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10 CFR 50.12

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RA-09-017

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

Oyster Creek Nuclear Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Request for Exemption from 10 CFR 50, Appendix R, Section III.G., "Fire Protection of Safe Shutdown Capability" (Phase 1)

References:

1. Letter dated March 24, 1986, from J. Zwolinski, USNRC, to P. Fiedler, Oyster Creek Nuclear Generating Station, "Exemptions from Requirements of Appendix R to 10 CFR Part 50, Section III.G.2 and the Post Fire Safe Shutdown Capability (TAC 56740, 56786)."
2. Letter dated June 25, 1990, from A. Dromerick, USNRC, to E. Fitzpatrick, Oyster Creek Nuclear Generating Station, "Exemption from Certain Technical Requirements Contained in Section III.G of Appendix R to 10 CFR Part 50 (TAC 62229)."
3. Letter dated April 3, 1985, from P. Fiedler, GPU Nuclear, to J. Zwolinski, USNRC, Oyster Creek Nuclear Generating Station, Fire Protection.
4. Letter dated July 12, 1985, from P. Fiedler, GPU Nuclear, to J. Zwolinski, USNRC, Oyster Creek Nuclear Generating Station, Fire Protection.
5. Letter dated October 9, 1985, from P. Fiedler, GPU Nuclear, to J. Zwolinski, USNRC, Oyster Creek Nuclear Generating Station, Fire Protection.
6. Letter dated August 25, 1986, from P. Fiedler, GPU Nuclear, to J. Zwolinski, USNRC, Oyster Creek Nuclear Generating Station, Fire Protection.

In accordance with 10 CFR 50.12, "Specific exemptions," Exelon Generation Company, LLC (Exelon) hereby requests an exemption from the provisions of 10 CFR 50, Appendix R, Section III.G, "Fire Protection of Safe Shutdown Capability," for the use of operator manual actions for Oyster Creek Nuclear Generating Station (OCNGS) in lieu of the requirements of Paragraph III.G.2. This exemption is being requested in accordance with the requirements of 10 CFR 50.12(a)(2)(ii) since the application of the regulation in this particular circumstance would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

The manual actions addressed in this exemption request (Phase 1) are those that were previously included in the OCNGS Fire Hazards Analysis Report (FHAR) submitted to the NRC, which was subsequently found acceptable in a fire protection safety evaluation report (SER). Reference 1 is an SER that accepts the OCNGS FHAR, which includes operator manual actions. Reference 2 is an SER that acknowledges that other manual actions not affected by a fire in the fire area are acceptable. References 3 – 6 comprise the submittals to the NRC referenced in the two SERs.

In accordance with Regulatory Issue Summary (RIS) 2006-10, "Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions," an approved 10 CFR 50.12 exemption is required for all operator manual actions, even those that were accepted in a previously issued NRC SER. This exemption request is limited to those manual actions that were previously accepted in an NRC SER for OCNGS. Attachment 2 contains a list of the specific manual actions for which an exemption is being requested.

This exemption request will not result in undue risk to the public health and safety because Exelon has determined that the subject manual actions are feasible and the NRC has already found these manual actions to be acceptable for use in achieving post-fire safe shutdown. In addition, the intent of 10 CFR 50, Appendix R, Section III.G.2, is to ensure that one train of systems necessary to achieve and maintain hot shutdown will remain available in the event of a fire. The manual actions discussed in this exemption request provide that assurance. If manual actions are not used to meet the underlying purpose of the rule, modifications to: (1) provide additional fire suppression systems, detection systems, or fire barriers, or (2) re-route cabling or wrap cabling, would be required to achieve compliance. Such modifications represent an unwarranted burden on Exelon since they are not necessary to meet the underlying purpose of the rule. Therefore, the special circumstances for issuance of the exemption are satisfied in accordance with the requirements of 10 CFR 50.12(a)(2)(ii), since application of the rule is not necessary to achieve the underlying purpose of the rule. Furthermore, the requested exemption is authorized by law and is consistent with the common defense and security. Therefore, the requirements of 10 CFR 50.12(a)(1) are satisfied.

The Fire Protection Program at Oyster Creek, including defense-in-depth features such as fire detection and suppression systems installed in specific fire areas/zones within the plant, has been previously reviewed and approved by the NRC in various fire protection SERs and exemptions, and found acceptable during fire protection related inspections. Due to the mitigating factors and existing defense-in-depth features already provided, as discussed in Attachment 1, the existing level of defense in depth is considered acceptable for the manual actions contained in this exemption request. Nonetheless, Exelon has decided to enhance the existing fire protection defense in depth by adding detection or suppression capability to certain fire areas/zones within the plant. The modifications to install this detection or suppression are discussed within the applicable fire area descriptions in Attachment 1.

This exemption request includes no new regulatory commitments.

Information supporting the exemption request is contained in Attachments 1 and 2 to this letter. Exelon requests approval of this exemption request by March 3, 2010.

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

Respectfully,

D cK

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

Attachments: 1. 10 CFR 50.12 Exemption Request, Operator Manual Actions
2. Appendix R, Section III.G.2, Operator Manual Actions

cc: Regional Administrator - NRC Region I w/ attachments
NRC Senior Resident Inspector – OCNGS "
NRC Project Manager, NRR – OCNGS "
Director, Bureau of Nuclear Engineering, New Jersey Department of Environmental Protection "
Mayor of Lacey Township, Forked River, New Jersey "
Jon Corzine, State of New Jersey "

bcc:

Sr. Vice President, Mid-Atlantic Operations	w/o attachments
Sr. Vice President, Operations Support	"
Vice President, Engineering	"
Site Vice President, OCNGS	"
Plant Manager, OCNGS	"
Director, Operations, OCNGS	"
Director, Engineering	"
Director, Site Engineering, OCNGS	"
Director, Site Training, OCNGS	"
Manager, Regulatory Assurance, OCNGS	"
Manager, Licensing - KSA3-E	w/attachments
G. Stewart - KSA3-E	"
M. Carlson, OCNGS	"
C. Pragman, KSA2-N	"
Commitment Coordinator - KSA 3-E	"
Records Management - KSA 1-N-1	"

ATTACHMENT 1

10 CFR 50.12 Exemption Request

Oyster Creek Nuclear Generating Station
Docket No. 50-219

Request for Exemption from 10 CFR 50, Appendix R,
Section III.G, "Fire Protection of Safe Shutdown Capability" (Phase 1)

Operator Manual Actions

ATTACHMENT 1
OPERATOR MANUAL ACTIONS

I. SPECIFIC EXEMPTION REQUEST

An exemption is requested by Exelon Generation Company, LLC (Exelon) from the requirements of Appendix R (Reference 1), Section III.G, "Fire Protection of Safe Shutdown Capability," for Oyster Creek Nuclear Generating Station (OCNGS), to the extent that operator manual actions are necessary to achieve and maintain hot shutdown for areas/zones in which both trains of systems required for safe shutdown could be affected by the same fire.

Background:

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

Regulatory Issue Summary (RIS) 2006-10 (Reference 2) documents the NRC position relative to the use of operator manual actions as part of a compliance strategy to meet the requirements of 10 CFR 50, Appendix R, Section III.G.2. The NRC requires that plants which credit manual actions for Section III.G.2 compliance obtain specific NRC approval for the manual actions via the exemption process in accordance with the requirements of 10 CFR 50.12. RIS 2006-10 addresses operator manual actions that were previously approved outside the exemption process as stated below:

> "For pre-1979 licensees, a staff decision in a safety evaluation report (SER) that approves the use of operator manual actions, in lieu of one of the means specified in paragraph III.G.2, does not eliminate the need for an exemption. Pre-1979 licensees who have SERs, but not a corresponding exemption, which approve manual actions should request an exemption under 10 CFR Part 50.12, citing the special circumstances of section 50.12(a)(2)(ii), citing the SER as the safety basis, and confirming that the safety basis established in the SER remains valid. The staff expects to grant the exemption on these bases without further review."

10 CFR 50.12(a)(2)(ii) states, "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

II. BASIS FOR EXEMPTION REQUEST

This exemption request (Phase 1) is limited to those operator manual actions credited for 10 CFR 50, Appendix R, Section III.G.2 compliance that were previously found acceptable for OCNGS by the NRC in a Safety Evaluation Report (SER). References to the documentation that supports the inclusion of these manual actions as previously approved is provided. The operator manual actions that are the subject of this exemption request are essentially unchanged from their original acceptance (with minor changes as noted in Attachment 2); therefore, the original safety basis remains valid.

The intent of 10 CFR 50, Appendix R, Section III.G.2, is to ensure that one train of systems necessary to achieve and maintain hot shutdown will remain available in the event of a fire. The manual actions discussed in this exemption request provide that assurance. If manual actions are not used to meet the underlying purpose of the rule, modifications to: (1) provide additional fire suppression systems, detection systems, or fire barriers, or (2) re-route cabling or wrap cabling, would be required to achieve compliance. Such modifications represent an unwarranted burden on Exelon since they are not necessary to meet the underlying purpose of the rule. Therefore, the special circumstances for issuance of the exemption are satisfied in accordance with the requirements of 10 CFR 50.12(a)(2)(ii), since application of the rule is not necessary to achieve the underlying purpose of the rule.

III. DEMONSTRATION THAT MANUAL ACTIONS ARE PREVIOUSLY APPROVED

Overview

Manual actions have been a part of the OCNGS Fire Safe Shutdown (FSSD) analysis since its inception for both Redundant and Alternative Shutdown areas. A discussion of manual actions required for each fire area/zone was included in Rev. 3 of the "Fire Hazards Analysis Report [FHAR] and Appendix R, Section III.G Safe Shutdown Evaluation" submitted to the NRC on April 3, 1985 (Reference 3), FHAR Rev. 4 submitted on July 12, 1985 (Reference 4) and FHAR Rev. Nos. 5 and 6 submitted on August 25, 1986 (Reference 5). By letter dated March 24, 1986 (Reference 6), the NRC accepted the OCNGS FHAR, which includes the operator manual actions. By letter dated June 25, 1990 (Reference 7), the NRC acknowledges that other manual actions not affected by a fire in the fire area are acceptable.

Citations

The information presented below provides a brief discussion regarding correspondence between GPU Nuclear (GPUN) and the NRC that relates to the NRC review of operator manual actions described in this exemption request.

1. April 3, 1985 – GPUN Letter to NRC, Submitting Rev. 3 of the FHAR (Reference 3)

This version of the FHAR was submitted based on discussions with the NRC, and described the required manual actions for each fire area/zone, as well as describing them in Appendix A, including Figures A-1 and A-2 of the FHAR.

For example, Section 1.2.1.H states that manual actions for hot shutdown are required to align the Fire System water to the Isolation Condenser shell side for makeup. In some redundant shutdown areas/zones, these manual actions include taking control of certain components at the "Local Shutdown Panel(s)," which were installed to satisfy Alternative Shutdown requirements (III.G.3).

Section 3.0 changes included adding a reference to the Shutdown Paths in Appendix A, Figures A-1 and A-2. These Figures tabulate the equipment used to provide shutdown in the event of a fire in any area of the plant, which include listing all manual actions that are required.

2. August 5, 1985 – GPUN Telecon Summary - Telecon between GPUN and D. Kubicki (NRC) regarding April 3, 1985 Rev. 3 FHAR submittal

D. Kubicki, the NRC Fire Protection reviewer, requested a telephone conference to discuss the OCNGS fire protection submittal dated April 3, 1985. The purpose of this discussion was to clarify and/or resolve various concerns, which have resulted from the review of the submittal. The page number listed below is from the April 3, 1985 submittal.

> "Page 1-13 Concern: Here and elsewhere manual actions are required. Verify that these actions are accomplished outside the area involved in the fire.
>
> "Response: Manual actions referred to are accomplished outside the area involved in the fire."

3. October 9, 1985 – GPUN Letter to NRC Documenting the Verbal Resolution of a Number of NRC Concerns (Reference 8)

This letter summarizes the agreement that was reached between the NRC and GPUN on the telephone, which shows that the NRC reviewed all manual actions and only required exemptions for the manual actions that were performed in the area of the fire.

> "The NRC staff is currently reviewing the Oyster Creek "Fire Hazards Analysis and Appendix R Section III.G Safe Shutdown Evaluation," which was submitted by letter dated April 3, 1985. The staff contacted GPUN by telephone to identify those areas of the submittal, which involve staff concerns, and questions, which require resolution prior to completion of the Staff's Safety Evaluation Report (SER). After a number of discussions by telephone, GPUN and the staff have reached agreement on the resolution of these concerns.
>
> "Currently, GPUN is revising, on a page replacement basis, the April 3, 1985 submittal to incorporate the agreements reached; however, in order to expedite the review process, Enclosure 1 provides a summary description of the agreements reached and the resultant changes in the submittal. This information provides the basis for the staff to complete their SER while the revisions to the submittal are being prepared. The projected schedule for submittal of the revised pages is November 30, 1985."

From Enclosure 1:

> "Staff Concern: Manual actions are required within 45 minutes for postulated fires in numerous locations. Credit cannot be taken for manual actions, within the affected fire area, in less than 1 hour.
>
> "Resolution: The manual actions referred to are accomplished at locations outside the Fire Zone involved in the fire. The submittal will be revised to clearly indicate that manual actions are accomplished in locations independent of the Fire Zone under consideration."

This demonstrates that, while performing their review for the SER, the NRC was aware that manual actions were required to be performed outside the area of the fire.

4. October 29, 1985 – NRC letter to GPUN – "August 1985 Progress Review Meeting on Licensing Actions" (Reference 9)

This letter summarizes a meeting held on September 18, 1985, to discuss the status of several station Licensing Actions, including Appendix R.

"The Staff has completed its review of the licensee's fire protection program dated April 12, 1985, but is waiting for the licensee's letter to document its commitment made by phone call in August 1985. These commitments were made to resolve the staff's concerns given in Attachment 3. A draft of this letter has been reviewed by the Staff. The licensee submitted this letter on October 9, 1985."

Attachment 3 of this letter states:

"Manual actions are required within 45 minutes for postulated fires in numerous locations. Credit cannot be taken for manual actions, within the affected fire areas, in less than 1 hour."

5. March 24, 1986 – NRC Letter to GPUN - SER (Reference 6)

This letter transmits the NRC's approval of certain exemptions to Appendix R. This letter states that the NRC's approval of the overall post fire safe shutdown capability for Oyster Creek is included in Section 8.0 of the Safety Evaluation. This approval is based on the April 3, 1985 submittal of the FHAR (Rev. 3), July 12, 1985 submittal of the FHAR (Rev. 4) and GPUN's October 9, 1985 response to a request for additional information. Excerpts from the Safety Evaluation are provided below.

Section 6.0, Item 2 states:

"Exemption request from the requirements to provide 1-hour fire barriers for electrical circuits associated with the "C" battery room ventilation system in Fire Area OB-FA-6B."

The "Evaluation" portion of this section states:

"The licensee stated that the ventilation of the "C" battery room is not required for a minimum of 38 hours after a loss of ventilation, and that the adequate ventilation can be achieved for this battery room by manually opening the battery room door and dampers D-1 and D-2 and D-4 in the ventilation duct work.

"Based on the above, as the ventilation of the "C" battery room is not needed for 38-hours and the alternate ventilation can be provided after this period, the staff concludes that an exemption request from the requirements to provide 1-hour barriers from the electrical circuits associated with [the] "C" battery room is not needed."

Section 8.0 states:

"By letter dated April 3, 1985, the licensee submitted the revised Fire Hazard Analysis Report and Section III.G Safe Shutdown Evaluation describing the means by which safe shutdown can be achieved in the event of fire and the proposed modifications to Oyster Creek to meet the requirements of Appendix R, Items III.G.3 and III.L.

"The licensee's revised safe shutdown analysis for a fire event has demonstrated that adequate redundancy and/or alternate safe shutdown methods exist for those systems required to effect hot or cold shutdown utilizing the alternate shutdown methods."

The manual actions specified in Attachment 2 of this exemption request that refer to Reference 3 were reviewed by this SER.

6. August 25, 1986 – GPUN Letter to NRC, Submitting Revision Nos. 5 and 6 of the FHAR (Reference 5)

Revision Nos. 5 and 6 of the FHAR incorporated GPUN's commitments submitted by letter dated October 9, 1985 (Reference 8).

The summary of changes for Rev. 5 clarified the manual action requirements for the majority of Sections 1.2 and 3.0 of the FHAR. The typical statement that was added is as follows:

> "All manual actions for hot and cold shutdown will be accomplished from outside of this fire zone and are not affected by a fire in this zone."

The detailed manual actions were relocated from Sections 1.2 and 3.0 to Appendix A, Figures A-1 and A-2, "Appendix R Safe Shutdown Hot Shutdown Paths." The Shutdown Paths provided a generic tabulation of the systems required for Hot Shutdown that were applicable to all fire areas/zones that utilized this particular path as well as a tabulation of the applicable manual actions required for each fire area/zone. Only manual actions requiring special discussion remained in Sections 1.2 and 3.0, for example, those performed in the area of the fire, as indicated in the examples below.

Section 1.2.1.E states:

> "Valve V-15-30 located in this zone will be opened after a fire, but within 3 hours 24 minutes after scram to assure a flow path from the CRD pumps to the reactor.
>
> "All other manual actions will not be affected by a fire in this zone."

Section 3.1.6 states:

> "In the event of a fire in this zone the following Safe Shutdown Paths have been selected:
>
> Hot Shutdown - Path No. 1
> Cold Shutdown - Path No. 1
>
> "See Appendix A, Figures A-1 and A-2, for Safe Shutdown Path descriptions."

Section 3.1.6.d states:

> "All manual actions for hot and cold shutdown will be accomplished from outside of this fire zone except as follows:
>
> "Valve V-20-1 located in RB-FZ-1F3 will be opened after a fire in RB-FZ-1F3 but within 3 hours 24 minutes after scram to complete the alignment of the Condensate Storage tank to Core Spray Pump NZ01B.
>
> "All other manual actions will not be affected by a fire in this zone."

7. June 25, 1990 – NRC Letter to GPUN - SER (Reference 7)

Requested exemptions were submitted by Reference 5, which were based on GPUN commitments contained in Reference 8. These commitments were made from various GPUN and NRC discussions, including some discussions about manual actions. Below are examples from the SER where the NRC acknowledges that manual actions are performed outside the area of the fire.

Section 2.1.1, "Evaluation," states:

> "Assuring that all manual actions required for hot and cold shutdown due to fire in this zone will be accomplished from outside this zone and are not affected by a fire in this zone."

Section 3.1.1, "Evaluation," states:

> "Modifications provided for protection of safe shutdown capability, and other mitigating factors in this fire zone [including manual actions], are the same as those described for Fire Zone RB-FZ-1D, elevation 51 feet, in Section 2.1.1 above, except that the fire loading (while still low) is approximately 20,000 BTU per square foot and corresponds to a fire severity of about 15 minutes as measured on the ASTM E-119 time/temperature curve."

Section 4.2.1, "Evaluation," states:

> "Manual action required for hot and cold shutdown for a fire in this zone will be accomplished outside of the fire zone except for opening valve V-20-1. This valve, located in Room RB-FZ-1F3 (North-West corner of room in the same fire zone) must be opened following a fire in RB-FZ-1F3 but only within 3 hours 24 minutes after scram to complete the alignment of the condensate storage tank to the core spray pump NZ01B. Other manual actions will not be affected by a fire in this zone."

Section 6.2, "Evaluation," states:

> "Manual actions required for hot and cold shutdown due to a fire in this zone will be accomplished outside of this zone and will not be affected by any fire in this zone."

Section 11.1.1, "Evaluation," states:

> "The licensee further stated that all manual actions for hot and cold shutdown will be accomplished from outside of this fire zone and will not be affected by a fire in this zone."

Based on Reference 8 and the above statements extracted from this SER (Reference 7), it is apparent that the NRC reviewed and accepted the manual actions contained in the FHAR, and only required an exemption if the hot shutdown manual action was required to be performed in the affected fire area/zone.

Summary

The March 24, 1986 SER (Reference 6) accepted the FHAR, and also accepted the OCNGS proposed resolution to the NRC reviewer's final comments regarding manual actions. The August 25, 1986 submittal of the FHAR Rev. 6 (Reference 5) documented the final resolution of the NRC reviewer's comments regarding manual actions. The June 25, 1990 SER (Reference 7) clearly acknowledges that manual actions are performed outside the fire zone.

Attachment 2 contains a summary list of the manual actions for which an exemption is being requested. These actions were contained in the OCNGS FHAR up through Revision 6, at the time the June 25, 1990 SER (Reference 7) was issued, but were not addressed in a previous exemption request. It is evident that the NRC reviewed OCNGS manual actions based on the specific comments and questions regarding manual actions previously cited. Therefore, only a small number of exemptions were requested and approved for manual actions in the affected fire area that are needed to maintain hot shutdown. Other manual actions not located in the affected fire area were included in the FHAR submittals and the NRC accepted the use of these manual actions without requiring an exemption.

IV. TECHNICAL JUSTIFICATION FOR OPERATOR MANUAL ACTIONS

This exemption request includes a summary of information, based on the OCNGS FHAR (Reference 10), safe shutdown drawings, procedures, etc., that would have been available (except for subsequent revisions over time) when the manual actions credited for post-fire safe shutdown were previously approved by the NRC. This exemption request provides a discussion of the initiating fire areas involved, the results of a feasibility review of the operator manual actions based on the criteria specified in NRC Inspection Procedure 71111.05 (Reference 11), and a discussion of how the manual actions meet the defense-in-depth criteria specified in Appendix R. While Inspection Procedure 71111.05 did not exist at the time the SERs approving the manual actions were issued, it is apparent that NRC Regional Fire Inspectors and the Nuclear Reactor Regulation reviewer used similar criteria when reviewing the operator manual actions at that time.

NRC IP 71111.05 was revised on March 6, 2003, to specifically address the feasibility of operator manual actions in support of the proposed manual action rule. The operator manual actions addressed in this exemption request are those that were previously approved in the March 24, 1986 and June 25, 1990 fire protection SERs. RIS 2006-10 directs that operator manual actions that were approved in a fire protection SER should be included in a request for "an exemption under 10 CFR Part 50.12, citing the special circumstances of Section 50.12(a)(2)(ii), citing the SER as the safety basis, and confirming that the safety basis established in the SER remains valid." The approval SERs did not provide a detailed safety basis for the NRC approval of these operator manual actions; however, the manual actions remain essentially unchanged from their original accepted configuration. In order to confirm to the NRC that the operator manual actions are feasible, which would support the conclusion that the safety basis established in the SERs remains valid, each of the operator manual actions addressed by this exemption request was reviewed against the feasibility criteria listed in the March 6, 2003 revision of NRC IP 71111.05 and the defense-in-depth criteria provided in Appendix R.

The Fire Protection Program at Oyster Creek, including defense-in-depth features such as fire detection and suppression systems installed in specific fire areas/zones within the plant, has been previously reviewed and approved by the NRC in various SERs and exemptions, and found acceptable during fire protection related inspections. Due to the mitigating factors and existing defense-in-depth features already provided, as discussed in the individual fire area/zone descriptions below, the existing level of defense in depth is considered acceptable for the manual actions contained in this exemption request. Nonetheless, Exelon has decided to enhance the existing fire protection defense in depth by adding detection or suppression capability to certain fire areas/zones within the plant. The modifications to install this detection or suppression are discussed within the applicable fire area/zone descriptions below.

A. FIRE AREA/ZONE DESCRIPTIONS

There are 34 initiating fire areas/zones included in this exemption request. An initiating fire area is the area where a fire that requires the manual action to be performed originates. A brief description of each fire area is provided below. This information provides a summary of the type of fires that are postulated to occur in each area and the type of combustibles located in each

area. Detection and suppression systems that are installed in the fire area are also discussed. The information provided was obtained and summarized from the current OCNGS FHAR, Section 7 (Reference 12). Section 7 of the FHAR is divided up by fire area/zone. Each fire area/zone has subsections providing an area description (references fire area layout drawings that are contained in Attachment B of the FHAR), equipment located in the area, fire hazards, fire protection, safe shutdown method/strategy, exemptions for the area, evaluations applicable to the area and the analysis/conclusion for the area.

OCNGS fire area boundaries utilized for fire safe shutdown analysis purposes were approved in the SER dated March 24, 1986, in Section 7.1 (Reference 6) in which the NRC stated the following:

> "In the April 3, 1985 report, the licensee described the non-fire-rated walls and floor/ceilings which bounded certain fire areas. The licensee stated that a number of these fire area boundaries contain unprotected openings such as stairways, hatchways and pipe penetrations. We have expressed our concerns to the Licensee that, because of these openings, a fire might spread from one area to the next and damage systems that are needed to achieve and maintain safe-shutdown conditions. We stated that where a fire area was protected by an automatic fire suppression system, we did not expect fire to spread through these openings into adjoining locations. Therefore, in areas protected by automatic fire suppression system, the presence of unprotected openings in walls and floor/ceilings and negligible safety significance. We also stated that in those areas where fire could spread into adjoining locations but safe-shutdown could still be achieved, the presence of unprotected openings had no safety significance. We defined this situation to be those areas where the adjacent fire area(s) contains no required shutdown related equipment or where the nearest shutdown related system is more than 50 feet horizontally from any unprotected opening in the walls or ceiling that define those areas.
>
> "For all other areas we recommended that the licensee protect the openings to prevent fire spread. The licensee committed to seal such unprotected openings with at least six inches of a fire-rated silicone foam. Where the use of such foam would not be viable, such as at open stairways or hatchways, the licensee committed to install an automatic sprinkler system to protect the opening that conforms to the appropriate sections of NFPA standard No. 13. These commitments were by letter dated October 9, 1985. Because these commitments provide us with reasonable assurance that fire will not spread into adjoining plant fire areas, we find them acceptable."

The description of each initiating fire area/zone below also provides a discussion of the required operator manual action that this exemption applies to and the reason for the operator manual action. Some of the operator manual actions that are performed are repeated in numerous fire areas/zones because of the fire safe shutdown analysis assumptions. For example, instrument air will be lost for the majority of the fire areas/zones (unless otherwise demonstrated available by analysis), which causes the Control Rod Drive (CRD) flow control valve to fail closed requiring three valves (V-15-30, 52 and 237) to be manually operated to utilize the bypass line around the normal flow control valve (refer to manual action No. 12 in Attachment 2).

Fire Area AB-FA-13

Auxiliary Boiler House fire area is remotely located from the Reactor Building with open spatial separation of at least 65 feet. The boiler house is also detached from the Railroad Airlock by

approximately 10 feet. The boiler house is unprotected sheet metal with concrete floors containing two package boilers with feed pumps and exhaust stack. Combustibles in this area include diesel fuel oil contained in piping/pumps (for heating boiler and piping/pumps to transfer fuel oil to the emergency diesel) and cable insulation. The fire loading is "low" as defined in the FHAR. A rate compensated/fixed temperature thermal detection system is installed in the Building and will sound an alarm in the Augmented Off-Gas (AOG) Building and in the Control Room. A hydrant and hose house are located nearby and a hose station is located inside the boiler house. Portable fire extinguishers are located in the area. Manual suppression efforts from the hose station and nearby hydrant or the portable extinguishers will contain the fire to the Auxiliary Boiler House. Separation from adjacent areas would prevent the spread of fire to any adjacent area. No Fire Safe Shutdown equipment or cables are located in this area.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the Emergency Operating Procedure (EOP) contingency actions for reactor pressure vessel (RPV) level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area 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 operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual action for AB-FA-13 by Item Number as identified in Attachment 2 of this letter.

TABLE AB-FA-13

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Area CW-FA-14

Circulatory Water Intake fire area is an outside area greater than 100 feet from any building except for the fish sample pool enclosure that is located in this area, which is constructed of non-combustible material. Combustible loading consists of transformer oil and electrical motors. The Unit Substation transformers (USS 1A3 and 1B3) are filled with Dow Corning 561 Silicon transformer oil. This material has characteristics that minimize the likelihood of a fire involving the insulating oil itself. A review of vendor information indicates that the flash and fire points are almost twice as high as other transformer oils, but more importantly, the heat release rate is almost 10 times lower, and any postulated fire originating at the transformer itself would tend to be limited in duration and would not involve sustained burning of the silicon oil. This judgment is supported by testing performed in 1977 by Industrial Risk Insurers of DC-561, which showed that the fluid tended to form a crust and self-extinguish (Reference 13). Based on the characteristics of the silicon fluid, any postulated fire event is expected to be very short in duration. No specific quantification of fire loading is considered necessary for this structure because it is an open structure with nothing to contain the heat release in the event of a fire. Manual suppression is provided by a hydrant and hose house within approximately 100 feet of

the area and fire extinguishers. Transformers have dikes to contain the oil to the immediate area. A security tower monitors this area continuously; therefore, any fire of significance would be detected rapidly.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer system to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the actions. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

The following table provides a summary of the manual actions for CW-FA-14 by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE CW-FA-14

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Area DG-FA-15

Emergency Diesel Generator Room No. 1 fire area is part of the Emergency Diesel Generator Building. Emergency Diesel Generator Room No. 1 is separated from other fire areas (i.e., Emergency Diesel Generator Room No. 2 (DG-FA-17) and Emergency Diesel Fuel Oil Storage Area (FS-FA-16)), with rated fire barriers. Fire loading consists of diesel fuel, diesel lube oil and nominal electrical equipment including cables. Fire loading is "low" as defined in the FHAR. Thermally activated rate-of-rise fire detection is installed throughout the general area and smoke detection systems are installed in the switchgear cubicle; both sound an alarm in the Control Room and at the local panel. A fire hydrant and hose house with Aqueous Film-Forming Foam (AFFF) supply are located nearby. Portable fire extinguishers are located in the area. Manual suppression utilizing hose lines and AFFF in conjunction with the rated fire barriers will contain a loss to one diesel generator unit. Emergency power will still be available from the other diesel generator.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not

immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual action for DG-FA-15 by Item Number as identified in Attachment 2 of this letter.

TABLE DG-FA-15

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Area NR-FA-20

New Radwaste fire area is separated from other fire areas by open space of at least 50 feet. This area contains pumps, tanks, evaporators and other waste treatment equipment. Combustible loading consists of health physics supplies, lubricating oils (minor amounts of lubricants enclosed in valve gear boxes, pump bearings, etc.), ion exchange resin, cable, paper products, and wood products. Fire loading is "low" as defined in the FHAR. Area-wide detection is made up of both thermal (rate compensated/fixed temperature) and smoke detectors. These detectors sound alarms locally and in the Control Room. Portable fire extinguishers and outside hose houses are available for manual suppression. The fire detection system will provide early warning of a fire to allow utilization of manual suppression. A fire will be contained within the area and will have no effect on safe shutdown. No Fire Safe Shutdown equipment or cables are located in this area.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual action for NR-FA-20 by Item Number as identified in Attachment 2 of this letter.

TABLE NR-FA-20

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Area OB-FA-9

The Office Building is a three story facility enveloped by the Reactor Building (RB-FA-1) on the east side, the Turbine Building (TB-FA-11) on the west side, and the service area (OB-FA-10) on the north side. The Office Building is considered a light hazard occupancy with limited amounts of combustibles, primarily paper and furnishings. The overall combustible loading for this fire area is "low" as defined in the FHAR. The building's materials of construction are non-combustible with the shell structure being reinforced concrete and the highly compartmentalized interior being hollow concrete block or sheetrock. Smoke detectors are installed in the hallway on each floor. Detector actuation sounds an alarm locally and in the Control Room. Fire extinguishers are provided on each floor and hose stations are provided on the second and third floors. A fire hydrant is available for use from outside on the first floor.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for OB-FA-9 by Item Number as identified in Attachment 2 of this letter.

TABLE OB-FA-9

ITEM #	Manual Action Required
2	Locally read Condensate Storage Tank level at LI-424-993 due to damage to control circuits.
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zone OB-FZ-6A

This fire zone is the 'A' 480V Switchgear Room. It is separated from the 'B' 480V Switchgear Room (OB-FZ-6B), Turbine Building (TB-FA-11) and Reactor Building (RB-FA-1) by fire rated barriers. The significant combustible loading is from transformer oil and cable insulation. There are also minor amounts of ordinary combustibles (paper and plastic). The fire loading is "moderate" as defined in the FHAR. The Unit Substation 1A2 transformer is filled with Dow Corning 561 Silicon transformer oil. This material has characteristics that minimize the likelihood of a fire involving the insulating oil itself. A review of vendor information indicates that the flash and fire points are almost twice as high as other transformer oils, but more importantly, the heat release rate is almost 10 times lower, and any postulated fire originating at the transformer itself would tend to be limited in duration and would not involve sustained burning of the silicon oil. This judgment is supported by testing performed in 1977 by Industrial Risk Insurers of DC-561, which showed that the fluid tended to form a crust and self-extinguish (Reference 13). Based on the characteristics of the silicon fluid, any postulated fire event is expected to be very short in duration. A fixed, total flooding, automatic Halon 1301

extinguishing system is installed throughout the zone. The system has reserve capacity for a full second discharge. A cross-zoned detection system consisting of ionization and photoelectric detectors is installed which sounds an alarm locally and in the Control Room upon operation of one detector in either detection zone. Detectors actuate the Halon system, shut down ventilation fans, and close ventilation system isolation dampers upon activation of a detector in the second zone. Remote alarms to the Control Room indicate detector actuation, Halon discharge and local panel trouble. Portable fire extinguishers are provided in the area and adjacent areas for manual fire fighting. Hose lines are available from a nearby Turbine Building hose station and from outside fire hydrants and hose houses.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for OB-FZ-6A by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE OB-FZ-6A

ITEM #	Manual Action Required
2	Locally read Condensate Storage Tank level at LI-424-993
9	Manually control 480V USS 1B2 Breakers for CRD Pump NC08B and 1B2M from Remote Shutdown Panel
10	Manually align Static Charger to 125 VDC Distribution Center "B"
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
17	Manually trip 4160V 1C Breakers for Main Core Spray Pumps "A" and "D"
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
20	Manually trip 480V USS 1B2 Breakers for Core Spray Booster Pumps "B" and "C"

Fire Zone OB-FZ-6B

This fire zone is the 'B' 480V Switchgear Room. It is separated from the 'A' 480V Switchgear Room (OB-FZ-6A), Turbine Building (TB-FA-11) and Reactor Building (RB-FA-1) by fire rated barriers. The significant combustible loading is from transformer oil and cable insulation. There are also minor amounts of ordinary combustibles (paper and plastic). The fire loading is "moderate" as defined in the FHAR. The Unit Substation 1A2 transformer is filled with Dow Corning 561 Silicon transformer oil. This material has characteristics that minimize the likelihood of a fire involving the insulating oil itself. A review of vendor information indicates that the flash and fire points are almost twice as high as other transformer oils, but more importantly,

the heat release rate is almost 10 times lower, and any postulated fire originating at the transformer itself would tend to be limited in duration and would not involve sustained burning of the silicon oil. This judgment is supported by testing performed in 1977 by Industrial Risk Insurers of DC-561, which showed that the fluid tended to form a crust and self-extinguish (Reference 13). Based on the characteristics of the silicon fluid, any postulated fire event is expected to be very short in duration. A fixed, total flooding, automatic Halon 1301 extinguishing system is installed in the Switchgear Room. The system has reserve capacity for a full second discharge. A cross-zoned detection system consisting of ionization and photoelectric detectors is installed which sounds an alarm locally and in the Control Room upon operation of one detector in either detection zone. Detectors actuate the Halon system, shut down ventilation fans, and close ventilation system isolation dampers upon activation of a detector in the second zone. Remote alarms to the Control Room indicate detector actuation, Halon discharge and local panel trouble. Portable fire extinguishers are provided in the area and adjacent areas for manual fire fighting. Hose lines are available from a nearby Turbine Building hose station and from outside fire hydrants and hose houses.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the actions. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

The following table provides a summary of the manual actions for OB-FZ-6B by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE OB-FZ-6B

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zone OB-FZ-8A

Reactor Recirculation MG Set Room is part of the Office Building and is separated from the adjoining stairwell area (OB-FA-9), Turbine Building (TB-FA-11) and Reactor Building (RB-FA-1) by fire rated barriers. The ceiling is concrete with unrated openings to the Mechanical Equipment Room on 35' elevation (OB-FZ-8B), A/B Battery Room (OB-FZ-8C), and the Office Building (OB-FA-9), which has been evaluated as acceptable. This area/zone is analyzed

together with OB-FZ-8B for safe shutdown purposes, due to the lack of rated fire barriers between the zones. Combustible loading consists of lubricating oil in MG sets and cable insulation but the loading is tracked by combining it with OB-FZ-8B. The total fire loading for OB-FZ-8A & 8B is "low" as defined in the FHAR with the majority of the loading being in OB-FZ-8A. A closed head sprinkler system is installed throughout the majority of this fire zone (over MG Sets). An alarm is provided to the Control Room when water flows from a single sprinkler head. A smoke detector is provided in the exhaust duct of the ventilation system. SER dated June 25, 1990 (Reference 7) provided an exemption for not having automatic fire detection. Fire extinguishers are provided for manual fire fighting backup. Hose lines are available from outside hydrants and hose houses.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the actions. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

The following table provides a summary of the manual actions for OB-FZ-8A by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE OB-FZ-8A

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
14	Manually provide power to Control Room A/C unit by closing tiebreaker US3T between USS 1A3 and 1B3
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
20	Manually trip 480V USS 1B2 Breakers for Core Spray Booster Pumps "B" and "C"

Fire Zone OB-FZ-8B

Mechanical Equipment Room (35' elevation) is part of the Office Building and is separated from the adjoining corridors (OB-FA-9) and Turbine Building (TB-FA-11) by fire rated barriers. The floor is concrete with unrated openings to the Reactor Recirculation MG Set Room (OB-FZ-8A), and the north wall is sealed for Halon containment but is unrated to the A/B Battery Room (OB-FZ-8C), both of which have been evaluated as acceptable. This area/zone is analyzed together with OB-FZ-8A for safe shutdown purposes, due to the lack of rated fire barriers between the

zones. Combustible loading for this fire zone consists of minor amounts of cable insulation but the loading is tracked by combining it with OB-FZ-8A. The total fire loading for OB-FZ-8A & 8B is "low" as defined in the FHAR with the majority of the loading being in OB-FZ-8A. Manual fire fighting is available using hose lines and fire extinguishers from the Office Building corridor. There is no fire safe shutdown equipment located in this area but there are safe shutdown cables in this area.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the actions. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status. There is also significant time available to perform manual action Nos. 14, 18, and 20 (Attachment 2).

An enhancement is being made to install area-wide smoke detection in this area to provide for improved operator notification ability, thereby providing a quicker response time for any required actions.

The following table provides a summary of the manual actions for OB-FZ-8B by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE OB-FZ-8B

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
14	Manually provide power to Control Room A/C unit by closing tiebreaker US3T between USS 1A3 and 1B3
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
20	Manually trip 480V USS 1B2 Breakers for Core Spray Booster Pumps "B" and "C"

Fire Zone OB-FZ-8C

A/B Battery Room, Tunnel and Electrical Tray Room are part of the Office Building and are separated from the adjoining Office Building areas (OB-FA-9) and Turbine Building (TB-FA-11) by fire rated barriers except for the floor and south wall. The floor is concrete with unrated openings to the Reactor Recirculation MG Set Room (OB-FZ-8A), and the south wall is sealed for Halon containment but is unrated to the Mechanical Equipment Room at 35' elevation (OB-

FZ-8B), both of which have been evaluated as acceptable. Major combustible loading is from cable insulation and plastic battery cases and fiberglass laminated polyester battery racks. There is also a minor amount of oil in the rotary inverter bearings. Fire loading is "low" as defined in the FHAR. A fixed, total flooding, Halon 1301 extinguishing system will discharge throughout the A/B Battery Room, Tunnel, and Electrical Tray Room. Smoke detectors are 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.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the actions. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

The following table provides a summary of the manual actions for OB-FZ-8C by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE OB-FZ-8C

ITEM #	Manual Action Required
2	Locally read Condensate Storage Tank level at LI-424-993
7	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
8	Manually control 480V USS 1A2 Breakers for "A" CRD Pump and 1A2M from LSP-1A2
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
14	Manually provide power to Control Room A/C unit by closing tiebreaker US3T between USS 1A3 and 1B3
15	Manually trip 4160V Breakers for Reactor Feedwater Pumps 1A, 1B, and 1C
16	Manually trip Reactor Recirculation Pumps ("A", "B", "C", "D" and "E") 4160V Switchgear 1A and 1B.
17	Manually trip 4160V 1C Breakers for Main Core Spray Pumps "A" and "D"
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
19	Manually trip 480V USS 1A2 Breakers for Core Spray Booster Pumps "A" and "D"
20	Manually trip 480V USS 1B2 Breakers for Core Spray Booster Pumps "B" and "C"

Fire Zone OB-FZ-10A

Monitor and Change Room Area and Operations Support Area are part of the Office Building (Service Area) and are located between the Reactor Building (RB-FA-1) and Turbine Building (TB-FA-11). The walls and ceiling are rated. The floor is concrete with unrated openings to the Chemical Lab (OB-FZ-10B), which has been evaluated as acceptable. The Service Area equipment does not perform safety related functions although safety related cabling is routed through the building. Materials of construction are non-combustible, primarily reinforced concrete and concrete block. Major combustibles consist of electrical cable insulation located above the suspended ceiling. Other combustibles include health physics materials, Protective Clothing (PC) supplies, and other miscellaneous materials. The overall combustible loading for this fire area is "low" as defined in the FHAR. Smoke detectors are installed in a majority of the zone to provide early warning fire detection. A closed head automatic sprinkler system is installed above and below the ceiling in the Monitor and Change Room, in the Cable Tray Closet and above the ceiling in the Operations Support Area hallway to protect cable trays. In addition, a hose station located nearby outside the Control Room provides manual suppression capability.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the actions. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

An enhancement is being made to add sprinkler heads to the existing automatic sprinkler system in the Monitor and Change Room, stairway area and Operations Support Area to make it area-wide, thereby improving survivability of area cables and reducing the likelihood of the fire spreading. Also, additional smoke detection is being added to this zone to provide area-wide detection.

The following table provides a summary of the manual actions for OB-FZ-10A by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE OB-FZ-10A

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zone OB-FZ-10B
Hot & Cold Chemical Lab, Instrument Lab, P.A.S.S., Count Room is part of the Office Building (Service Area) and is located between the Reactor Building (RB-FA-1) and Turbine Building (TB-FA-11). The floor and walls are rated. The ceiling is concrete with unrated openings to the Monitor and Change Room Area (OB-FZ-10A), which has been evaluated as acceptable. Fire loading consists of miscellaneous materials in the Chemistry Lab (flammable liquids, plastics, rubber, etc.) and cable insulation. The flammable liquids are maintained in flammable cabinets except during times of usage. The fire loading is "low" as defined in the FHAR. Product-of-combustion type smoke detectors are provided throughout OB-FZ-10B, except spaces above suspended ceilings. Detectors are not provided in the space above the ceiling in the Chemistry Lab; however, this space does not contain cable tray or other combustible material. Detectors are provided below the suspended ceiling to provide notification of a fire condition. Manual hose stations and portable fire extinguishers are provided and are considered to be adequate for the hazards and loading in this area. There is no fire safe shutdown equipment located in this area; however, there are fire safe shutdown cables (non-protected train) located in this area.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the actions. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

The following table provides a summary of the manual actions for OB-FZ-10B by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE OB-FZ-10B

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Area OG-FA-21
Augmented Off Gas (AOG) Building fire area is separated from other fire areas by at least 50 feet. The floors and roof are concrete, with the outside walls being unprotected metal siding. The building houses charcoal absorbers and hydrogen recombiners. Combustible loading

consists of charcoal beds, lubricating oils (minor amounts of lubricants enclosed in valve gear boxes, pump bearings, etc.), cable and miscellaneous combustibles such as wood and paper. Fire loading is "moderate" as defined in the FHAR. Smoke detectors are installed throughout the building. The system will sound an alarm locally and in the Control Room. Hose stations are available from outside hydrants and a dry standpipe inside the building. Portable extinguishers are provided. Hydrogen detection is provided in areas containing process piping. No fire safe shutdown equipment or cables are located in this area.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual action for OG-FA-21by Item Number as identified in Attachment 2 of this letter.

TABLE OG-FA-21

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Area OR-FA-19

The Old Radwaste Building is located on the east side of the Reactor Building. The Old Radwaste Building is separated from the Reactor Building by approximately 15 feet, and by 50 feet to any other fire area. The building floor, ceiling and walls are reinforced concrete. This area also includes a prefabricated steel structure on the west side of the building that houses sample tanks. The fire loading in OR-FA-19 consists of health physics supplies, lubrication oils (minor amounts of lubricants enclosed in valve gear boxes, pump bearings, etc.), ion exchange resins, paper products and wood products. The fire loading is "low" as defined in the FHAR. Fire protection features include a rate compensated/fixed temperature thermal detection system installed in portions of the building that will sound an alarm in the Augmented Off Gas Building and in the Control Room. There is no fire detection in the prefabricated steel enclosure. Fire detection is not considered required due to the very minimal combustible loading. Manual suppression is available utilizing fire extinguishers as well as hose lines that are available from outside fire hydrants and hose houses. No fire safe shutdown equipment or cables are located in this area.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression

of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual action for OR-FA-19 by Item Number as identified in Attachment 2 of this letter.

TABLE OR-FA-19

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zone RB-FZ-1D

This fire zone is located in the Reactor Building elevation 51'-3". The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were either sealed similar to a 1-hour minimum fire barrier (six inches of fire-rated silicone foam) or were evaluated as acceptable since some of these barriers are not credited with separating redundant safe shutdown equipment. The major fixed combustible is cable insulation. The fire loading is "low" as defined in the FHAR. Fire protection features include automatic fire detection, which alarms locally and in the Control Room. Primary fire suppression is provided by fixed automatic water spray systems protecting the primary fire hazard in this zone (i.e., grouped electrical cable trays). The automatic water spray system is also installed at the equipment hatch opening and open stairway to both RB-FZ-1E (Reactor Building elevation 23'-6") and RB-FZ-1C (Reactor Building elevation 75'). The water spray systems are supplemented with hose stations and portable extinguishers. SER dated June 25, 1990 (Reference 7) provided an exemption for not having area-wide automatic fire suppression in this fire zone because it was concluded that the existing provisions would promptly detect and extinguish any fire.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual action for RB-FZ-1D by Item Number as identified in Attachment 2 of this letter.

TABLE RB-FZ-1D

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zone RB-FZ-1E
This fire zone is located in the Reactor Building elevation 23'-6". The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were either sealed similar to a 1-hour minimum fire barrier (six inches of fire-rated silicone foam) or were evaluated as acceptable. The major fixed combustible is cable insulation. The fire loading is "low" as defined in the FHAR. Fire protection features include automatic fire detection, which alarms locally and in the Control Room. Primary fire suppression is provided by fixed automatic water spray systems protecting the primary fire hazard in this zone (i.e., grouped electrical cable trays). The automatic water spray system is also installed at the equipment hatch opening and open stairway to RB-FZ-1D (Reactor Building elevation 51'-3") as well as at the duct penetration at elevation 35'. The water spray systems are supplemented with hose stations and portable extinguishers. SER dated June 25, 1990 (Reference 7) provided an exemption for not having area-wide automatic fire suppression in this fire zone because it was concluded that the existing provisions would promptly detect and extinguish any fire.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for RB-FZ-1E by Item Number as identified in Attachment 2 of this letter.

TABLE RB-FZ-1E

ITEM #	Manual Action Required
11	Locally read CRD flow gauge FI-225-998
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zones RB-FZ-1F1, RB-FZ-1F2, RB-FZ-1F3, RB-FZ-1F4, and RB-FZ-1F5
These fire zones are located in the Reactor Building basement –19'-6" elevation (RB-FZ-1F1 (Southeast corner), RB-FZ-1F2 (Southwest corner), RB-FZ-1F3 (Northwest corner), RB-FZ-1F4 (Northeast corner), and RB-FZ-1F5 (Torus room - remaining area of Reactor Building basement.)). The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were either sealed similar to a 1-hour minimum fire barrier (six inches of fire-rated silicone foam) or were evaluated as acceptable. The major fixed combustible is limited to molded fiberglass reinforced polyester grating and minor amounts of lube oil in the various pumps. The fire loading is "low" as defined in the FHAR. Smoke detectors, which alarm locally and in the Control Room, provide fixed fire

detection. For manual fire suppression, portable fire extinguishers are provided with hose stations for backup. SER dated June 25, 1990 (Reference 7) provided an exemption for not having area-wide automatic fire suppression in fire zone RB-FZ-1F due to the fact that there is a 1-hour fire wrap present. This was approved because of the low combustible loading and the fact that the fire detection would alert the fire brigade to the onset of a fire in the zone so that prompt manual suppression of any fire could be accomplished. A second exemption was approved by the same SER for RB-FZ-1F3 for not providing either additional separation from in-situ combustibles or protection for Core Spray system valve V-20-1 (re-entry into fire area required) and the exemption was approved due to the low fuel loading and automatic fire detection, as well as manual fire suppression capability and heat sink capability of the water-filled piping connected to the valve.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for RB-FZ-1F1, RB-FZ-1F2, RB-FZ-1F3, RB-FZ-1F4, and RB-FZ-1F5 by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE RB-FZ-1F1, RB-FZ-1F2, RB-FZ-1F3, RB-FZ-1F4, and RB-FZ-1F5

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve for RB-FZ-1F1, RB-FZ-1F2, RB-FZ-1F4, and RB-FZ-1F5
13	Manually open Core Spray valves V-20-1 and V-20-2 and close V-20-4 to provide Reactor Coolant Makeup from Condensate Storage Tank for RB-FZ-1F3,

Fire Zone RB-FZ-1G

The Shutdown Cooling room is located on the north side of the Reactor Building (elevations 38' and 51'-3"). The ceiling is reinforced concrete with no openings. The floor and walls are reinforced concrete with non-rated openings to adjoining fire areas/zones. The non-rated openings were either sealed similar to a 1-hour minimum fire barrier (six inches of fire-rated silicone foam) or were evaluated as acceptable. Combustible loading consists of cable insulation, miscellaneous health physics material and pump motors. The fire loading is "low" as defined in the FHAR. Smoke detectors are installed and sound an alarm in the Control Room. Hose stations and portable extinguishers installed in RB-FZ-1D (Reactor Building elevation 51'-3") are available for use in this area.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for RB-FZ-1G by Item Number as identified in Attachment 2 of this letter.

TABLE RB-FZ-1G

ITEM #	Manual Action Required
11	Locally read CRD flow gauge FI-225-998
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zone RB-FZ-1H
This fire zone is the Trunnion Room, elevation 23'-6, located in the Reactor Building. The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were evaluated as acceptable. Fire loading consists of minimal cable and MSIV damping oil within the MSIV actuators. The fire loading is "low" as defined in the FHAR. A hose station is provided in adjacent fire zone TB-FZ-11E (Condenser Bay) in the heater bay area. In addition, portable extinguishers are provided in access to the condenser bay area for use in this zone. The only fire safe shutdown equipment and cables located in the area are associated with the outboard MSIVs that are located outside the drywell. The inboard MSIVs and cables are located inside the drywell and are not located in this area.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual action for RB-FZ-1H by Item Number as identified in Attachment 2 of this letter.

TABLE RB-FZ-1H

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Area TB-FA-3A
The 4160V Emergency Switchgear 1C Vault is located in the Turbine Building Mezzanine 23'-6" elevation south end. The floor is reinforced concrete while the walls and ceiling are coated Metal lath with a fire resistant rating. All openings in these barriers are fire rated to adjoining fire areas/zones. Fire loading consists of minimal cable insulation, minimal amounts of plastics, and minimal amounts of hydrogen. The fire loading is "low" as defined in the FHAR. Fire Protection features include a manual, total flooding CO2 system. Smoke detectors are installed at the ceiling of the vault and sound an alarm locally and in the Control Room. Actuation of one fire detector closes all fire dampers in both TB-FA-3A and TB-FA-3B. In addition, an automatic pre-action sprinkler system is installed over the roof of this fire area in fire zone TB-FZ-11C (4160 Volt Switchgear 1A and 1B).

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for TB-FA-3A by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FA-3A

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"

Fire Area TB-FA-3B
The 4160V Emergency Switchgear 1D Vault is located in the Turbine Building Mezzanine 23'-6" elevation south end. The floor is reinforced concrete while the walls and ceiling are coated Metal lath with a fire resistant rating. All openings in these barriers are fire rated to adjoining fire areas/zones. Fire loading consists of cable insulation, minimal amounts of plastics, and minimal amounts of hydrogen. The fire loading is "low" as defined in the FHAR. Fire Protection features include a manual, total flooding CO2 system. Smoke detectors are installed at the ceiling of the vault and sound an alarm locally and in the Control Room. Actuation of one fire detector closes all fire dampers in both TB-FA-3A and TB-FA-3B. In addition, an automatic pre-action sprinkler system is installed over the roof of this fire area in fire zone TB-FZ-11C (4160 Volt Switchgear 1A and 1B).

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the actions. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

The following table provides a summary of the manual actions for TB-FA-3B by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FA-3B

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Area TB-FA-26

The 125 VDC Battery Room 'C' (elevation 23'-6") is located in the south end of the Turbine Building and is separated from adjoining fire zones TB-FZ-11C (4160 Volt Switchgear 1A and 1B), TB-FZ-11G (Turbine Mezzanine Truck Bay), and TB-FZ-1D (Turbine Building basement - south end) with fire rated barriers. Fire loading consists of battery cases and a minimum amount of cable. Fire loading is "low" as defined in the FHAR. Fire protection features include a particles-of-combustion detection system that will alarm locally and in the Control Room. Hose lines are available from a hose station outside this area and from outside hydrants and hose houses. Fire extinguishers are also provided.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

An enhancement is being made to install new sprinkler heads (area-wide) in the 'C' 125 VDC Battery Room from the existing pre-action fire sprinkler system in the 4160V Switchgear 1A and

1B zone, thereby improving survivability of area components and cables, and reducing the likelihood of the fire spreading.

The following table provides a summary of the manual actions for TB-FA-26 by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted. Note that TB-FA-26 is wholly contained within TB-FZ-11C, and that cables traveling to TB-FA-26 must traverse TB-FZ-11C. Therefore, TB-FZ-11C and TB-FA-26 are analyzed together for Fire Safe Shutdown analysis purposes, and therefore, the manual actions are duplicated in each area. A fire contained within TB-FA-26 is not expected to require most of the actions shown below. These areas were not considered a single analysis area in the original FHAR submittal.

TABLE TB-FA-26

ITEM #	Manual Action Required
1	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D
3	Manually control 1B3M Breaker from LSP-1B3
6	Manually re-close Feeder Breaker MCC 1B32 at USS 1B3 due to an undervoltage trip.
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
15	Manually trip 4160V Breakers for Reactor Feedwater Pumps 1A, 1B, and 1C
17	Manually trip 4160V 1C Breakers for Main Core Spray Pumps "A" and "D"
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
19	Manually trip 480V USS 1A2 Breakers for Core Spray Booster Pumps "A" and "D"

Fire Zone TB-FZ-11A

The Turbine Operating Floor 46'-6" elevation is located in the Turbine Building and has reinforced fire rated floors with unprotected openings adjacent to fire zones TB-FZ-11B (Lube Oil Bay), TB-FZ-11E (Condenser Bay), and TB-FZ-11G (Turbine Mezzanine Truck Bay). The walls are sheet metal on unprotected steel. The east wall adjoining OB-FZ-5 (Control Room) and TB-FZ-11B (Turbine Lube Oil Bay) is a fire resistive wall. The roof is a Class II metal deck on unprotected steel. The only significant combustible loading is the bearing lube oil and hydrogen for generator cooling. Fire loading is "moderate" as defined in the FHAR. The fire protection features include an automatic closed head sprinkler system provided over the bearing lift pump and turbine bearings. A fixed CO2 extinguishing system is provided for localized protection of the generator bearings and exciter. Hose stations are provided throughout the operating floor. Fire extinguishers are also provided throughout this area. No fire safe shutdown equipment or cables are located in this area.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual action for TB-FZ-11A by Item Number as identified in Attachment 2 of this letter.

TABLE TB-FZ-11A

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zone TB-FZ-11B

The Turbine Lube Oil Storage, Pumping & Purification Area is located on the north end of the Turbine Building, elevations 0'-0", 27'-0, 36'-0, and 46'-6". The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were evaluated as acceptable. Turbine lube oil is the major fuel loading. Cable insulation also provides some combustible loading. The fire loading is "high" as defined in the FHAR. Fire protection features include a closed head automatic sprinkler system that is provided over cable trays. Water spray system (open-head deluge system) is installed over oil handling equipment and the oil storage tank. Closed head sprinkler system is provided for the bearing lift pump. Rate-of-rise/fixed temperature thermal detectors are installed over the largest hazard in the area, which is the lube oil storage tank; these detectors actuate the open head deluge (water spray) system. An alarm is provided to the Control Room when water flows from a single sprinkler head or from the deluge system. Hose stations are installed in the area at the basement level and in an adjacent corridor on the mezzanine level. Hose lines are also available from outside hydrants and hose houses. Fire extinguishers are provided throughout the area and AFFF Foam is staged in the Fire Brigade van for use, if necessary. Additional detection was not deemed necessary because the area is protected by an automatic wet-pipe sprinkler system and the open-head deluge system is located above the largest hazard (Lube Oil Tank) and both alarm to the Control Room when a flow condition occurs.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for TB-FZ-11B by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FZ-11B

ITEM #	Manual Action Required
1	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D
2	Locally read Condensate Storage Tank level
3	Manually control 1B3M Breaker from LSP-1B3
4	Manually control Condensate Transfer Pump 1-2 from LSP-1B32
5	Manual control Emergency Diesel Generator #2 from LSP- DG2
6	Manually re-close Feeder Breaker MCC 1B32 at USS 1B3 due to an under voltage trip.
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
15	Manually trip 4160V Breakers for Reactor Feedwater Pumps 1A, 1B, and 1C
16	Manually trip Reactor Recirculation Pumps ("A", "B", "C", "D" and "E") 4160V Switchgear 1A and 1B.
17	Manually trip 4160V 1C Breakers for Main Core Spray Pumps "A" and "D"
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
19	Manually trip 480V USS 1A2 Breakers for Core Spray Booster Pumps "A" and "D"

Fire Zone TB-FZ-11C

The 4160V Switchgear Room 1A and 1B, is located at the west end of the Turbine Building on Mezzanine Level elevation 23'-6". The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were evaluated as acceptable. Fire loading consists of cable insulation and miscellaneous ordinary combustibles. The fire loading is "low" as defined in the FHAR. Fire protection features include smoke detection system installed at the ceiling over 4160V Switchgear 1A and 1B which actuates an alarm locally and in the Control Room. This system also actuates a pre-action sprinkler system in this fire zone located over the 4160V 1C & 1D Switchgear vaults (Fire areas TB-FA-3A and TB-FA-3B). Actuation of the pre-action sprinkler system alarms locally and in the Control Room. Hose lines are available from a hose station outside this area and from outside hydrants and hose houses. Fire extinguishers are also provided.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

An enhancement is being made to install additional sprinkler heads on the existing pre-action fire sprinkler system so that the sprinkler system within Fire Zone TB-FZ-11C is area-wide (except for the small caged area to the east of the "C" 4160V Switchgear Room), thereby improving survivability of area components and cables (hazards protected), and reducing the likelihood of the fire spreading.

The following table provides a summary of the manual actions for TB-FZ-11C by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FZ-11C

ITEM #	Manual Action Required
1	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D
3	Manually control 1B3M Breaker from LSP-1B3
6	Manually re-close Feeder Breaker MCC 1B32 at USS 1B3 due to an under voltage trip.
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
15	Manually trip 4160V Breakers for Reactor Feedwater Pumps 1A, 1B, and 1C
17	Manually trip 4160V 1C Breakers for Main Core Spray Pumps "A" and "D"
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
19	Manually trip 480V USS 1A2 Breakers for Core Spray Booster Pumps "A" and "D"

Fire Zone TB-FZ-11D

This fire zone is located in the Turbine Building Basement Floor south end elevation 3'-6". The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were evaluated as acceptable. Fire loading consists of cable insulation, transformer oil, lube oil (minor amounts of lubricants enclosed in valve gear boxes, pump bearings, etc.), and hydrogen seal oil; miscellaneous ordinary combustibles, such as wood and paper, exist in small quantities. The fire loading is "low" as defined in the FHAR. The Unit Substation 1A1 and 1B1 transformers are filled with Dow Corning 561 Silicon transformer oil. This material has characteristics that minimize the likelihood of a fire involving the insulating oil itself. A review of vendor information indicates that the flash and fire points are almost twice as high as other transformer oils, but more importantly, the heat release rate is almost 10 times lower, and any postulated fire originating at the transformer itself would tend to be limited in duration and would not involve sustained burning of the silicon oil. This judgment is supported by testing performed in 1977 by Industrial Risk Insurers of DC-561, which showed that the fluid tended to form a crust and self-extinguish (Reference 13). Based on the characteristics of the silicon fluid, any postulated fire event is

expected to be very short in duration. The fire protection features include a closed-head automatic sprinkler system installed throughout the general area. A water spray system with closed head directional nozzles protects the hydrogen seal oil unit. Hose stations and fire extinguishers are also located in the area. SER dated June 25, 1990 (Reference 7) provided an exemption for not having automatic fire detection. The flow alarm for the sprinkler system alarms locally and in the Control Room. This was determined to be adequate based on the fact that the fire will not be of significant magnitude or duration, it will be promptly extinguished by one of the two automatic sprinkler systems installed in this fire zone, and the flow alarms will promptly alert the fire brigade who will respond to manually fight the fire.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for TB-FZ-11D by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FZ-11D

ITEM #	Manual Action Required
1	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D
3	Manually control 1B3M Breaker from LSP-1B3
5	Manual control Emergency Diesel Generator #2 from LSP- DG2
6	Manually re-close Feeder Breaker MCC 1B32 at USS 1B3 due to an under voltage trip.
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
15	Manually trip 4160V Breakers for Reactor Feedwater Pumps 1A, 1B, and 1C
17	Manually trip 4160V 1C Breakers for Main Core Spray Pumps "A" and "D"
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
19	Manually trip 480V USS 1A2 Breakers for Core Spray Booster Pumps "A" and "D"

Fire Zone TB-FZ-11E

The condenser bay is located in the Turbine Building elevation 0'-0". The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were evaluated as acceptable. The fire loading consists of fiberglass-reinforced polyester grating installed on permanent scaffolding (flame spread of 15 as

determined by ASTM E84) and cable insulation with a minor amount of lube oil in pumps. The low flame spread provides assurance that the grating will not contribute to a fire without a sustained external ignition source. The fire loading is "low" as defined in the FHAR. Fire protection features include closed head automatic sprinklers installed throughout the condenser bay and over cable trays in the condenser bay section. This system is not area-wide because the heater bay section does not have sprinkler heads except for the southwest corner where sprinkler heads were installed to protect an unsealed pipe and duct chase to another fire zone (TB-FZ-11H). There is very minimal combustible loading in the heater bay portion where the feedwater heaters are located and there are only a few cable trays that go to equipment/components that support the feedwater heaters (e.g., valves, etc.). Hose stations and fire extinguishers are also provided throughout this area. SER dated June 25, 1990 (reference 7) provided an exemption for not having automatic fire detection. The flow alarm for the sprinkler system alarms locally and in the Control Room. This was determined to be adequate based on the fact that the fire will not be of significant magnitude or duration, it will be promptly extinguished by the automatic sprinkler system installed in this fire zone, and the flow alarms will promptly alert the fire brigade who will respond to manually fight the fire.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed.

The following table provides a summary of the manual actions for TB-FZ-11E by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FZ-11E

ITEM #	Manual Action Required
1	Manually trip 4160V 1D Breakers and control USS 1B2 and 1B3 480V Breakers locally at LSP-1D
2	Locally read Condensate Storage Tank level
3	Manually control 1B3M Breaker from LSP-1B3
4	Manually control Condensate Transfer Pump 1-2 from LSP-1B32
5	Manual control Emergency Diesel Generator #2 from LSP- DG2
6	Manually re-close Feeder Breaker MCC 1B32 at USS 1B3 due to an under voltage trip.
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
15	Manually trip 4160V Breakers for Reactor Feedwater Pumps 1A, 1B, and 1C
16	Manually trip Reactor Recirculation Pumps ("A", "B", "C", "D" and "E") 4160V Switchgear 1A and 1B.

17	Manually trip 4160V 1C Breakers for Main Core Spray Pumps "A" and "D"
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"
19	Manually trip 480V USS 1A2 Breakers for Core Spray Booster Pumps "A" and "D"

Fire Zone TB-FZ-11F
The Feedwater Pump Room is located in the Turbine Building Basement elevation 3'6" on the east side. The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were evaluated as acceptable. The fire loading is "low" as defined in the FHAR. The fire loading consists of cable insulation, plastics and lube oil in the pumps. Fire protection features include manual suppression available from fire extinguishers and hose stations.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of the Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

An enhancement is being made to install area-wide rate compensated/fixed temperature thermal detection in the Feedwater Pump Room to provide for improved operator notification ability, thereby providing a quicker response time for any required actions.

The following table provides a summary of the manual actions for TB-FZ-11F by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FZ-11F

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

Fire Zone TB-FZ-11G
This area is located in the Turbine Building Mezzanine South elevation 23'-6". The floor, walls and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were evaluated as acceptable. Fire loading consists of

cable insulation, plastics, rubber, and wood. The fire loading is "low" as defined in the FHAR. Fire protection features include hose lines from a hose station outside this area and from outside hydrants and hose houses. Portable fire extinguishers are also located in the area. A closed head sprinkler system protects the area under the turbine. This system alarms locally and in the Control Room.

Manual action No. 12 in Attachment 2, credited for this area, essentially duplicates the EOP contingency actions for RPV level control, which is readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of this operator action, since the EOPs would direct the same action to be performed. There is also significant time available to perform manual action Nos. 17 and 18 (Attachment 2).

An enhancement is being made to install area-wide rate compensated/fixed temperature thermal detection into Fire Zone TB-FZ-11G to provide for improved operator notification ability, thereby providing a quicker response time for any required actions.

The following table provides a summary of the manual actions for TB-FZ-11G by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FZ-11G

ITEM #	Manual Action Required
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve
17	Manually trip 4160V 1C Breakers for Main Core Spray Pumps "A" and "D"
18	Manually trip 4160V 1D Breakers for Main Core Spray Pumps "B" and "C"

Fire Zone TB-FZ-11H

The Demineralizer Tank and Steam Jet Air Ejector Area, elevations 3'-6" and 23'-6" is located in the Turbine Building southeast end. The walls are not rated. The floor and ceiling are reinforced concrete with both rated and non-rated openings to adjoining fire areas/zones. The non-rated openings were evaluated as acceptable. Fire loading consists of cable insulation, plastics and miscellaneous ordinary combustibles. The fire loading is "low" as defined in the FHAR. The fire protection feature includes manual fire suppression provided by hose station and fire extinguishers. No fire safe shutdown equipment is located in this area but there are two "B" Train 125 VDC control power cables (non-protected train) that traverse through the stairway area of this zone at approximately elevation 10'. There are also safe shutdown cables buried below the concrete floor and in one section, within a pull-pit covered by sand. SER dated June 25, 1990 (Reference 7) provided an exemption for not providing a 3-hour barrier for the "A"

Train power cable that is located in the stairway area of this zone since it is located in a pull-pit that is covered with a minimum of six inches of sand.

Manual action Nos. 7 and 12 in Attachment 2, credited for this area, essentially duplicate the EOP contingency actions for RPV level control and for the loss of Condensate Transfer System to the Isolation Condenser, both of which are readily diagnosed from the Control Room due to the numerous indications and symptoms available. There is also significant time available to perform the action. Therefore, if a fire occurred in this area and was not immediately discovered, any delay in the entry into the appropriate FSP or delay in suppression of the fire would not significantly affect the performance of the operator actions, since the EOPs would direct the same actions to be performed, based on system status.

The following table provides a summary of the manual actions for TB-FZ-11H by Item Number as identified in Attachment 2 of this letter.

The manual actions in the table below would be performed due to potential cable and/or equipment damage unless otherwise noted.

TABLE TB-FZ-11H

ITEM #	Manual Action Required
7	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
12	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 Reactor due to the loss of instrument air to the CRD Flow Control Valve

B. REVIEW OF FEASIBILITY USING THE CRITERIA LISTED IN INSPECTION PROCEDURE 71111.05

RIS 2006-10 addresses operator manual actions in which an SER issued by the NRC approves the operator manual actions, but is outside of the 10 CFR 50.12 exemption process. The RIS directs licensees to "request an exemption under 10CFR Part 50.12, citing the special circumstances of section 50.12(a)(2)(ii), citing the SER as the safety basis, and confirming that the safety basis established in the SER remains valid." The SERs that approved the operator manual actions did not list a specific safety basis. At the time the NRC issued the SERs, the criteria necessary to establish that operator manual actions were feasible had not yet been created; however, OCNGS has confirmed that the manual actions discussed in this exemption request are essentially unchanged from their original approved configuration, with minor changes as noted in Attachment 2. Subsequently, the NRC created criteria against which the feasibility of operator manual actions should be reviewed and placed the criteria in Inspection Procedure 71111.05. In order to confirm to the NRC that the operator manual actions are feasible, which would support the conclusion that the safety basis established in the 1986 and 1990 SERs remains valid, each of the operator manual actions addressed by this exemption request was reviewed against the feasibility criteria listed in the March 6, 2003 revision of

Inspection Procedure 71111.05. A general explanation of how the manual actions meet the criteria is provided below. Certain configurations are provided with a more detailed explanation.

Diagnostic Instrumentation: The Fire Support Procedures (FSPs) provide the operators with specific instructions in the event of a fire in a specific fire area. The FSPs for each fire area/zone provide a list of the key protected (credited) equipment available for a fire in that area. Therefore, the diagnostic instruments that are available are listed in each FSP along with actions to restore needed instruments that may be disabled by the fire. For hot shutdown using the Isolation Condenser, this list includes RPV coolant level, RPV pressure, condensate storage tank water level and certain system process monitoring instruments. For hot shutdown using Electromatic Relief Valves (EMRVs) and Core Spray, this list includes RPV coolant level, RPV pressure, torus water level, torus water temperature and certain system process monitoring instruments. These indications are consistent with the guidance in Generic Letter 81-12, " Fire Protection Rule (45 F/R 76602, November 19, 1980)," and Information Notice 84-09, " Lessons Learned From NRC Inspections of Fire Protection Safe Shutdown Systems (10 CFR 50, Appendix R)." If there are any "prompt" actions that are needed to restore an instrument for a fire in that area (i.e., those that need to be performed within 45 minutes), the applicable FSP identifies the action(s) as "prompt."

Environmental Considerations: These are conditions that operators performing the manual actions may encounter while traveling to the manual action location or where the manual action is to be performed. Adverse environmental conditions could prevent the operator from performing the required manual actions within the allotted time.

Radiation Levels: None of the manual actions require operators to enter areas that have radiation levels so high that access would be prohibited. This includes both at power and post shutdown conditions. At no time would operators be subjected to radiation doses close to the 10 CFR Part 20 limits. OCNGS Radiation Engineering has reviewed the operator manual actions in the areas listed and determined that no operator would have to perform a task that would result in a dose exceeding 100 millirem, given the anticipated plant conditions. Most of the actions are located in outdoor areas, electrical equipment rooms (e.g., switchgear, battery room, etc.) or general areas of the plant where the anticipated dose rates are less than 5 millirem per hour. The southwest Reactor Building corner room (RB-FZ-1F2) area is normally a Locked High Radiation area. However, the manual actions in this area will result in a dose of less than 100 millirem for the duration of the actions.

Emergency Lighting: Each of the operator manual actions addressed by this exemption request is provided with emergency lighting in the location where the manual action is performed and in the access/egress route to the manual action location. Manual operation of safe shutdown equipment after eight hours does not require emergency lighting support in accordance with Appendix R, Section III.J. There are periodic tests that ensure that the lights are operating properly and that the lights are properly aimed. In a few cases, re-entry into the area where the fire occurred is required. It is assumed that the emergency lighting in the area where the fire occurred may be unavailable following the fire. Portable hand lights are available in the Fire Brigade Turnout Area (located next to the Control Room) for use by the safe shutdown equipment operators. These portable hand lights are tested on a periodic basis as part of a routine inventory surveillance test. For the actions that require re-entry into the initiating fire area, the time limit to complete the action is at least 180 minutes in all cases. This provides ample time to obtain the portable hand light prior to accessing the area to perform the operator

manual action. The emergency lighting has been reviewed in previous NRC fire protection inspections.

Temperature and Humidity Conditions: Most of the actions are located in outdoor areas, electrical equipment rooms (e.g., switchgear, battery room, etc.) or general areas of the plant. Extreme temperature and humidity conditions are not anticipated in the areas where the manual actions are performed in the time frames in which they are required.

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

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

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

The fire effects on the manual actions stipulated in the Attachment 2 Table are as follows:

1) Six of the manual actions (Items 2-6 and 14 from the Attachment 2 Table) are either located in the Diesel Building, intake area or yard area and the initiating fires either occur in the Turbine Building or Main Office Building, which are separate buildings from where the manual actions occur.

2) One of the manual actions (Item 7 from the Attachment 2 Table) is in the Reactor Building and the initiating fires either occur in the Turbine Building, Office Building or Intake Area, which are separate buildings from where the manual actions occur.

3) Three of the manual actions (Items 8, 10 and 19 from the Attachment 2 Table) occur either in "A" 480V Room (OB-FZ-6A), "B" 480V Room (OB-FZ-6B) or "A/B" Battery Room. All of these fire zones are separated from the initiating fire by rated barriers and all of the rooms have separate ventilation systems.

4) Two of the manual actions (Items 11 and 13 from the Attachment 2 Table) are in separate fire zones in the Reactor Building that have the same ventilation system. There are 204 minutes (3.4 hours) between the start of the event and when the actions have to occur. The fire will be extinguished and the smoke vented from the area long before the action needs to be performed. The Reactor Building has a significant volume with its high ceilings and open equipment hatches and stairwells. This provides an advantage for the types of fires that are anticipated in this area; there will

be significant dilution of smoke and self-venting to the refuel floor (Reactor Building 119' elevation), which has no manual actions and also contains an automatic wet pipe sprinkler system. Additionally for the openings between the 23' to 51' elevations and 51' to 75' elevations, a water curtain is available (automatic or manual operation), which will provide reasonable assurance of extinguishing any postulated fire and will also help with cooling and general improvement of overall environmental conditions. The operators will not have any delay or need self-contained breathing apparatus (SCBA) to perform either of these actions.

5) One of the manual actions (Item 16 from the Attachment 2 Table) is in the Turbine Building Switchgear Room (TB-FZ-11C) and the initiating fires occurred in separate fire zones in the Turbine Building Condenser Bay (TB-FZ-11E), Turbine Building Lube Oil Bay (TB-FZ-11B) or Office Building. The ventilation system is a common system in the Turbine Building but the system exhausts away from the Switchgear Room towards the Condenser Bay and eventually up the Plant stack. The Condenser Bay is the only fire zone that is in close proximity to the Switchgear Room. The fire zone boundary separating the Switchgear Room from the Condenser Bay is a concrete wall with all openings sealed in this area. Also, there is a Pre-Action Sprinkler System installed on the switchgear side of the fire zone boundary and a wet-pipe sprinkler system installed on the Condenser Bay side that protects this boundary. Therefore, there should not be any fire effects for this particular manual action.

6) Two of the manual actions (Items 17 and 18 from the Attachment 2 Table) may require the use of a SCBA for either traveling to the "C" or "D" 4160V Switchgear Rooms, or if CO2 is present in the area. The manual actions are in the Turbine Building Switchgear Room (one action in either TB-FA-3A or 3B) and the initiating fires are in separate fire zones but there are some unsealed openings (Turbine Building fire zones) to the areas where access/egress is required and for one fire zone (TB-FZ-11G), post fire re-entry is required for access to the Switchgear Room. There are open equipment hatches that exist in the northeast corner of the ceiling of the Turbine Basement (TB-FZ-11D), which goes to the Turbine Mezzanine (TB-FZ-11G) area on 23'-6" elevation. The equipment hatch also continues in the ceiling of TB-FZ-11G up to the Turbine Operating floor (TB-FZ-11A) on 46'-6" elevation. There is also a larger equipment hatch in the ceiling of TB-FZ-11G in the truck bay area in the southwest corner. The only access to the Switchgear Room is through TB-FZ-11G on the south side, which is approximately 55 feet south of the equipment hatch in the northeast corner. There is a closed-head, automatic sprinkler system installed throughout the general area in the Turbine Basement and there is a water spray system with closed head directional nozzles that protects the hydrogen seal oil unit. It is expected that the installed suppression systems will limit the amount of smoke and hot gases that rise up into the Turbine Mezzanine area plus any smoke that does enter into this area will tend to continue to rise up towards the Turbine Operating floor. In addition, the Turbine Operating floor large volume will dilute and stratify the smoke at the ceiling, providing for a less hostile environment at floor level. Also, the ventilation will pull the smoke towards the Turbine Operating floor as long as it continues to operate. Finally, in the area where the action is performed, there are two smoke detectors installed in each 4160V Vault area near the ceiling (total of 4 detectors) and the fire dampers in the "C" and "D" 4160V vaults would close immediately upon detection of smoke in either the "C" or "D" 4160V vaults. It only takes the actuation of one detector in the "C" or "D"

4160V vault to close the dampers in both the "C" and "D" 4160V vaults. Therefore, it is unlikely that the SCBA would be required once the operator was inside the "C" and "D" 4160V vaults. Thus, there is reasonable assurance that the Turbine Mezzanine or the "C" and "D" 4160V area environment (e.g., visibility, heat, etc.) will not reach a point that will prohibit performance of these actions.

For a fire in TB-FA-3A or TB-FZ-11C, CO2 may be present due to either spurious actuation of the CO2 system or due to the fact that TB-FA-3A and TB-FA-3B have common discharge piping that actuates in both rooms if the CO2 is manually actuated. The Fire Brigade will be in the area for a fire in TB-FA-3A or TB-FZ-11C, and could assist with performing this manual action. Also, the action could be delayed until the area is ventilated since there are 120 minutes to perform this action.

In addition, the manual actions are tripping Core Spray 4160V breakers prior to the reactor pressure decreasing to 310 PSIG, which is the permissive for the opening of the Core Spray parallel injection valves. This action is being performed to prevent an inadvertent reactor overfill condition so that the Isolation Condenser remains available. The Fire Safe Shutdown (FSSD) calculations conservatively state that these actions need to be accomplished in 120 minutes. This time limit assumes the Control Room operator takes action in accordance with the EOPs (EMG-3200-01A "RPV Control – No ATWS EOP Flowchart") to initially "stabilize" reactor pressure below 1045 psig, and then control the cooldown rate of the reactor at the procedurally required rate of less than 100 degrees per hour. Furthermore, if reactor vessel make-up (CRD) were not immediately available, procedures instruct the Operator to "stabilize" reactor pressure, until vessel makeup is available, thereby further delaying the need for the action to trip the Core Spray pumps. Therefore, Operations controls how soon the Core Spray pumps need to be tripped by limiting cool down or they could override the Core Spray initiation logic from the Control Room (per EMG-3200-01A and EMG-SP10 "Support Procedure 10 – Stopping Injection From the Core Spray System") to keep the parallel injection valves closed until access to the Switchgear Room was available. In addition, if a loss of offsite power occurs, then these actions would not be required.

7) One of the manual actions (Item 1 from the Attachment 2 Table) may require the use of an SCBA to travel to the "D" 4160V Switchgear Rooms or to perform the manual action if CO2 actuated. This action has the same issue with smoke and/or CO2 as number No. 6 above and that discussion applies to this manual action. The only access to the Switchgear Room is through TB-FZ-11G and this area may be affected by smoke from the other Turbine Building fire zones; additionally, as discussed above, CO2 may be present in the area where the manual action is required.

This manual action is initiating Local Shutdown Panel LSP-1D to isolate damaged cable and to control the breakers required to restore power to the required "D" 4160V switchgear loads. Power needs to be restored within 45 minutes from the time that the Isolation Condenser is placed in service per the FSSD calculations so that the Condensate Transfer System can provide makeup to the Isolation Condenser. However, if access is not available due to excessive smoke, then firewater could be utilized until access is available as directed by the EOPs. The water inventory study indicates that reactor vessel makeup would not be required for 3 hours and 24 minutes and the "B" Battery that is utilized for the Isolation Condenser is sized to provide power

for all connected loads for up to 3 hours. After 60 minutes, when the fire is expected to be extinguished, the smoke/CO2 would be vented from the areas allowing the manual action to be performed and power to be easily restored within the 3 hours.

8) Two of the manual actions (Items 9 and 20 from the Attachment 2 Table) may require the use of an SCBA to access the "B" 480V Switchgear Room to trip a breaker and remove its close fuse and/or to partially initiate the Remote Shutdown Panel (RSP) (operating control switches). The barriers between the two fire zones are rated and they both have their own ventilation system; however, fire-fighting activities may allow smoke to enter this area. The SCBA is staged in this area and the operators are all trained on the use of SCBA since they are all members of the fire brigade. It is not expected that a large amount of smoke will be in this area because the initiating area is protected by halon and the fire brigade is trained to allow a 20-minute soak time before entering. Additionally, if the first discharge did not work, then a second discharge of halon will be initiated with another soak time. The actions would not have to be performed for at least 120 minutes; therefore, if necessary, the actions could be delayed until the fire is extinguished and the area vented. Also, if power were lost to USS 1B2 as is postulated for this area, one of the actions would not be required. Lastly, the five fire brigade members would be in the area to assist since they would be in standby while the halon was soaking.

9) One of the manual actions (Item 12 from the Attachment 2 Table) requires re-entry into the fire zone where the fire initiated. The action is to manually manipulate three two-inch valves that are located within approximately four feet of each other. There are 204 minutes between the start of the event and when the actions need to occur to restore CRD flow. The fire will be extinguished and the smoke vented from the area long before the action needs to be performed. The operators will not have any delay or need SCBA to perform this action. SER dated June 25, 1990, Section 3.3.2 (Reference 7), approved operating one of the valves (V-15-30) and the SER concluded the following:

> "Since the fire in this fire zone would not be of significant magnitude, the duration of the fire will be short due to automatic extinguishment or extinguishment by the plant fire brigade. The valve is located within the spray area of a deluge system and the heat conduction to the water filled piping will provide cooling of the valve. The valve is not required to operate for almost 3.5 hours after the fire. Therefore manual operation of the valve is considered to be achievable without the addition of any further protection."

10) One of the manual actions (Item 15 from the Attachment 2 Table) requires re-entry into the fire zone where the fire initiated. This action is to manually trip the Reactor Feedwater Pumps at the 4160V Switchgear Room. The feedwater flow is originally stopped using the feedwater regulating valves and this action is to stop the pumps since the regulating valves may not remain closed with the loss of instrument air. These valves lock up and will stay in that position indefinitely if there are no air leaks on the valves. If there are leaks, then the valves may drift back open so it is assumed that there are minor leaks and that the feedwater pumps should be tripped in 180 minutes (3 hours). The fire will be extinguished and the smoke vented from the area long before the action needs to be performed. The operators will not have any delay or

need SCBA to perform this action. In addition, if a loss of offsite power occurs, as is postulated in a few of the areas, then these actions would not be required.

Staffing: There are five personnel (operators and maintenance personnel) assigned fire brigade duty and four operators assigned as safe shutdown operators for each shift. The four operators assigned as safe shutdown operators are not assigned fire brigade responsibilities; two of them will be responsible for performing the operator manual actions outside of the Control Room while the other two operators remain in the Control Room. Time estimates have been performed for the manual actions contained in this exemption request, as well as other actions for which an exemption is not being requested at this time. These time estimates are maintained within the individual fire safe shutdown analysis calculations for each fire area/zone, and have been reviewed on several occasions by the NRC as part of triennial inspections. These time estimates show that the available operators can complete all of the manual actions.

Communications: OCNGS credits the use of portable radios during an Appendix R Event. Two-way voice communications is available between the Control Room, Remote/Local Shutdown Panels and manual action locations. The communication system is provided with three trains of repeaters located in different plant areas. The three repeaters are provided with (individual) battery backups sized to support the repeaters for at least 3 hours (main repeater battery is sized for up to 8 hours), which is sufficient to ensure the completion of the time-critical operator actions. Line-of-sight radio communication ("talk-around") and face-to-face communication are also available. This system has been analyzed to demonstrate one train is free of fire damage for all postulated fire scenarios. Most of the manual actions are simple in nature and do not require constant interface with the Control Room while performing the action; however, the radios are available if necessary. Upon completion of the action, the operator can report directly back to the Control Room, if necessary, or use the radio. Routine surveillances are performed to ensure that the radios function properly at various locations in the plant.

Special Tools: In order to perform the operator manual actions, tools and equipment may be required. The majority of the keys required for accessing or operating equipment for post fire safe shutdown are provided on separate FSSD key rings that are provided to the FSSD Operators. Where other keys, tools or special equipment are required to perform an operator manual action, the FSP states what equipment is needed and where the tools, keys or equipment can be obtained. Equipment, tools and keys staged for the operator manual actions have been walked down as part of the validation effort to ensure equipment availability for a fire event. The operators responsible for performing the manual actions are familiar with the location of the tools and equipment storage areas.

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

- Operating switches. This is considered a skill of the craft activity. The switches are clearly labeled.

- Verifying breaker position. This is considered a skill of the craft activity. This is done frequently by operators while establishing clearance boundaries.
- Opening/Closing breakers. This is considered a skill of the craft activity. Equipment operators frequently perform breaker manipulation as part of their normal routine.
- Racking breakers in and out. This is considered a skill of the craft activity. Equipment operators frequently perform breaker manipulation as part of their normal routine.
- Reading local indicators. This is considered a skill of the craft activity. The indicators are clearly labeled.
- Removing (pulling) individual fuses is considered a required skill performed by plant equipment operators during normal work functions. Fuses are pulled while applying clearances to establish safe work boundaries.
- Manually manipulating valves is considered to be a required skill by plant equipment operators and operation of these components is performed during normal work functions and is a common part of many work activities.

Licensed and non-licensed operators are trained biennially on the FSPs.

Accessibility: The equipment that needs to be operated is readily accessible and adequate time is allotted to permit access. In addition, tools needed for the manual action are available and accessible by the operators. The actions to verify breaker position, open/close breakers, operate switches and read local indicators can be done from the floor. All of the valves that have to be operated can be reached from the floor, from permanent platforms accessed by permanently mounted ladders or with a small stepladder, which is called out in the procedure and is staged in the area of the action.

Procedures: At Oyster Creek, the FSPs are formatted similar to the EOP support procedures. Each initiating fire area/zone has a corresponding FSP. Each FSP includes a section that lists the equipment that is credited to safely shut down the plant and any manual actions that may be required for that credited equipment. The individual steps describe the purpose of the action, equipment needed, and a step-by-step process to perform the action, including room and panel or valve locations. Most actions have a significant time available to perform, and thus are performed on a symptomatic basis, with the Control Room determining the priority and sequencing of actions based on actual plant conditions. For actions expected to be required to be performed within the first 45 minutes, such actions are designated as "prompt" actions in the FSPs.

Verification and Validation: Plant walkdowns have validated the manual actions. Note that in cases where the same action is performed for fires in a number of different fire areas, the validation was only performed once.

A summary of action times and travel times as well as the time available to perform the function is provided below. The time available to perform the function ("time limit") is defined by the safe shutdown calculations and supporting analyses. It should be noted that for the manual actions that are not considered a prompt action, the ability to perform the action in the stipulated time below is not considered critical as long as the action gets completed within the allotted time ("time limit") for the action. Walkdowns were performed to obtain travel times.

The information below is divided into groups based on restoring a desired function. This may combine several actions that are identified in the Attachment 2 Table to restore the desired function and will cross reference back to this attachment by listing the applicable Item number in parenthesis. The information provided below does not take into account the effects of other manual actions that are not required for the particular function.

1) For some of the Turbine Building fire zones, offsite power is assumed lost due to cable damage. In order to restore power so that the Condensate Transfer System can be utilized for makeup to the Isolation Condenser within 45 minutes from the time that the Isolation Condenser was initiated, various manual actions have to be performed. The worst case would be Operator 1 would have to initiate LSP-DG2 (Item 5) to isolate damaged cables and start emergency diesel 2 to restore power to the "D" 4160 bus, initiate LSP-1B3 (Item 3) to isolate damaged cables and restore power to USS 1B3, reset undervoltage trip to MCC 1B32 on USS 1B3 (Item 6), and initiate LSP-1B32 to isolate damaged cables and control one condensate transfer pump to makeup to an Isolation Condenser (Item 4). Operator 2 would trip and lock out all non-required breakers on the "D" 4160V Bus and then initiate LSP-1D (Item 1) to isolate damaged cables and close 4160V breaker for USS 1B2 and 1B3.

   The actions at the local shutdown panels only require taking a key locked switch to the "alternate" position to isolate the damaged cables and then turning the applicable control switch(es) to the desired position. Operator 1 would take approximately 28 minutes for access to the areas and for performing the actions, which is within the minimum allotted time of 45 minutes with sufficient margin to ensure completion of the task. In parallel, Operator 2 would take approximately 18 minutes for access to the area and for performing the actions, which is within the minimum allotted time of 45 minutes with sufficient margin to ensure completion of the task.

2) The Condensate Transfer System is a two-pump system fed from a single train of emergency power. When this single train of power is not available, a redundant means of providing makeup to the shell of the Isolation Condenser(s) is to utilize the firewater system. Utilizing firewater requires the manipulation of manual valves. When the Condensate Transfer System is not available to makeup to the Isolation Condenser, firewater is utilized (Item 7) within 45 minutes from the time that the Isolation Condenser was initiated. Only one operator is required to perform this task. Operator 1 would take approximately 16 minutes for access to the area and to perform the actions, which is within the minimum allotted time of 45 minutes with sufficient margin to ensure completion of the task.

3) When CRD is credited for Reactor Inventory makeup, a single CRD pump is required within 3 hours and 24 minutes. If cable damage prevents controlling the CRD pump from the Control Room, then the "A" CRD pump is controlled from LSP-1A2 (Item 8) or the "B" CRD pump is controlled by performing a partial initiation of the RSP (Item 9). Both panels are in close proximity to each other so the access time is the same and both panels only require taking a key locked switch to the "alternate" position to isolate the damaged cables and then turning two control switches to their required positions, so the action time is the same. Although the two CRD pumps are fed from redundant safety-related power supplies, the normal CRD flow control valve is a single component and does not have a redundant counterpart. This valve may fail to operate due to control or power cable damage, or due to the assumed loss of instrument air. If the normal flow control valve were not available due to the loss of instrument air or cable damage, then the operator would have to manually

align three manual valves (Item 12) to bypass the flow control valve. Operator 1 would take approximately 23 minutes for access to the areas and for performing the actions, which is within the minimum allotted time of 3 hours and 24 minutes with sufficient margin to ensure completion of the task. For a fire initiating in RB-FZ-1E, Operator 2 would go to the Reactor Building to assist Operator 1 with adjusting CRD flow (Item 11) since the flow indicator is on a different elevation than the valves. For this task, it requires re-entry into the fire area and will allow 90 minutes before re-entry. Operators 1 & 2 would take approximately 100 minutes for access to the areas and for performing the actions, which is within the minimum allotted time of 3 hours and 24 minutes with sufficient margin to ensure completion of the task.

4) For OB-FA-9, OB-FZ-6A, OB-FZ-8C, TB-FZ-11B and 11E, Condensate Storage Tank (CST) level may not be available in the Control Room due to cable damage so an operator would have to check level locally at LI-424-993 (Item 2) to ensure adequate water inventory is available in the CST for various system makeups (e.g., Isolation Condenser, RPV from CRD, etc.). The level indicator in the Control Room is a single component and does not have a redundant counterpart. The Operator would take approximately seven minutes for access to the area and for performing the action, which is within the minimum allotted time of 73 minutes with sufficient margin to ensure completion of the task.

5) The static charger (Item 10) may have to be lined up to the "B" 125 VDC Battery in the A/B Battery Room within 3 hours. This manual action will be required as a result of fire-induced cable failure on the "B" MG Set, and this action ensures the charger is restored before the battery is depleted. Only one operator would be required and it would take approximately 17 minutes for access to the area and to perform the actions, which is within the minimum allotted time of 3 hours with sufficient margin to ensure completion of the task. It should be noted that the normal line-up is to have the static charger aligned to the "B" 125 VDC Battery so the majority of the time this action would not be required; however, there are periods when the static charger is aligned to the "A" 125 VDC Battery due to equipment failures and/or maintenance activities.

6) Manually aligning valves V-20-2 and V-20-4 (Item 13) is necessary so that one Core Spray System II pump is aligned to the Condensate Storage Tank (CST) for makeup to the reactor vessel within 3 hours and 24 minutes. No CRD pumps are available for a fire in Fire Area RB-FZ-1F3; therefore, the Core Spray pump will be utilized. Only one operator is required to perform this task. Operator 1 would take approximately 35 minutes for access to the area and to perform the actions, which is within the minimum allotted time of 3 hours and 24 minutes with sufficient margin to ensure completion of the task. Note that the Core Spray pump cannot be utilized until V-20-1 is also re-positioned manually; however, this valve requires re-entry into the area where the fire occurred. It is assumed that the area can be reentered within 90 minutes, which is within the minimum allotted time of 3 hours and 24 minutes. SER dated June 25, 1990 (Reference 7) provided the exemption for manually operating V-20-1.

7) Tripping of the feedwater pumps at the 4160V Switchgear (Item 15) is required within approximately 3 hours. Tripping the feedwater pump breakers from the Control Room is lost as a result of fire-induced cable damage. The feedwater flow is originally stopped using the feedwater regulating valves and this action is to trip the feedwater pumps at the 4160V switchgear since the regulating valves may not remain closed with the assumed loss of

instrument air. These valves lock up and will stay in that position indefinitely if there are no air leaks on the valves. If there are leaks, then the valves may drift back open so it was assumed that there are minor leaks and that the feedwater pumps should be tripped in 180 minutes. Only one Operator would be required and it would take approximately 11 minutes for access to the area and to perform the actions, which is within the minimum allotted time of 3 hours with sufficient margin to ensure completion of the task. In addition, if a loss of offsite power occurs, as is postulated in some of the areas, then these actions would not be required.

8) Tripping of the Core Spray Main Pumps (Items 17 and 18) and Core Spray Booster Pumps (Items 19 and 20) is required within 120 minutes to prevent a Reactor overfill condition. It should be noted that the tripping of the booster pumps is for equipment protection because once the main pumps are tripped; the booster pumps have no water source to inject into the RPV. One Operator would go to the 4160V area while the second operator would go in parallel to the 480V area. Operator 1 would take approximately 17 minutes for access to the areas and for performing the actions, which is within the minimum allotted time of 120 minutes with sufficient margin to ensure completion of the task. Operator 2 would take approximately 19 minutes for access to the areas and for performing the actions, which is within the minimum allotted time of 120 minutes with sufficient margin to ensure completion of the task. In addition, if a loss of offsite power occurs, as is postulated in some of the areas, then these actions would not be required.

9) Tripping of the Recirculation Pumps (Item 16) is required due to the interaction with the Isolation Condenser (IC) and Fuel Zone Level (FZL) Indicators. The IC has high flow sensors that will close all IC valves if the flow exceeds 300%. With the recirculation pumps running, the flow through the IC can increase to above the high flow isolation setpoint. However, the high flow signal can be overridden by taking each IC valve control switch from "auto" to "open" in the Control Room to allow the IC to be placed back in service. The FSPs direct the operator to reopen the IC valves and use the IC for decay heat removal in the event that high flow isolation does occur. Thus, there is no time limit associated with tripping the recirculation pumps for the IC since it can still be initiated from the Control Room. The FZL indicators are used by the operators to monitor RPV water level if the level drops below the range of the normal level instruments (85" TAF). The FZL instruments use differential pressure across the core to determine water level in the RPV. The instruments are not compensated for the change in differential pressure across the core due to flow from the recirculation pumps and thus will not provide accurate readings with the recirculation pumps running. The Isolation Condenser System is placed in service very early in the event, and reactor water level should be indicated on the normal water level instruments (GEMAC and/or YARWAY), making use of the Fuel Zone instruments non-essential.

   In the event that use of the IC is delayed, the FSSD support analyses show that there is at least 30 minutes for the operator to trip the recirculation pumps and restore FZL indication. If the Control Room operator takes action in accordance with the EOPs (EMG-3200-01A "RPV Control – No ATWS EOP Flowchart") to initially "stabilize" reactor pressure below 1045 psig with the Isolation Condenser System, and then control the cooldown rate of the reactor to the procedurally required rate of less than 100 degrees per hour if no makeup source is available, then significantly more than 30 minutes is expected to be available. Also, if a loss of offsite power occurs as is postulated in some of the areas, then these actions would not be required.

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. This manual action is not needed for at least 30 minutes; thus, there is adequate margin.

10) The Control Room air conditioning system 'A' or 'B' is required whenever the Control Room is occupied. Under cases when the power supply is lost, USS 1A3 and USS 1B3 (Item 14) are cross-tied at the intake structure in order to utilize HVAC 'B' system. One operator can perform this action. Total action time including egress time, time to rack the breaker in, and time to close the tiebreaker requires 20 minutes. This manual action is not required for 10 hours; therefore, sufficient margin exists to perform this action.

Supporting Information

Triennial Fire Protection Inspections performed in 2003, 2005 and 2008, using the criteria provided in NRC IP 71111.05, reviewed the feasibility of a number of the manual actions and found them to be feasible. The results of these reviews by the NRC confirm that the safety basis of the original SERs remain valid.

C. DEFENSE IN DEPTH

Defense in depth is defined in Appendix R as follows:

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

OCNGS has administrative controls to prevent fires from starting. These controls include:

- Controls on hot work activities and ignition sources (involving cutting, welding, grinding, open flames or other heat producing activities);
- Controls and limits on combustible materials used in the plant or brought into the plant;
- Housekeeping inspection programs;
- Use of fire retardant cables and plastics; and
- Use of wood is limited and restricted to fire retardant wood (except for large cribbing).

Fire detection and suppression systems are installed in those areas that contain significant combustible hazards. Fire detection includes both smoke and heat detection systems that provide alarms to the Control Room. Suppression systems include pre-action, deluge and wet pipe sprinkler systems as well as halon and carbon dioxide systems. Lube oil hazards, cable concentrations and storage areas are examples of areas provided with fire protection systems. A summary of the fire protection features in the initiating fire area was provided previously within the description of each fire area. When fire protection systems become inoperable, compensatory measures are instituted. The plant has a fire brigade composed of plant operators and maintenance craft that are currently trained to meet the level of "interior/exterior structural firefighters." Hose stations and fire extinguishers are located throughout the plant to facilitate firefighting activities by the fire brigade. These detection and suppression systems, as well as manual fire fighting equipment, are designed to detect fire at the appropriate stage to

permit a response by plant personnel to the fire, including both operations and fire brigade. The suppression systems are designed to prevent a fire from rapidly growing and involving other areas. Manual suppression can be used to extinguish a fire or to prevent the fire from spreading to adjacent fire areas.

OCNGS ensures safe shutdown in the event of a fire in several ways. First, the plant has been divided into fire areas/zones. Each fire area/zone is separated from adjacent fire areas with a barrier commensurate with the fire hazard. Typically, the fire barriers have a 3-hour fire resistance rating, including the barrier, the door(s), damper(s) and penetration seals. However, other barrier types are used to divide fire areas/zones. These fire area/zone boundaries are described in the OCNGS FHAR document. In addition, analyses have been performed on how to achieve shutdown following a fire in any given fire area. The equipment lost and equipment available has been reviewed and actions necessary to ensure shutdown have been identified in the FSPs for each fire area/zone. The manual actions addressed by this exemption request are part of the actions that may be necessary in a worst-case fire to achieve shutdown.

V. ENVIRONMENT ASSESSMENT

There are no environmental issues associated with this exemption request. The exemption request provides a formal vehicle for NRC approval of operator manual actions associated with Appendix R post-fire safe shutdown. These operator manual actions have been included in the FHAR, which was previously accepted by the NRC in prior correspondence.

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

VI. CONCLUSION

OCNGS identified operator manual actions necessary to achieve and maintain hot shutdown in the OCNGS FHAR that was submitted to the NRC under various docketed letters. The SERs indicate that the NRC has reviewed the safe shutdown capability, and accepted the manual actions.

The operator manual actions addressed in this exemption request have been reviewed against the existing criteria the NRC has developed to determine the feasibility of these actions to be performed following a fire. This review determined that all of these manual actions could be performed and completed within the time lines established by the fire safe shutdown analyses. This provides the confirmation that the considerations used by the NRC to approve these operator manual actions in the referenced SERs remain valid. Defense-in-depth for the fire areas involved in this exemption include administrative controls on ignition sources and combustibles, fire protection systems in areas that present significant hazards, manual fire

fighting capability, separation between fire areas to limit fire spread and safe shutdown procedures, based on a detailed analysis providing a path to shutdown for each fire area.

The requested exemption will not result in undue risk to the public health and safety because Exelon has determined that the subject manual actions are feasible and the NRC has already found these manual actions to be acceptable for use in achieving post-fire safe shutdown. In addition, the intent of 10 CFR 50, Appendix R, Section III.G.2, is to ensure that one train of systems necessary to achieve and maintain hot shutdown will remain available in the event of a fire. The manual actions discussed in this exemption request provide that assurance. If manual actions are not used to meet the underlying purpose of the rule, modifications to: (1) provide additional fire suppression systems, detection systems, or fire barriers, or (2) re-route cabling or wrap cabling, would be required to achieve compliance. Such modifications represent an unwarranted burden on Exelon since they are not necessary to meet the underlying purpose of the rule. Therefore, the special circumstances for issuance of the exemption are satisfied in accordance with the requirements of 10 CFR 50.12(a)(2)(ii), since application of the rule is not necessary to achieve the underlying purpose of the rule. Furthermore, the requested exemption is authorized by law, and is consistent with the common defense and security.

There is no law that precludes the activities covered by this exemption request, and the requested exemption has no impact on the common defense and security. Therefore, based on the above discussion, the criteria of 10 CFR 50.12(a)(1) are satisfied in that the requested exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security.

VII. REFERENCES

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

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

3. Letter dated April 3, 1985, from P. Fiedler, GPU Nuclear, to J. Zwolinski, USNRC, Oyster Creek Nuclear Generating Station, Fire Protection.

4. Letter dated July 12, 1985, from P. Fiedler, GPU Nuclear, to J. Zwolinski, USNRC, Oyster Creek Nuclear Generating Station, Fire Protection.

5. Letter dated August 25, 1986, from P. Fiedler, GPU Nuclear, to J. Zwolinski, USNRC, Oyster Creek Nuclear Generating Station, Fire Protection.

6. Letter (SER) dated March 24, 1986, from J. Zwolinski, USNRC, to P. Fiedler, Oyster Creek Nuclear Generating Station, "Exemptions from Requirements of Appendix R to 10 CFR Part 50, Section III.G.2 and the Post Fire Safe Shutdown Capability (TAC 56740, 56786)."

7. Letter (SER) dated June 25, 1990, from A. Dromerick, USNRC, to E. Fitzpatrick, Oyster Creek Nuclear Generating Station, "Exemption from Certain Technical Requirements Contained in Section III.G of Appendix R to 10 CFR Part 50 (TAC 62229)."

8. Letter dated October 9, 1985, from P. Fiedler, GPU Nuclear, to J. Zwolinski, USNRC, Oyster Creek Nuclear Generating Station, Fire Protection.

9. Letter dated October 29, 1985, from NRC to GPU Nuclear, "August 1985 Progress Review Meeting on Licensing Actions."

10. Oyster Creek Nuclear Generating Station Fire Hazards Analysis Report, Revisions 3 through 6.

11. NRC Inspection Procedure 71111.05, "Fire Protection," March 6, 2003.

12. Oyster Creek Nuclear Generating Station Fire Hazards Analysis Report, Revision 14.

13. Industrial Risk Insurers, Document P.1.1.4, "Transformer and Capacitor Dielectric Fluids," August 30, 1977.

ATTACHMENT 2

10 CFR 50.12 Exemption Request

Oyster Creek Nuclear Generating Station
Docket No. 50-219

Request for Exemption from 10 CFR 50, Appendix R,
Section III.G, "Fire Protection of Safe Shutdown Capability" (Phase 1)

Appendix R, Section III.G.2, Operator Manual Actions

ATTACHMENT 2
Appendix R, Section III.G.2, Operator Manual Actions

Item	Equipment	Manual Action Required	Equipment Location Fire Zone	Fire Areas/Zones that credit this manual action*	Applicable References **	Comments
1	4160V Switchgear 1D and LSP-1D	Manual actions for Hot Shutdown are required to isolate damaged cables and reestablish control locally for the 4160V Switchgear 1D. Also, trip 4160V breakers and lockout using the 69 Switch for all Feeder Breakers except 1B2P and 1B3P. Use Local Shutdown Panels to control equipment as follows: LSP-1D 4160V Switchgear 1D Breakers for USS 1B2 and 1B3 (Operate Transfer Switch to "Alternate" and operate Control Switch for feeder breakers for USS 1B2 and 1B3)	TB-FA-3B	TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E	Ref. 3, Sections 1.2.2.D.1, 1.2.2.E.1, 1.2.2.F.1, 1.2.2.G.1 Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 11	Refer to Note #1
2	LI-424-993	Condensate Storage Tank (CST) level Ind. LI-424-993 Local Gauge Used (Read Local CST Gauge)	Yard	OB-FA-9, OB-FZ-6A, OB-FZ-8C, TB-FZ-11B, TB-FZ-11E	Ref. 3, Appendix A, pg 5 of 13, "Systems Used To Provide Shutdown Capability" Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1	

ATTACHMENT 2
Appendix R, Section III.G.2, Operator Manual Actions

Item	Equipment	Manual Action Required	Equipment Location Fire Zone	Fire Areas/Zones that credit this manual action*	Applicable References **	Comments
3	LSP-1B3	Manual actions for Hot Shutdown are required to isolate damaged cables and reestablish control locally for 480V USS 1B3 electrical power breakers. Use Local Shutdown Panels to control equipment as follows: LSP-1B3 480V USS 1B3 incoming breaker. (Operate transfer Switch to "Alternate" and then operate Control Switch for USS 1B3 Breaker 1B3M)	CW-FA-14	TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E	Ref. 3, Sections 1.2.2.D.1, 1.2.2.E.1, 1.2.2.F.1, 1.2.2.G.1; Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 11	Refer to Note #1
4	LSP-1B32	Manual actions for Hot Shutdown are required to isolate damaged cables and reestablish control locally for the Condensate Transfer Pump. Use Local Shutdown Panels 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)	MT-FA-12	TB-FZ-11B, TB-FZ-11E	Ref. 3, Sections 1.2.2.D.1, 1.2.2.G.1 Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 11	
5	LSP-DG2	Manual actions for Hot Shutdown are required to isolate damaged cables and reestablish control locally for Emergency Diesel Generator #2 (EDG2). Use Local Shutdown Panels 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)	DG-FA-17	TB-FZ-11B, TB-FZ-11D, TB-FZ-11E	Ref. 3, Sections 1.2.2.F.1, 1.2.2.G.1 Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 11	

ATTACHMENT 2
Appendix R, Section III.G.2, Operator Manual Actions

Item	Equipment	Manual Action Required	Equipment Location Fire Zone	Fire Areas/Zones that credit this manual action*	Applicable References **	Comments
6	USS-1B3 Breaker 062C	MCC 1B32 Feeder Breaker at USS 1B3 shall be manually re-closed after Diesel Generator start due to an undervoltage trip.	CW-FA-14	TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E	Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 3	Refer to Note #1
7	V-9-2099 (formerly V-11-44), V-11-49, V-11-63, V-11-41	Manual actions for Hot Shutdown are required to align the Fire System water to the Isolation Condenser shell side for makeup. Manual valves V-9-2099 (formerly V-11-44) and V-11-49 are opened, and manual valves V-11-63 and V-11-41 are closed to provide makeup. This action is required because there is no power ("B" Train) available to the Condensate Transfer System.	RB-FZ-1E	TB-FA-3B, OB-FZ-6B, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, OB-FZ-10A, OB-FZ-10B, TB-FZ-11F, TB-FZ-11H, CW-FA-14	Ref. 3, Sections 1.2.2.B.1, 1.2.2.H.1, 1.2.2.J.1, 1.2.3.C.1, 1.2.3.D.1, 1.2.3.F.1, 1.2.3.H.1, 1.2.3.I.1, 1.2.6.A.1; Ref. 3, Appendix A, pg 5 of 13, "Systems Used To Provide Shutdown Capability" Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #2, Note 6 and Hot Shutdown Path #1, Note 20.	Refer to Note #2

ATTACHMENT 2
Appendix R, Section III.G.2, Operator Manual Actions

Item	Equipment	Manual Action Required	Equipment Location Fire Zone	Fire Areas/Zones that credit this manual action*	Applicable References **	Comments
8	LSP-1A2	Manual actions for Hot Shutdown are required to isolate damaged cables and reestablish control locally for Unit Substation (USS) 1A2 electrical breakers. Use Local Shutdown Panels to control equipment as follows: LSP-1A2, CRD Hydraulic PP NC08A and 480V USS 1A2 Incoming breaker (Operate transfer switch to "Alternate" and operate Control Switch for USS-1A2 Main Breaker 1A2M and A CRD Pump).	OB-FZ-6A	OB-FZ-8C	Ref. 3, Section 1.2.3.F.1 Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #2, Note 13.	
9	Remote Shutdown Panel	Manual actions for Hot Shutdown are required to isolate damaged cables and reestablish control locally for Unit Substation (USS) 1B2 electrical breakers and CRD Hydraulic. Use Remote Shutdown Panel to control equipment: RSP, CRD Hydraulic PP 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).	OB-FZ-6B	OB-FZ-6A	Ref. 3, Section 1.2.3.C.1 Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 6.	
10	125V DC Distribution Center B and Static Charger	Use static charger instead of MG Set "B" due to damaged equipment and cables by aligning breakers at Distribution Center B.	OB-FZ-8C	OB-FZ-6A	Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 22.	

ATTACHMENT 2
Appendix R, Section III.G.2, Operator Manual Actions

Item	Equipment	Manual Action Required	Equipment Location Fire Zone	Fire Areas/Zones that credit this manual action*	Applicable References **	Comments
11	FI-225-998	Use CRD local flow gauge FI-225-998. due to cable damage to the normal Control Room flow indicator.	RB-FZ-1D	RB-FZ-1E, RB-FZ-1G	Ref. 3, Section 1.2.1.E.1; Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 8.	Refer to Note #3
12	V-15-30, V-15-52, V-15-237, FI-225-2	Manually open V-15-237, throttle V-15-30 using local flow indicator (FI-225-2) and close V-15-52 to establish CRD flow to Reactor due to the loss of instrument air to the CRD Flow Control Valve	RB-FZ-1E	RB-FZ-1D, RB-FZ-1E, RB-FZ-1F1, RB-FZ-1F2, RB-FZ-1F4, RB-FZ-1F5, RB-FZ-1G, RB-FZ-1H, TB-FA-3A, TB-FA-3B, OB-FZ-6A, OB-FZ-6B, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, OB-FA-9, OB-FZ-10A, OB-FZ-10B, TB-FA-26, TB-FZ-11A, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FZ-11F, TB-FZ-11G, TB-FZ-11H, AB-FA-13, CW-FA-14, DG-FA-15, NR-FA-20, OG-FA-21, OR-FA-19	Ref. 3, Appendix A, pg 3 of 13, "Systems Used To Provide Shutdown Capability" Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1 and Path #2.	Refer to Notes #1 & 5 Ref. 7 section 3.3 provided an exemption for manually operating V-15-30 in RB-FZ-1E, since this valve is located within the fire zone involved in the fire.
13	V-20-2 and V-20-4	Core Spray System II manual valves V-20-1 and V-20-2 are opened and V-20-4 is closed to provide Reactor Coolant Makeup using Core Spray Pump instead of the CRD Pump (manipulate valves to align Core Spray to CST). This action is required because the fire damages both CRD Pumps.	RB-FZ-1F2	RB-FZ-1F3	Ref. 3, Section 1.2.1.F.1; Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 2	Ref. 7 provides an exemption for operating V-20-1. Ref. 5 has a typo so corrected zone quadrant typo 1F2 to 1F3 for the zone that requires this manual action.

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Appendix R, Section III.G.2, Operator Manual Actions

Item	Equipment	Manual Action Required	Equipment Location Fire Zone	Fire Areas/Zones that credit this manual action*	Applicable References **	Comments
14	USS 1B3	Provide power to Control Room A/C unit from USS 1B1 by racking in and closing tiebreaker US1T between USS 1B1 and 1A1. Later changed to crosstie USS 1A3 & 1B3 to restore ventilation to the Control Room .	CW-FA-14	OB-FZ-8A, OB-FZ-8B, OB-FZ-8C	Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #2, Note 14.	Refer to Notes 4 & 6
15	4160V Switchgear. 1A Breaker A8 and 1B Breakers B2 and B10	Trip Reactor Feedwater Pumps 1A (Breaker A8), 1B and 1C (Breakers B2 and B10) and lockout using 69 Switch. This manual action is being performed to prevent a reactor overfill condition due to cable damage and/or loss of control power to the normal feedwater trip circuit.	TB-FZ-11C	TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, OB-FZ-8C	Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1 and #2, Tables Ref. 6, Section 8.1.1	Refer to Note #1 For OB-FZ-8C, only have to trip the B & C pumps at the switchgear.
16	4160V Switchgear. 1A Breakers A3, A5 and A9 and Switchgear. 1B Breakers B4 and B8	All five Reactor Recirculation Pumps (NG01-A, NG01-B, NG01-C, NG01D and NG01E) must be tripped to use fuel zone level instruments and to prevent the Isolation Condenser from tripping on high flow. Also, lockout the 4160V breakers using the 69 Switch.	TB-FZ-11C	TB-FZ-11B, TB-FZ-11E, OB-FZ-8C,	Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 16 Ref. 6, Section 8.1.1	For OB-FZ-8C, only have to trip the A, C & E pumps at switchgear.
17	4160V Switchgear 1C Breakers C0 and C5	Trip Breakers for Main Core Spray Pumps NZ01A and NZ01D and lockout using 69 switch at 4160V Switchgear 1C. This manual action is being performed to prevent a reactor overfill condition due to cable damage and/or loss of control power to the normal Core Spray trip circuit.	TB-FA-3A	OB-FZ-6A, OB-FZ-8C, TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FZ-11G	Ref. 3, Appendix A, pg 4 of 13, "Systems Used To Provide Shutdown Capability" Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 12	Refer to Note #1

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Appendix R, Section III.G.2, Operator Manual Actions

Item	Equipment	Manual Action Required	Equipment Location Fire Zone	Fire Areas/Zones that credit this manual action*	Applicable References **	Comments
18	4160V Switchgear 1D Breakers D4 and D9	Trip Breakers for Main Core Spray Pumps NZ01B and NZ01C and lockout using 69 switch at 4160V Switchgear 1D. This manual action is being performed to prevent a reactor overfill condition due to cable damage and/or loss of control power to the normal Core Spray trip circuit.	TB-FA-3B	TB-FA-3A, OB-FZ-6A, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C, TB-FA-26, TB-FZ-11B, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FZ-11G	Ref. 3, Appendix A, pg 4 of 13, "Systems Used To Provide Shutdown Capability" Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 13 and Hot Shutdown Path #2, Note 10	Refer to Note #1
19	USS-1A2 Breakers 036B & 036C	Trip Breakers for Core Spray booster pumps NZ03A and NZ03D at 480V USS 1A2 and remove close fuses. This manual action is being performed to prevent a reactor overfill condition due to cable damage and/or loss of control power to the normal Core Spray trip circuit.	OB-FZ-6A	OB-FZ-8C, TB-FZ-11C, TB-FZ-11D, TB-FZ-11E, TB-FA-26, TB-FZ-11B	Ref. 3, Appendix A, pg 4 of 13, "Systems Used To Provide Shutdown Capability" Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 14 and Hot Shutdown Path #2, Note 11	Refer to Note #1

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Item	Equipment	Manual Action Required	Equipment Location Fire Zone	Fire Areas/Zones that credit this manual action*	Applicable References **	Comments
20	USS-1B2 Breakers 046B & 046C	Trip Breakers for Core Spray booster pumps NZ03B and NZ03C at 480V USS 1B2 and remove close fuses. This manual action is being performed to prevent a reactor overfill condition due to cable damage and/or loss of control power to the normal Core Spray trip circuit.	OB-FZ-6B	OB-FZ-6A, OB-FZ-8A, OB-FZ-8B, OB-FZ-8C	Ref. 3, Appendix A, pg 4 of 13, "Systems Used To Provide Shutdown Capability" Ref. 5, Figure A-1, Sheet 1, Hot Shutdown Path #1, Note 15 and Hot Shutdown Path #2, Note 12	

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* Fire Areas and Fire Zones are used interchangeably in Attachment 2, and both are considered to have adequate separation from adjacent fire areas or fire zones such that a single fire will not propagate between them. This separation has been justified in Reference 3, Section 1.3, and approved by Reference 6, Section 7.1.

** Applicable References specified in the table refer to the References specified in Attachment 1.

Note 1: TB-FZ-11C and TB-FA-26 were analyzed together for safe shutdown analysis purposes, so TB-FA-26 was added as a fire area that credits this manual action. TB-FA-26 is a separate fire-rated room located within TB-FZ-11C. These areas were not considered a single analysis area in the original FHAR submittal.

Note 2: This action has been slightly modified from that described in the original submittal to correct a valve number (i.e., V-11-44 changed to V-9-2099) and to add one additional valve (i.e., V-11-41), but the action location, timing and outcome are comparable. The additional valve provides additional isolation to the spring check valve that already exists in the line. All of the applicable valves are three inches or smaller and are located within approximately three feet of each other.

Note 3: RB-FZ-1E and RB-FZ-1G were analyzed together for safe shutdown analysis purposes, so RB-FZ-1G was added as a fire area that credits this manual action. These areas were not considered a single analysis area in the original FHAR submittal.

Note 4: The Control Room air conditioning system 'A' or 'B' is required whenever the Control Room is occupied. Wherever practical, HVAC System 'B' is the credited system for cooling under post-fire scenarios because it contains fewer dependencies and support systems than the 'A' System (e.g., doesn't require instrument air for its dampers, doesn't require any support systems for cooling, etc.). The 'B' HVAC was installed in 1988 after the FHAR revision 6 (Reference 5) submittal was made. Therefore, the action to restore the Control Room ventilation power changed from USS 1B1 to USS 1B3 ('B' HVAC power source) so the action to crosstie the USS is at USS 1A3 and 1B3 instead of USS 1A1 and 1B1; however, the timing and outcome are the same.

Note 5: This action has been slightly modified from that described in the original FHAR submittal to change from using the pump discharge valve, V-15-7 or V-15-10 as a throttle valve to using V-15-30 (monitor flow locally at FI-225-2) in conjunction with opening V-15-237. Also, added one additional valve, V-15-52. Changing the valve from V-15-7 or V-15-10 to V-15-30 and V-15-237 improved the location and timing of the action because V-15-237 is located next to V-15-30 while V-15-7 and V-15-10 are located in one of the Reactor Building corner rooms approximately 5 minutes away. V-15-52 is also located next to V-15-30 and this valve closes the CRD Charging Water Header. These changes were made to be consistent with the EOPs. The action location and timing has been improved and the outcome is essentially the same. All of the valves listed above are two-inch valves and they are within

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approximately four feet of each other. Additionally, the local flow indicator can be monitored while adjusting V-15-30.

Note 6: OB-FZ-8A and OB-FZ-8B were analyzed together for safe shutdown analysis purposes, so OB-FZ-8A was added as a fire area that credits this manual action. These areas were not considered a single analysis area in the original FHAR submittal.