable damage.

In the unlikely event that a fire does occur and causes the normal flow control valve to be unavailable due to a loss of instrument air or cable damage, OMA #12 is available to manually open V-15-237, throttle V-15-30 while monitoring flow at FI-225-2, and close V-15-52 to establish CRD flow to the reactor. Furthermore, OMA #12 would only be necessary if the Isolation Condenser/CRD systems are utilized for hot shutdown. If OMA #12 becomes necessary, the licensee stated that they have assumed a 30-minute diagnosis period and that the required time to perform the action is 15 minutes, while the time available is 204 minutes, which provides a 159-minute margin.

3.20.5 Conclusion

Given the limited amount of combustible materials, ignition sources, and large volume of the space, it is unlikely that a fire would occur and go undetected or unsuppressed by the thermal detection system noted above or personnel, and damage the safe shutdown equipment. Even if such circumstances exist, OMAs #7 and #12 are available to provide additional assurance that safe shutdown capability is maintained.

4.0 Feasibility of the Operator Manual Actions

This analysis postulates that OMAs may be needed to assure safe shutdown capability in addition to the traditional fire protection features described above. NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," provides criteria and associated technical bases for evaluating the feasibility and reliability of post-fire OMAs in nuclear power plants. However, Exelon states that the OMAs identified in its Phase 1 request were previously found acceptable in fire protection safety evaluation reports dated March 24, 1986 and June 25, 1990, and, therefore, do not need to meet the reliability criteria specified in NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," dated October, 2007. The following provides the OCNGS analysis of these criteria for justifying the OMAs specified in this exemption.

4.1 Bases for Establishing Feasibility

The NRC staff has evaluated the feasibility review provided by the licensee in the April 2, 2010, Response to Request for Additional Information. The feasibility review documents that procedures are in place, in the form of fire response procedures, to ensure that clear and accessible instructions on how to perform the manual actions are available to the operators. All of the requested OMAs are directed by plant procedures, and the operators are trained in the use of the procedures. Specifically, the licensee stated that procedure ABN-29, Plant Fires, is entered whenever a fire or indication of a fire occurs on the main fire alarm panel in the control room or at any local fire alarm panel. In addition to dispatching a radio-equipped operator to the alarming location, ABN-29 also directs that the fire brigade be dispatched whenever a fire suppression system has actuated (sprinkler, deluge, Halon, CO2) or a fire is confirmed. In addition, the licensee stated that ABN-29 directs immediate entry into the Fire Support

Procedure (FSP) for the affected fire area as soon as the existence of a fire is confirmed. The licensee states that the following indications or symptoms are considered examples of a confirmed fire:

- Fire detection alarm and equipment malfunction indication or alarms within the same area;
- Fire pump start and either sprinkler flow alarm or deluge flow alarm;
- Gaseous suppression system actuation;
- Report from the field of an actual smoke condition or actual fire condition;
- Fire detection alarm with follow up confirmation by field operator.

Entering the FSP means that the operator will review the FSP, identify equipment that could be affected, identify equipment that will be available, monitor plant equipment from the control room and communicate with the fire brigade leader. Based on the symptoms received in the control room and the feedback from the fire brigade leader, the operator will decide using the procedure what mitigating actions are necessary. In the event that a plant shutdown has occurred before the FSP is entered, the operator will still enter the FSP based on the fire and initiate the OMAs as appropriate. OMAs that are considered “prompt” (i.e., those that must be done within 45 minutes or less) are identified in both ABN-29 and in the applicable FSPs as an item requiring immediate attention. The operators are trained to perform prompt actions first and prioritize them based upon existing plant conditions. The FSPs are based on the worst-case loss considerations by assuming all fire damage occurs instantaneously and thus all operator manual actions will be required. The use of the Emergency Operating Procedures (EOPs) in conjunction with the applicable FSPs will permit the use of any mitigating system available first, and if a desired system is not available, the FSP provides a contingency action to

restore the system or provide another means to perform the function. Operator training, including simulator demonstrations and plant walk downs, has been performed to ensure consistency in operator and team response for each OMA.

Several potential environmental concerns are also evaluated, such as radiation levels, temperature/humidity conditions and the ventilation configuration and fire effects that the operators may encounter during certain emergency scenarios. The licensee's feasibility review concluded that the operator manual actions were feasible because the operators performing the manual actions would not be exposed to adverse or untenable conditions during any particular operator manual action procedure or during the time to perform the procedure. An action is considered feasible if it is shown that it is possible to be performed within the available time (considering relevant uncertainties in estimating the time available). The licensee states that OMAs required for achieving and maintaining hot shutdown conditions are feasible, and not impacted by environmental conditions associated with fires in the fire area identified in the request. Each of the safe shutdown calculations that provide the technical basis for the FSPs contains a timeline for operator actions for the specific fire area. In addition, the equipment needed to implement OMAs remains available and the fire areas remain accessible during or following the event.

An operator may need to re-enter Fire Zone RB-FZ-1E to manually manipulate three 2-inch CRD System valves V-15-237, V-15-30 and V-15-52 that are physically located within four feet of each other within the spray area of the automatic localized fixed water spray deluge system installed in this fire zone. An exemption was granted in SER dated June 25, 1990 for not providing either additional separation from in-situ combustibles or protection for CRD System valve V-15-30. Valves V-15-237, V-15-52 and V-15-30 are physically within four feet of

each other; therefore, the technical basis of the exemption is considered to be equally valid for these two additional valves. In addition, the licensee states that the actions can be performed in 15 minutes and there are 204 minutes available between the start of the event and when the actions need to occur to restore CRD flow.

4.2 Feasibility

The licensee's analysis demonstrates that, for the expected scenarios, the OMAs can be diagnosed and executed within the amount of time available to complete them. The licensee's analysis also demonstrates that various factors, as discussed above, have been considered to address uncertainties in estimating the time available. Therefore, the OMAs included in this review are feasible because there is adequate time available for the operator to perform the required OMAs to achieve and maintain hot shutdown following a postulated fire event. The following table summarizes the "required" verses "available" times for each OMA. Where a diagnosis time has been identified, it is included as part of the required time for a particular action. Where an action has multiple times or contingencies associated with the "allowable" completion time, the lesser time is used. This is approach is considered to represent a conservative approach to analyzing the timelines associated with each of the OMAs with regard to the feasibility and reliability of the actions included in this exemption. In some cases the margin between the required time and available time is small. This limited margin is based on using the most limiting information from the licensee. For example, if the licensee postulated up to 30 minutes for diagnosis, the required time below includes the full 30 minutes.

Finally, these numbers should not be considered without the understanding that the manual actions are a fall back in the unlikely event that the fire protection defense-in-depth features are insufficient. In most cases there is no credible fire scenario that would necessitate

the performance of these OMAs. The licensee provided a discussion of the times and circumstances associated with each of the actions in their March 3, 2009, and April 2, 2010, correspondence.

OMA	Fire Area /Zone of Fire Origin	OMA Location	Required Time (min)	Available Time (min)	Margin (min)
1	TB-FA-26, TB-FZ-11B, TB-FZ-11E	TB-FA-3B	29	45	16
	TB-FZ-11C, TB-FZ-11D		34	45	11
2	OB-FA-9, OB-FZ-6A, OB-FZ-8C, TB-FZ-11B, TB-FZ-11E	Yard	37	73	36
3	TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E	CW-FA-14	20	45	25
4	TB-FZ-11B, TB-FZ-11E	MT-FA-12	20	45	25
5	TB-FZ-11D, TB-FZ-11E	DG-FA-17	24	45	21
6	TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E	CW-FA-14	16	45	29
7	OB-FZ-6B, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, TB-FZ-11F, TB-FZ-11H, CW-FA-14	RB-FZ-1E	23	45	22
8	OB-FZ-8C	OB-FZ-6A	38	60	22
9	OB-FZ-6A	OB-FZ-6B	43	180	137

11	RB-FZ-1E, RB-FZ-1G	RB-FZ-1D	130	204	74
12	RB-FZ-1D, RB-FZ-1F5, TB-FA-3A, OB-FZ-6A, OB-FZ-6B, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, OB-FA-9, TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FZ-11F, TB-FZ-11H, CW-FA-14	RB-FZ-1E	45	204	159
	OB-FZ-10A		48	204	156
	RB-FZ-1E, RB-FZ-1G		130	204	74
13	RB-FZ-1F3	RB-FZ-1F2	65	204	139
16	TB-FZ-11B, TB-FZ-11E, OB-FZ-8C	TB-FZ-11C	23	30	7

* Noted times account for any assumed diagnosis time to assess the need for OMAs.
** Prompt actions are those having allowable completion times of 30 minutes or less.

The NRC staff reviewed the required operator manual action completion time limits versus the time before the action becomes critical to safely shutting down the unit as presented in the feasibility analyses. In one case the action must be completed within 30 minutes. This action is identified as OMA Phase 1, #16 and requires an operator to manually trip the Reactor Recirculation Pumps “A," “B," “C," “D” and “E” at the 4160V Switchgear 1A and 1B. The action may be required as a result of fire in OB-FZ-8C, TB-FZ-11B, or TB-FZ-11E. The symptom for this action is the inability to trip the Recirculation Pumps from the control room and this is detected using the associated pump breaker indicating lights, alarms and flow indications. The Fire Support Procedures direct the operator to trip the pumps using the pump control switches

or the Recirculation Pump Trip circuitry (two trip coils for pumps). If both of these methods fail on one or more pumps, the guidance is given to trip the pumps from the 4160V Switchgear 1A and 1B located outside the control room in Fire AreaTB-FZ-11C. Only one operator would be required and it would take approximately 13 minutes for access to the area and to perform the action of tripping the breakers. Given the low complexity of this action, the NRC staff finds that there is a sufficient amount of time available to complete the proposed operator manual actions.

5.0 **Summary of Defense-in-Depth and Operator Manual Actions**

In summary, the defense-in-depth concept for a fire in the fire areas discussed above provides a level of safety that results in the unlikely occurrence of fires, rapid detection, control and extinguishment of fires that do occur and the protection of structures, systems and components important to safety. As discussed above, the licensee has provided preventative and protective measures in addition to feasible and reliable OMAs that together demonstrate the licensee's ability to preserve or maintain safe shutdown capability in the event of a fire in the analyzed fire areas.

Authorized by Law

This exemption would allow OCNGS to rely on OMAs, in conjunction with the other installed fire protection features, to ensure that at least one means of achieving and maintaining hot shutdown remains available during and following a postulated fire event, as part of its fire protection program, in lieu of meeting the requirements specified in III.G.2 for a fire in the analyzed fire areas. As stated above, 10 CFR 50.12 allows the NRC to grant exemptions from the requirements of 10 CFR Part 50. The NRC staff has determined that granting of this

exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, the exemption is authorized by law.

No Undue Risk to Public Health and Safety

The underlying purpose of 10 CFR Part 50, Appendix R, Section III.G is to ensure that at least one means of achieving and maintaining hot shutdown remains available during and following a postulated fire event. Based on the above, no new accident precursors are created by the use of the specific OMAs, in conjunction with the other installed fire protection features, in response to a fire in the analyzed fire areas. Therefore, the probability of postulated accidents is not increased. Also based on the above, the consequences of postulated accidents are not increased. Therefore, there is no undue risk to public health and safety.

Consistent with Common Defense and Security

This exemption would allow OCNGS to credit the use of the specific OMAs, in conjunction with the other installed fire protection features, in response to a fire in the analyzed fire areas, discussed above, in lieu of meeting the requirements specified in III.G.2. This change, to the operation of the plant, has no relation to security issues. Therefore, the common defense and security is not diminished by this exemption.

Special Circumstances

One of the special circumstances described in 10 CFR 50.12(a)(2)(ii) is that the application of the regulation is not necessary to achieve the underlying purpose of the rule. The underlying purpose of 10 CFR Part 50, Appendix R, Section III.G is to ensure that at least one means of achieving and maintaining hot shutdown remains available during and following a

postulated fire event. While the licensee does not comply with the explicit requirements of III.G.2, specifically, they do meet the underlying purpose of 10 CFR Part 50, Appendix R, and Section III.G as a whole. Therefore, special circumstances exist that warrant the issuance of this exemption as required by 10 CFR 50.12(a)(2)(ii).

4.0 CONCLUSION

Based on the all of the features of the defense-in-depth concept discussed above, the NRC staff concludes that the use of the requested OMAs, in these particular instances and in conjunction with the other installed fire protection features, in lieu of strict compliance with the requirements of III.G.2 is consistent with the underlying purpose of the rule. As such, the level of safety present at OCNGS is commensurate with the established safety standards for nuclear power plants.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the exemption is authorized by law, will not present an undue risk to the public health and safety, is consistent with the common defense and security and that special circumstances are present to warrant issuance of the exemption. Therefore, the Commission hereby grants Exelon an exemption from the requirements of Section III.G.2 of Appendix R of 10 CFR Part 50, to utilize the OMAs discussed above at OCNGS.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment **(XX FR XXXXX)**.

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this [date] day of [Month Year].

FOR THE NUCLEAR REGULATORY COMMISSION

Joseph G. Giitter, Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation