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February 2, 1987
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U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Three Mile Island Nuclear Station Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
10 CFR 50 Appendix R Exemptions

GPUN letter to NRC dated November 7, 1985 (5211-85-2177) submitted the TMI-1 Fire Hazards Analysis Report (FHAR), Revision 7. This revision contained requests for exemption from 10 CFR 50 Appendix R. Additional GPUN letters to NRC dated May 17, 1986 (5211-86-2066), July 22, 1986 (5211-86-2124), August 19, 1986 (5211-86-2143), November 19, 1986 (5211-86-2197), November 19, 1986 (5211-86-2196) and November 20, 1986 (5211-86-2199) revised certain previous exemption requests and submitted new exemption requests.

Attachment I to this letter summarizes the changes to the exemption requests described in Revision 7 of the TMI-1 FHAR. This summary incorporates the changes and additions included in the above referenced submittals, as well as any changes resulting from final Appendix R design modifications. This is submitted for NRC information. The discussions in Attachment I should not affect the conclusion of the NRC Safety Evaluation Reports (SER) dated June 4, 1984 and December 30, 1986.

Attachment II provides additional stand alone Appendix R exemption requests. This consists of those exemptions identified during the Appendix R NRC audit and those resulting from final Appendix R design implementation. NRC review and approval of these exemption requests is desired prior to scheduled startup of TMI-1 in mid-March 1987.

The discussions in this letter concerning exemption requests for manual action required within 30 minutes or less serve to notify NRC of the changes to such existing exemption requests, denied in the NRC SER dated December 30, 1986, and to formally submit new exemption requests for these actions. It should be noted that additional information to support existing and new exemption requests for manual actions required within 30 minutes or less will be provided separately.

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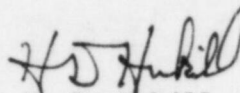
February 2, 1987

Additional technical information to support the exemption request for loss of control building ventilation is provided in Attachment II, Item 6. This information addresses the NRC concerns outlined in the December 30, 1986 SER. Also, additional technical information to support the existing exemption requests for loss of emergency feedwater pump room ventilation, and diesel generator building ventilation will be provided separately.

GPUN is prepared to meet with appropriate NRC representatives at your earliest convenience to discuss any of these exemption requests.

If any additional information is required, please contact us.

Sincerely,



H. D. Hukill

Vice President & Director, TMI-1

DJD:jh(1716g)

Attachment I - Summary of Changes to FHAR, Rev. 7 Exemptions

Attachment II - Additional Stand-Alone Exemption Requests

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ATTACHMENT I

Summary of Changes to TMI-1 FHAR, Rev. 7 Exemptions

3.14.1 Previously Approved Exemptions

3.14.1.2 Heat Exchanger Vault (Fire Zone AB-FZ-1)

Exemption no longer required.

3.14.1.4 Penetration Area (Fire Zone AB-FZ-4), IR Switchgear Area (Fire Zone ISPH-FZ-1), and IT Switchgear Area (Fire Zone ISPH-FZ-2)

An exemption was granted from the required installation of one hour fire rated barriers in NRC SER dated June 4, 1984. This exemption remains valid.

An additional exemption request from the requirement to have 20 ft. separation with no intervening combustibles was submitted via GPUN letter to NRC, dated May 17, 1986 (5211-86-2066), and has been granted in NRC SER dated December 30, 1986. This exemption will be further clarified in FHAR, Revision 8 to delete reference to the intervening wall in AB-FZ-4.

Exemptions for the use of Rockbestos Firezone R cable in lieu of one-hour fire barrier wrap and for not providing fire barrier wraps on supports (for trays, conduits and cables) are requested for all three of these fire zones (see Section 3.14.3). (Reference Attachment II, Item No. 1, for stand-alone exemption request on structural steel supports.) The intent of the original exemption request in FHAR, Revision 7 was to include structural steel supports. Supports were addressed in the justification but not specifically in the Section 3.14 exemption. This is a clarification of FHAR, Revision 7.

3.14.1.9 Fuel Handling Building Elevation 305' (Fire Zone FH-FZ-2)

Exemption from area wide fire detection was approved in NRC SER dated December 30, 1986. GPUN provides clarification that this exemption also includes partial suppression in lieu of area wide suppression. This was the intent per FHAR, Revision 7, Section 1.2.7.b.

3.14.2 Exemptions for Manual Actions

2. Makeup Valves MU-V-14A, MU-V-16A, MU-V-16B, and MU-V-18

This exemption was approved in NRC SER dated December 30, 1986. However, request for manual action of MU-V-17 is being withdrawn. Also, for the specific situation where a fire requires manual operation of MU-V-14A a new exemption was submitted by GPUN letter dated May 17, 1986 (5211-86-2066) and approved in NRC SER dated December 30, 1986. This exemption is now clarified in that manual alignment of MU-V-14A is no longer required for a fire in AB-FZ-6. Manual alignment of this valve is required only for a fire in AB-FZ-4.

In addition manual alignment of MU-V-18 is no longer required for a fire in AB-FZ-4; however manual alignment of this valve is now required for a fire in CB-FA-2e. See Attachment II, Item No. 2 for the stand-alone exemption request for manual alignment of MU-V-18 in CB-FA-2e.

3. Letdown Valve MU-V-8

Exemption for manual alignment of MU-V-8 for various fire zones was requested in FHAR, Revision 7 and GPUN letter to NRC dated July 22, 1986 (5211-86-2124) and granted in NRC SER dated December 30, 1986.

Additional exemption is requested for manual alignment of MU-V-8 for a fire in fire zone AB-FZ-6. See Attachment II, Item 3 for stand-alone exemption request for manual alignment of MU-V-8 in AB-FZ-6.

4. Steam Dump Valves MS-V-4A and MS-V-1B and Block Valves MS-V-2A and MS-V-2B

Exemption is revised to include block valves MS-V-2A and MS-V-2B which were inadvertently omitted from the heading in FHAR, Revision 7. These valves were intended to be manual actions as identified in Attachment 3-7 of FHAR, Revision 7, as well as in GPUN letter to NRC dated July 22, 1986 (5211-86-2124). Since the FHAR, Revision 7 and GPUN letter 5211-86-2124 are identified as the basis for NRC SER dated December 30, 1986, GPUN considers this a correction of a typographical error in FHAR Section 3.14, and that the exemption has been granted.

Manual alignment of MS-V-2B for a fire in CB-FA-3b is also being requested. See Attachment II, Item 4 for the stand-alone exemption request for manual alignment of MS-V-2B in fire zone CB-FA-3b.

6. Emergency Feedwater Valves EF-V-30A, B, C, and D

Previously identified exemption requests for manual action to operate these valves within 20 minutes (FHAR, Revision 7 and GPUN letter to NRC dated July 22, 1986 (5211-86-2124)) remain valid.

Additional exemption is requested for 20 minute manual action of valves EF-V-30A, B, C and D for a fire in zones CB-FA-2g, IB-FZ-2 and DG-FA-2. Additional exemption is also requested for two hour manual actions for valves EF-V-30A, B, C and D for any fire which causes loss of instrument air.

See Attachment II, Item 5 for stand-alone exemption request for manual operation of EF-V-30A, B, C and D within 20 minutes for a fire in CB-FA-2g, IB-FZ-2 and DG-FA-2 and for additional manual operation after two hours for any fire which causes loss of instrument air.

7. Control Building HVAC

The exemption request for manual operation of the control building ventilation system is withdrawn. However exemption is requested for manual tripping of the electrical loads to reduce heat loads in the control building. Such manual action is required for a fire in CB-FA-1, CB-FA-2a, CB-FA-2b, CB-FA-2d, CB-FA-2e, CB-FA-2f, CB-FA-3a, CB-FA-4a, CB-FA-4b, and CB-FZ-5a.

See Attachment II, Item 6 for the stand-alone exemption request for control building ventilation. The discussion provided in Attachment II, Item 6 addresses NRC concerns outlined in the December 30, 1986 SER.

8. Emergency Feedwater Pump Room Ventilation

The exemption request as discussed in FHAR, Revision 7 and GPUN letter to NRC dated July 22, 1986 (5211-86-2124) is still valid.

Additional technical information will be provided separately to support this exemption request.

10. Nuclear Services Cooling Water Pumps

The exemption request for manual operation of NS pump as discussed in FHAR, Revision 7 and in GPUN letter to NRC dated July 22, 1986 (5211-86-2124, Item m) is withdrawn. These pumps are required to provide cooling water to makeup pump MU-P-1B and to the control building chillers.

The control building temperature profile analysis indicated that the control building air handling system (including chillers) is not required for shutdown in CB-FA-2a and CB-FA-2b (see 3.14.2.7).

Since makeup pump MU-P-1C is used for shutdown for a fire in CB-FA-2a and MU-P-1A for a fire in CB-FA-2b, the NS pump is not needed to operate for these fires to support MU-P-1B. This is a change from FHAR, Revision 7.

11. Diesel Generator Building Ventilation

This exemption request as discussed in FHAR, Revision 7 and in GPUN letter to NRC dated July 22, 1986 (5211-86-2124) is still valid. Additional technical information will be provided separately to support this exemption request.

13. Nuclear River Cooling Water Pumps

Additional exemption is requested for manual operation of Nuclear River Cooling Water Pump NR-P-1c for a fire in ISPH-FZ-1. See Attachment II, Item No. 7 for the stand-alone exemption request for manual operation of the NR pump.

14. Intermediate Cooling Valves IC-V-2, IC-V-3 and IC-V-4

Exemption previously requested in FHAR, Revision 7 and GPUN letter to NRC dated July 22, 1986 (granted in NRC SER dated December 30, 1986) for manual correction of spurious operation within four hours is clarified in that this action is no longer required for a fire in zones CB-FA-3b (IC-V-3) and AB-FZ-4 (IC-V-4).

Additional exemption is requested for manual correction of spurious operation within four hours for a fire in zones RB-FZ-1c (IC-V-2), AB-FZ-6a (IC-V-3 and 4), CB-FA-2c (IC-V-2 and 4), CB-FA-2e (IC-V-2 and 4), and CB-FA-2g (IC-V-2 and 4). Also, additional exemption is requested for manual correction of spurious operation of IC-V-2, 3 and 4 within 30 minutes for a fire in zones AB-FZ-6, CB-FA-1, CB-FA-2a, CB-FA-2d, CB-FA-2f, FH-FZ-1, FH-FZ-2 and FH-FZ-5. See Attachment II, Item 8 for the stand-alone exemption request for these manual actions for IC-V-2, 3, and 4.

15. Reactor Building Sump Isolation Valves DH-V-6A and DH-V-6B

This exemption request for manual correction of spurious operation within 45 minutes was identified in GPUN letter to NRC dated July 22, 1986 (5211-86-2124) and in FHAR, Revision 7, Table 3-7. Since the FHAR, Revision 7 and GPUN letter 5211-86-2124 are identified as the basis for NRC SER dated December 30, 1986, GPUN considers this a correction of a typographical error, and that the exemption has been granted. This exemption is clarified in that manual action is no longer required in FH-FZ-2 for valve DH-V-6B.

16. Makeup valves MU-V-20, MU-V-36 and MU-V-37

The exemption for manual action within two hours for these valves was discussed in FHAR, Revision 7, Attachment 3-7 and in GPUN letter to NRC dated July 22, 1986 (5211-86-2124). Since the FHAR, Revision 7 and GPUN letter to NRC (5211-86-2124) are identified as the basis for NRC SER dated December 30, 1986, GPUN considers this a correction of a typographical error, and that the exemption has been granted.

Additional exemption is requested for manual correction of spurious operation of MU-V-37 for a fire in zones AB-FZ-2c, CB-FA-2c, CB-FA-2e, and CB-FA-2g. See Attachment II, Item 9 for the stand-alone exemption request for these actions.

17. Letdown Valves MU-V-1A, MU-V-1B, MU-V-2A, MU-V-2B, MU-V-3, MU-V-4, MU-V-6A, MU-V-6B, MU-V-11A, MU-V-11B, WDL-V-1, WDL-V-2, WDL-V-3, WDL-V-4 and WDL-V-5

The exemption for manual action within 4 hours for these valves was discussed in FHAR, Revision 7, Attachment 3-7 and in GPUN letter to NRC dated July 22, 1986 (5211-86-2124). Since the FHAR, Revision 7 and GPUN letter to NRC (5211-86-2124) are identified as the basis for NRC SER dated December 30, 1986, GPUN considers this a correction of a typographical error and that the exemption has been granted. This exemption is clarified in that exemption is no longer required for valves MU-V-1B in zones CB-FA-1, CB-FA-2b, FH-FZ-1 and FH-FZ-6; MU-V-2A and 2B in zones CB-FA-2d and CB-FA-2e; and MU-V-3 in zones CB-FA-3b, FH-FZ-5, and TB-FA-1.

Additional exemption is requested for manual correction of spurious operation of MU-V-1B in zones AB-FZ-5, AB-FZ-6, AB-FZ-9, CB-FA-2e, FH-FZ-2, FH-FZ-5; MU-V-1A in zones AB-FZ-6 and CB-FA-2e; MU-V-3 in zones CB-FA-1, CB-FA-2d and FH-FZ-6; MU-V-2A, 2B in zone CB-FA-2c; MU-V-6A, 6B in zone AB-FZ-6; and WDL-V-1, 2 in zone AB-FZ-6. See Attachment II, Item 10 for the stand-alone exemption request for these actions.

18. Intermediate Cooling Valves IC-V-1A and IC-V-1B

The exemption for manual action within 4 hours for these valves was discussed in FHAR, Revision 7, Attachment 3-7 and in GPUN letter to NRC dated July 22, 1986 (5211-86-2124). Since the FHAR, Revision 7 and GPUN letter to NRC (5211-86-2124) are identified as the basis for NRC SER dated December 30, 1986, GPUN considers this a correction of a typographical error and that the exemption has been granted. This exemption is clarified in that manual action is no longer required for valves IC-V-1A in zone FH-FZ-1, and IC-V-1B in zone CB-FA-2b.

Additional exemption is requested for manual action within 4 hours for valves IC-V-1A in zone AB-FZ-6; and IC-V-1B in zones AB-FZ-5, AB-FZ-6, AB-FZ-9, CB-FA-2e, FH-FZ-2, FH-FZ-5. See Attachment II, Item 11 for the stand-alone exemption request for these manual actions for IC-V-1A, 1B.

19. Emergency Feedwater Valves EF-V-2A and EF-V-2B

The exemption for manual correction of spurious operation of these valves within 2 hours was discussed in FHAR, Revision 7, Attachment 3-7 and in GPUN letter to NRC dated July 22, 1986 (5211-86-2124). Since the FHAR, Revision 7 and GPUN letter to NRC (5211-86-2124) are identified as the basis for NRC SER dated December 30, 1986, GPUN considers this a correction of a typographical error and that the exemption has been granted.

20. Nuclear River Valves NR-V-15A, NR-V-15B and NR-V-18

This exemption request to manually correct spurious operation of these valves within 30 minutes was discussed in FHAR, Revision 7, Attachment 3-7 and in GPUN letter to NRC dated July 22, 1986 (5211-86-2124). This exemption request is clarified in that manual action to correct spurious operation within 30 minutes is now required only for valve NR-V-18 for zone FH-FZ-1. Previously identified actions for valves NR-V-15A, 15B now have a 4-hour time limit. In addition, manual action for NR-V-15A, 15B is no longer required for zone AB-FZ-6.

Additional exemption is requested for manual correction of spurious operation within 4 hours for valves NR-V-15A, 15B in zones IB-FZ-1, IB-FZ-2, IB-FZ-4, IB-FZ-6, IB-FZ-8, CB-FA-2g, CB-FA-3b and TB-FA-1, and for valve NR-V-15A in zone CB-FA-2b. See Attachment II, Item 12 for stand-alone exemption request for these actions, as well as the resubmittal of the exemption request for previously identified 30-minute manual actions for valves NR-V-15A and 15B which are now 4-hour manual actions.

3.14.3.3 Auxiliary Building Fire Zone AB-FZ-4
Intake Screen Pump House Fire Zones ISPH-FZ-1, ISPH-FZ-2
Fuel Handling Building Fire Zone FH-FZ-1

Exemption 3.14.3 in FHAR, Revision 8 is being revised to more clearly indicate GPUN position that support steel for trays, conduits, and cable need not be fireproofed. The justification was included in FHAR, Revision 7. To facilitate NRC review, the revised exemption is included in Attachment II, Item 1.

Auxiliary Building Fire Zone AB-FZ-5

The exemption request for the use of Rockbestos Firezone R cable in fire zone AB-FZ-5 is withdrawn. Rockbestos Firezone R cable is no longer used in AB-FZ-5, as discussed in GPUN letter to NRC dated November 20, 1986 (5211-86-2199). This change is addressed in NRC SER dated December 30, 1986.

3.14.4 Fire Zone FH-FZ-6 (Chiller Room)

This exemption request in FHAR, Revision 7 is revised to indicate that exemption is requested from the requirement for automatic fire suppression, only.

The exemption request from the requirement for the separation of Control Building chillers located in this area is withdrawn. The Control Building temperature profile analysis indicated that these chillers and associated pumps and valves are not required for shutdown (see Attachment II, Item 6). Safe shutdown cables are routed through this zone as described in Section 3.7.6 of FHAR, Revision 7. In addition, power cables LS5A and LS5B for IC-ESV-control center are routed through this zone. These cables are being wrapped with one hour fire barriers in this zone. An area wide detection system which alarms in the Control Room is installed in this zone.

The fire loading in this zone is minimal. The proposed one hour fire barrier wraps will provide protection for safe shutdown circuits. The detection system assures rapid response of the plant fire brigade to manually suppress the fire in its early stages to prevent damage to safe shutdown components. The lack of significant combustibles and the proposed modifications provide an equivalent level of protection as that provided in the Appendix R requirements.

This revision supersedes the discussion of fire zone FH-FZ-6 contained in GPUN letter to NRC dated July 22, 1986 (5211-86-2124, Item 1). This exemption request submitted in FHAR, Revision 7 and clarified above has not been addressed by NRC in either the June 4, 1984 SER or the December 30, 1986 SER. NRC review and concurrence is therefore requested.

3.14.5 Control Room

The exemption request from the requirements of Section III. J, to the extent that it requires emergency lighting units with at least an eight-hour battery power supply was submitted via GPUN letter to NRC dated November 19, 1986 (5211-86-2196) and granted by NRC SER dated December 30, 1986.

3.14.6 Emergency Lights in Reactor Building

The exemption request from the requirements of Section III. J for permanently mounted emergency lighting units inside the Reactor Building was submitted via GPUN letter to NRC dated November 19, 1986 (5211-86-2197) and granted by NRC SER dated December 30, 1986.

3.14.7 Fire Zone IB-FZ-8 (Intermediate Building - Alligator Pit, Elev. 279')

Exemption request for steel plate doors in IB-FZ-8 will be addressed in FHAR, Revision 8. See Attachment II, Item 13 for the stand-alone exemption request identified during the Appendix R audit.

ATTACHMENT II

Additional Exemption Requests

1. Structural Steel Supports

Exemption Requested

Exemption is requested from the requirements of Section III.G.2 to the extent that protection of structural steel associated with supports is required for Fire Zones AB-FZ-4, ISPH-FZ-1, ISPH-FZ-2 and FH-FZ-1.

Justification

An area wide fire detection system and an area wide fire suppression system is provided in each of these fire zones. The fire detection system assures prompt response by the plant fire brigade and rapid manual extinguishment with the manual suppression equipment provided in the zone and surrounding areas. This assures that temperatures within the zone will not rise to levels where the structural integrity of steel supports will be affected even if the automatic suppression system should fail to function as designed. Therefore, supports for open raceways carrying the Rockbestos fire resistant cable, supports for cables, conduits and trays protected by 1 hour fire barriers, and supports for services in proximity to these cables, raceways and conduits need not be fire-proofed in this zone.

The underlying purpose of the rule is to provide protection against fire damage to the structural steel supports associated with Appendix R safe shut-down cables, equipment, and associated non-safety circuits. This protection is being accomplished by ensuring that the temperatures within the expected zones will not rise to levels which could affect the structural steel integrity. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12(a)(2)(ii), in that application of the regulations in this particular circumstance is not necessary to achieve the underlying purpose of the rule.

2. Makeup Valve MU-V-18

Exemption Requested

Exemption is requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual action to align valve MU-V-18 to correct spurious closure for a fire in CB-FA-2e.

Justification

The makeup flow line through MU-V-18 is used for normal makeup flow and for RC pressure control when the pressurizer heaters are not available. MU-V-18 is located in AB-FZ-4. If MU-V-18 spuriously closes due to a fire in CB-FA-2e, it can be manually opened.

A minimum of two hours is available before correction of spurious closure is required. This manual action is achievable in two hours. Post-fire shutdown procedures will specify the required action.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. This valve is not located in the area of the fire which causes it to spuriously actuate. Sufficient time and available personnel exist to allow this manual operation and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual operation of MU-V-18 due to a fire in CB-FA-2e. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12 (a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of material, fabrication and installation costs.

3. Letdown Valve MU-V-8

Exemption Requested

Exemption is requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual action to align valve MU-V-8 for a fire in AB-FZ-6.

Justification

This valve aligns letdown flow to either the makeup tank or the Reactor Coolant Bleed Tanks. In the event letdown is required for shutdown, this valve should be repositioned to align letdown flow to the Reactor Coolant Bleed Tanks prior to overfilling the makeup tank, but this is not required. If the valve is not realigned the makeup tank will overflow to the WDL-T-2 miscellaneous waste storage tank through the makeup tank relief valve MU-RV-1. The minimum time available to operate this valve to prevent makeup tank overflow is four hours and can be further delayed until reactor depressurization and letdown is initiated. This manual action is achievable in 2 hours. Post-fire shutdown procedures will specify the required action.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe shutdown condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. Fire damage to the valve operator will not prevent the valve operator from being manually turned. Sufficient time and available personnel exist to allow this manual operation and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual operation of MU-V-8 due to a fire in AB-FZ-6. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12 (a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of material, fabrication and installation costs.

4. Main Steam Block Valve MS-V-2B

Exemption Requested

Exemption is requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual alignment of valve MS-V-2B for a fire in CB-FA-3b.

Justification

The main steam block valve, MS-V-2B, must remain open for the atmospheric steam dump. The steam will be allowed to dump to the code safety valves if it spuriously closes due to a fire in CB-FA-3b. MS-V-2B is located in IB-FZ-2. If valve MS-V-2B spuriously closes due to a fire in CB-FA-3b, it can be manually opened.

A minimum of three hours is available before correction of spurious closure is required. This time reflects an assumption of maintaining hot shutdown for up to three hours before it is necessary to begin cooldown, and therefore, to use MS-V-4B. This manual action is achievable in two hours. Post-fire shutdown procedures will specify the required action.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. This valve is not located in the area of the fire which causes it to spuriously actuate. Sufficient time and available personnel exist to allow this manual operation and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual operation of MS-V-2B due to a fire in CB-FA-3b. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12 (a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of material, fabrication and installation costs.

5. Emergency Feedwater Valves EF-V-30A, B, C and D

Exemption Requested

Exemption is requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual control of valves EF-V-30A, B, C and D within 20 minutes for a fire in CB-FA-2g, IB-FZ-2 and DG-FA-2, and to allow manual control of valves EF-V-30A, B, C and D after 2 hours for any fire which causes loss of instrument air.

Justification

EF-V-30A, B, C and D control the flow of feedwater into the steam generators. One valve for at least one steam generator is required to be operable, while the valves not being used are required to stay closed to prevent overfilling of the steam generators. These valves are located in IB-FZ-3. If automatic control of these valves is lost due to a fire in CB-FA-2g, FH-FZ-5, IB-FZ-2 and DG-FA-2, the valves can be manually controlled within 20 minutes by isolating the valve circuits using the Remote Shutdown System and establishing manual control at the valves. This manual action is achievable in 20 minutes. Post fire shutdown procedures will specify the required action.

These valves are equipped with a 2-hour backup air supply. If a fire in other areas causes loss of normal instrument air to valves EF-V-30A, B, C and D, these valves can be manually controlled after the first 2 hours by manually throttling at the valve in IB-FZ-3. This manual action is achievable in 2 hours. Post-fire shutdown procedures will specify the required action upon loss of instrument air to these valves.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. Sufficient time and available personnel exist to allow this manual operation and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual operation of EF-V-30A, B, C and D within 20 minutes for a fire in CB-FZ-2g, IB-FZ-2 and DG-FA-2, and after 2 hours for any fire which causes loss of instrument air. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12 (a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of material, fabrication and installation costs.

6. Control Building HVAC

Exemption Requested

The exemption request for manual operation of the control building ventilation system, as described in GPUN letter to NRC dated July 22, 1986 (5211-86-2124, Item 1), is withdrawn. Exemption is hereby requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual actions to trip electrical loads to reduce heat loads in the control building upon loss of the control building ventilation system in lieu of protection of control building ventilation system components or use of portable ventilation. This manual action is required for a fire in CB-FA-1, CB-FA-2a, CB-FA-2b, CB-FA-2d, CB-FA-2e, CB-FA-2f, CB-FA-3a, CB-FA-4a, CB-FA-4b, and CB-FZ-5a.

Justification

Fires in various areas of the plant could affect the control building ventilation system due to fire damage of the air ducts, control dampers and power/control cables; and due to closure of fire dampers. An analysis has been performed which demonstrates that loss of ventilation will result in slowly increasing temperatures in the areas of safe shutdown equipment. A temperature profile - HVAC transient analysis was performed using reduced heat loads. The heat loads in the control building will be reduced by deenergizing power to selected nonessential equipment after loss of the HVAC system. A generalized heat transfer program was used in the analysis to model the control building as a number of rooms. Each room was connected to the HVAC system and contained heat sources and passive heat sinks of concrete, fire-proofed structural steel, and bare steel (equipment).

The generalized heat transfer program allowed the control building to be modeled as a network (analogous to an electrical network of capacitances and resistances). The network consisted of the thermal capacitances (mcp) of the air and heat sinks and the thermal conductances (1/resistance) from the air to the surfaces and, for the concrete and coated steel, through the bulk of the material.

The control building has been divided into 13 rooms for this analysis, consisting of at least 2 "rooms" at each elevation; elevations 306 and 355 are divided into only the north and south halves, elevations 322 and 338 are divided into their individual rooms. The "patio" area at the west end of the building was not included since it is isolated as is the stairwell. Also, the 380 elevation was not included in the analysis since air flow into these areas is small (1000 cfm total).

For each room, the manner in which the thermal model of the control building is constructed has the air "connected" to the mass of the bare metal by means of a conductance (natural convection heat transfer coefficient x surface area). The use of the natural convection coefficient alone is conservative. The metal was assumed to have no gradient due to the high thermal conductivity. The fire-proof coated structural steel was connected to the room air through 2 conductances in series, (the surface heat transfer coefficient x surface area and the $kA/\Delta x$ of the 1-1/2 inch thick coating);

6. Control Building HVAC (continued)

this metal was also assumed to have no gradient. The concrete was divided into several slabs in order to represent the thermal gradient; there was a surface node and nodes representing the centers of slabs varying in thickness from 1/2" to 8". The concrete was represented to a depth of 15-1/2 inches; this is conservative for a transient lasting 72 hours as the concrete at 15-1/2 inches starts to respond at 24 hours. The surface of the concrete was connected to the room air by means of a conductance (natural convection heat transfer coefficient x surface area). Adjoining rooms were connected to each other through a conductance representing the floor or partition as appropriate. The floors are nominally 5" thick (floor under 203 is 18" thick). Each room was also connected to the HVAC system through a conductance representing the room air flow rate (mass flow rate x specific heat); the implicit assumption was that the room air is well mixed; the HVAC system is modelled as a mass of air with the heat load of the fans included.

The HVAC system was connected to the outside ambient air temperatures to represent the make-up air. For the small values of make-up air used (20%), this could be simply represented by a conductance equal to the make-up air (mass flow rate x specific heat). For larger make-up air fractions, the actual return air temperature must be considered in addition to the outside air temperature.

The outside ambient temperature was tabulated as a function of time of day; this is design day (95°F) per ASHRAE. The transient was started at the hottest time, 3 p.m. (T=95°F).

The computations were performed using a computer program, TSAP, to solve the resulting simultaneous equations.

The temperatures were first calculated for a steady-state, or equilibrium, case in order to have the room air and the heat sinks at the proper equilibrium temperature. This case was calculated by maintaining the HVAC supply air at 52°F and using the thermal model to calculate room temperatures; a minimum room temperature at 72°F was maintained by adding the heat representing the thermostatically controlled heaters.

The transient started when the HVAC conductance to its heat sink was disconnected and the heat loads are set to their design values; this causes the air to warm up and to transfer heat to the metal and concrete heat sinks in each room. The time steps used in the transient are shown below:

<u>Time</u>	<u>Time Step</u>
0-0.2 hr	0.01 hr
0.2 hr - 4.0 hr	0.1 hr
4.0 hr - 24 hr	1.0 hr

6. Control Building HVAC (continued)

Test runs have shown that the results vary negligibly if the time steps are increased or decreased by a factor of 2; the time step size is therefore considered reasonable.

The HVAC connections for each room were set equal to zero and the room temperature increases on its own, unaffected by HVAC air flow. Heat transfer still exists between rooms where there was contact through a partition or floor.

The evaluation of the heat sinks, heat sources, and air flows was determined for each room in the control building. The analysis considered the weight and surface area of the ductwork, the electrical equipment (cable trays and conduit), the equipment supports, the structural steel, and the floor decking and the concrete surface area. These are the passive heat sinks; mass associated with the heat generating equipment is not included. The analysis also considered the room volume (for mass of air), the HVAC air flow, and the total heat generation rate. The air flow rates represented the original design except for rooms 201 and 202 which are specified as 1579 cfm and 1347 cfm per test data.

The heat sources were evaluated for the electrical equipment (switchgear units, motor control centers, transformers, control panels, battery chargers, inverters, etc.) by making estimates of the heat generation within the equipment. An assumed loading of 80% of actual nameplate rating was used for motor control centers. The input used for the calculation incorporated heat loss data for the various types of electrical equipment compiled from various electrical equipment manufacturers. More detailed evaluations were obtained for rooms 203, 204, 205, 301, & 302 by utilizing actual switchgear, motor control center, inverter, and battery charger loads from a GPUN Technical Data Report. In addition, the heat sources for rooms 201 and 202 (1P & 1S switchgear) were determined from actual test data taken at the plant during periods from hot shutdown to 75% power. Lighting loads assumed normal illumination levels. Heat generation rates for the mechanical equipment (HVAC fans) were evaluated and their loads dissipated into the HVAC air. The plant status was taken to be normal plant operation at 100% power and the heat generation is assumed to remain constant throughout the analysis - both steady-state and transient until selected loads are reduced.

The transient analysis was performed for HVAC failure using normal heat sources during the first 60 minutes. The heat loads changed at 1 hour to lower values by reduction of selected non-essential electrical loads. These actions will be accomplished by one operator. The results, as documented on the attached temperature profiles (Table 6-2, Figures 6-6 thru 6-10), indicate

6. Control Building HVAC
(continued)

that the ambient room temperature under total HVAC failure will be below 100°F (after a maximum of 72 hours), in all rooms except the following seven (7) areas:

<u>Areas</u>	<u>Max. Temperature Reached in 72 Hours</u>
CB-FA-2a	105.6°F
CB-FA-2b	104.3°F
CB-FA-2d	114°F
CB-FA-2e	111°F
CB-FA-3a	103.8°F
CB-FA-3b	105.3°F
CB-FA-4b	107.9°F

The above temperatures are within the operating equipment maximum permissible ambient temperature range. The equipment located in the control building consists of electrical distribution equipment, protective relays, control board, batteries, battery chargers, inverters and electronic components. These electrical apparatus are normally designed for operation at usual service conditions. The service conditions specify limits in altitude (not to exceed 3300 ft.) and in ambient temperature (max. ambient of 40°C-104°F). However, they can be operated at unusual service conditions and higher ambient temperature if special installation, operation and maintenance provisions are considered.

Generally, the rated continuous current is based on the maximum permissible total temperature limitation of various parts of the electrical equipment including insulation. The total temperature of the electrical parts under operating conditions depends on the actual load current and the actual ambient temperature. It is, therefore, possible to operate at a current higher than rated current when the temperature is less than 40°C. Similarly, the equipment can be operated at higher ambient temperature under reduced loading condition without affecting the equipment.

American National Standard Institute (ANSI) and Institute of Electrical and Electronic Engineer (IEEE) have several standards which provide method of calculating the allowable current of equipment at an ambient temperature above 40°C. Based on these standards, the electrical components are capable of operating without damage at an ambient of 50°C (122°F) if the electrical loads are reduced to 80 to 90 percent of the rated current. During shutdown operation, the electrical loads on the electrical equipment are expected to be reduced to values below the allowable currents by tripping non-essential circuits. Solid state inverters are capable of operating for 2 hours at ambient temperature of 150°F (MIL-I-60166).

6. Control Building HVAC (continued)

The control room (CB-FA-4b) will reach a temperature of 97.7°F in 24 hours and 107.9°F in 72 hours during the Appendix R shutdown. It is determined that operators can endure these ambient temperatures for this emergency condition and can bring the plant to cold shutdown. The operators have ample time to provide portable blowers to achieve favorable comfort levels. In addition, operating shifts can be changed as deemed necessary.

A complete loss of CB ventilation is expected only for a fire in CB-FA-1, CB-FA-2d, CB-FA-2f and CB-FA-4b. For a fire in CB-FA-2a, CB-FA-2b, CB-FA-2e, CB-FA-3a, CB-FA-4a and CB-FZ-5a, a partial loss of the ventilation system is anticipated due to circuit and/or duct damage.

Even with a total failure of the CB air handling system the resulting ambient room temperatures are not unacceptably high and they will not jeopardize the operation of the shutdown equipment nor impair the performance of the plant operators, if heat loads in the control building are reduced by tripping selected non-essential loads. Time is available (within 1 hour) to perform such manual actions. Safe shutdown will be achieved with or without the control building ventilation system.

The underlying purpose of the rule is to provide protection of safe shutdown capability during and after any postulated fire in the plant. The rule requires fire protection for circuits and components associated with shutdown related ventilation systems. It has been demonstrated that operation of the control building ventilation system is not required to maintain acceptable ambient temperatures in the control building for Appendix R loads, when the manual actions are taken to reduce selected non-essential electrical loads. Sufficient time and available personnel exist to allow these manual actions and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the control building ventilation system components. Thus, the underlying purpose of the rule is satisfied allowing manual action to reduce selected non-essential electrical loads. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12(a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of materials, fabrication and installation costs.

The analysis and emergency fire procedures incorporating these manual actions are available for review.



Gilbert/Commonwealth

ENGINEERING/CONSULTANTS

CALCULATION

SUBJECT

TM1-2 OUTSIDE BUILDING HVAC TRANSIENT TM1.5130.227-REV.1

IDENTIFIER

PAGE

8

OF

REV.

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1

2

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MICROFILMED

ORIGINATOR

J W MITCHELL

DATE

1/27/87

PAGES 18

TABLE 6-2

ROOM TEMPERATURES
AT 1 DAY INTERVALS
6 LOADS REDUCED @ 1 hr

ROOM			HEAT LOAD $\frac{B}{hr}$ initial/after 1 hr	TEMPERATURE			
				START	24 hrs	48 hrs	72 hrs
CB-FA-1	EL 306 N	37,878		71.9	84.5	86.9	89.2
"	-1 EL 306 S	36,001		72.0	86.3	89.0	91.6
"	-2a Room 201	36664/25401		72.0	96.4	101.2	105.6
"	-2b " 202	33276/19863		72.0	95.5	100.1	104.3
"	-2c " 203	14,000		76.0	91.0	94.1	96.9
"	-2d " 204	57055/25719		75.3	103.8	109.1	114.0
"	-2e " 205	47816/22025		77.2	102.1	106.7	111.0
"	-2f " 206	2,150		71.9	80.7	82.12	84.9
"	-2g " 207	2,150		71.9	80.6	82.7	84.7
"	-3a " 301	21,638		72.0	94.9	99.5	103.8
"	-3b " 302	19,556		72.0	96.1	100.9	105.3
"	-3c " 303	24,868		72.0	91.5	95.4	99.0
"	-3d " 304	132,302/56200		72.0	91.9	96.1	99.9
"	-4a EL 355-N	69,661		72.0	91.6	95.5	99.2
"	-4b EL 355-S	129,885/98504		72.0	97.7	102.9	107.9

FIGURE 5-6
 TMI-1 CONTROL BUILDING
 HVAC TRANSFER ANALYSIS
 TMI-1 HVAC FAILURE
 APPENDIX A, 6 WAREHOUSE, 21-1

TMI.5/30.287-REV 1

ROOM TEMPERATURE, °F

ROOM 51 306.5
 EA 306.5

TIME FROM FAILURE, hr

20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560 580 600 620 640 660 680 700 720 740 760 780 800 820 840 860 880 900 920 940 960 980 1000 1020 1040 1060 1080 1100 1120 1140 1160 1180 1200 1220 1240 1260 1280 1300 1320 1340 1360 1380 1400 1420 1440 1460 1480 1500 1520 1540 1560 1580 1600 1620 1640 1660 1680 1700 1720 1740 1760 1780 1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000 2020 2040 2060 2080 2100 2120 2140 2160 2180 2200 2220 2240 2260 2280 2300 2320 2340 2360 2380 2400 2420 2440 2460 2480 2500 2520 2540 2560 2580 2600 2620 2640 2660 2680 2700 2720 2740 2760 2780 2800 2820 2840 2860 2880 2900 2920 2940 2960 2980 3000 3020 3040 3060 3080 3100 3120 3140 3160 3180 3200 3220 3240 3260 3280 3300 3320 3340 3360 3380 3400 3420 3440 3460 3480 3500 3520 3540 3560 3580 3600 3620 3640 3660 3680 3700 3720 3740 3760 3780 3800 3820 3840 3860 3880 3900 3920 3940 3960 3980 4000 4020 4040 4060 4080 4100 4120 4140 4160 4180 4200 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41720 41740 41760 41780 41800 41820 41840 41860 41880 41900

FIGURE 8-9
 TME-1 CONTROL BUILDING
 HVAC TRANSIENT ANALYSIS
 TOTAL HVAC THERMAL
 APPENDIX A, 6 DAYS PERIOD @ 1 hr

TME.5130.287-REV 1

ROOM TEMPERATURE, °F

ROOM 201
 202
 203

T = 47
 48
 49

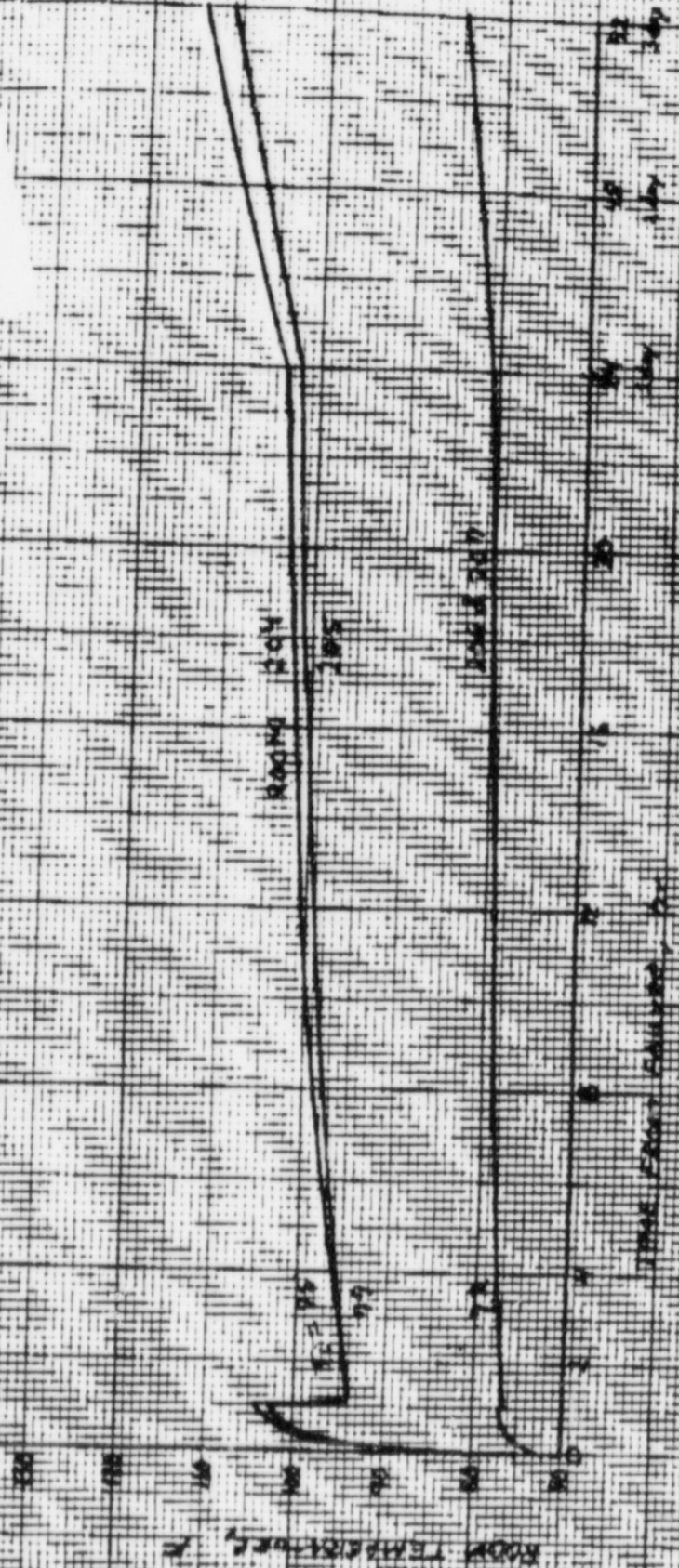
TIME FROM FAILURE, hr

1 day
 2 day
 3 day

1/2 day

FIGURE 2-8
TME-5 CUMULATIVE BUILDUP
DURING TRANSDUCER ANALYSIS
SERIAL NUMBER 287
APPENDIX B, 6 CUMULATIVE BUILDUP

TME. 5130. 287 - REV 1



100% 100%

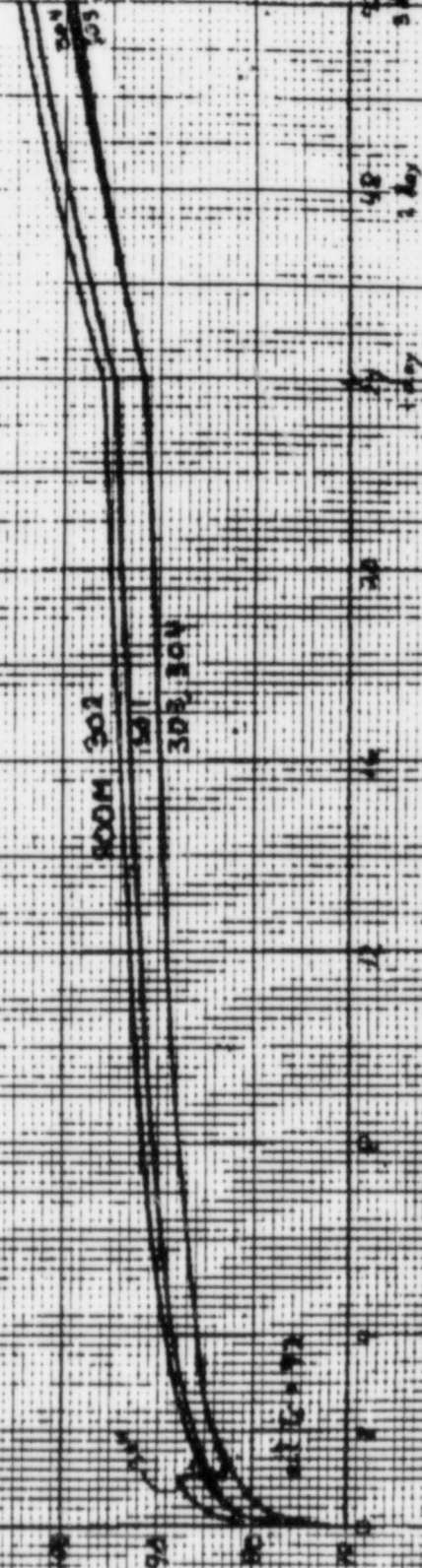
FIGURE 6-9

TMI-1 CONTROL BUILDING
HVAC TRANSIENT ANALYSIS
TOTAL HVAC FAILURE
APPENDIX B, 6 LOSS REDUCED 6.147

TMI 5/34.227 - REV 1

ROOM TEMPERATURE, °F

TIME FROM FAILURE, hr



5/30/227

THE

1-800-368-2262

FLUO-THERM™ ANALYSIS

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THE UNIVERSITY OF CHICAGO

68-10397-15



7. Nuclear River Cooling Water Pumps

Exemption Requested

Exemption is requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual operation of Nuclear River Cooling Water Pump NR-P-1c for a fire in ISPH-FZ-1.

Justification

These pumps are required to provide cooling water to Nuclear Service coolers and intermediate coolers. For a fire in ISPH-FZ-1 one of the NR pumps is needed within 30 minutes to support the available makeup pump MU-P-1B for RCP seal injection (NS system is required in MU-P-1B operation) or to support one IC pump for RCP thermal barrier cooling. Manual operation of the NR-P-1c pump (manual closing of circuit breaker), after isolating a control circuit for an interlock, is required for a fire in ISPH-FZ-1. Manual control of NR-P-1c can be established within 30 minutes or less by isolating control circuitry at remote shutdown transfer switch panel "B" and starting NR-P-1c from auxiliary remote shutdown panel "B" in the control building. This manual action is achievable in 30 minutes. Post-fire shutdown procedures will specify the required action.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown related pumps. This pump is not located in the area of the fire of concern. Sufficient time and available personnel exist to allow this manual operation and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual operation of NR-P-1c for a fire in ISPH-FZ-1. Therefore, the exemption being requested meets the special circumstances delineated in 10CFR50.12(a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of materials, fabrication and installation costs.

8. Intermediate Cooling Valves
IC-V-2, IC-V-3 and IC-V-4

Exemption Requested

Exemption is requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual corrections of spurious operation of IC-V-2, 3 and 4 within 4 hours for a fire in zones RB-FZ-1c (IC-V-2), AB-FZ-6a (IC-V-3 and 4), CB-FA-2c (IC-V-2 and 4), CB-FA-2e (IC-V-2 and 4), and CB-FA-2g (IC-V-2 and 4); and to allow manual correction of spurious operation of IC-V-2, 3 and 4 within 30 minutes for a fire in AB-FZ-6, CB-FA-1, CB-FA-2a, CB-FA-2d, CB-FA-2f, FH-FZ-1, FH-FZ-2, and FH-FZ-5.

Justification

These normally-open IC valves are required to remain open during safe shutdown for RCP thermal barrier cooling and letdown cooling. For thermal barrier cooling, any spurious closing of these valves should be corrected within 30 minutes. A much longer action time, up to four hours, is allowed for letdown cooling. Spurious Reactor Building Isolation (RBI) initiated by the ESAS system can lead to spurious closure of IC-V-3 and IC-V-4 for "A" channel and/or IC-V-2 and IC-V-4 for "B" channel. Spurious RBI initiation of the ESAS system can be corrected within the required time by isolating the ESAS circuits at the remote shutdown panels or by deenergizing dc power to the solenoid valves. Electrical cables for the valves are normally protected from fire damage in the areas where thermal barrier cooling is required.

Because of this cable protection the IC valves originally require manual operation for letdown cooling (action time four hours). However, the spurious initiation of ESAS is possible in some areas where intermediate closed cycle cooling is required for RCP thermal barrier cooling. For these eight areas (AB-FZ-6, CB-FA-1, CB-FA-2a, CB-FA-2d, CB-FA-2f, FH-FZ-1, FH-FZ-2 and FH-FZ-5), the IC system must be available within 30 minutes. The required actions can be accomplished within the allotted time frame, because the actions take place in the control tower complex.

Isolation of the ESAS output circuits is made at the remote shutdown transfer switch panels in CB-FA-2b and CB-FA-3c, the IC valves can be remotely reopened from the remote shutdown panels (CB-FA-2c). This action can be taken within 30 minutes.

These actions are achievable in the required time frames. Post-fire shutdown procedures will specify the required actions.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. Sufficient time and available personnel exist to allow this manual operation and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus,

8. Intermediate Cooling Valves
IC-V-2, IC-V-3 and IC-V-4
(continued)

the underlying purpose of the rule is satisfied allowing manual operation of these valves. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12 (a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of materials, fabrication and installation costs.

9. Makeup Valve MU-V-37

Exemption Requested

Exemption is requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual correction of spurious operation of valve MU-V-37 for a fire in AB-FZ-2c, CB-FA-2c, CB-FA-2e, and CB-FA-2g.

Justification

Makeup valve MU-V-37 must stay open to assure minimum acceptable flow through the makeup pumps. It has been determined that the makeup pump will not be incapacitated when subject to a restricted makeup flow of 32 gpm for RCP seal injection for a short period. The electrical cables for this valve are normally protected where required for RCP seal injection. Manual operation of the valve is required for some fire area/zones where time is not critical. In these cases, the MU System is not needed for RCP seal injection and MU System operation can be delayed. A minimum of two hours is available to operate these valves in these cases. This manual action is achievable in two hours. Post-fire shutdown procedures will specify the required action.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. This valve is not located in the area of the fire which causes it to spuriously actuate. Sufficient time and available personnel exist to allow these manual actions and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual operation of MU-V-37 due to a fire in AB-FZ-2c, CB-FA-2c, CB-FA-2e, and CB-FA-2g. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12(a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of materials, fabrication and installation costs.

10. Letdown Valves MU-V-1A, MU-V-1B, MU-V-2A, MU-V-2B
MU-V-3, MU-V-6A, MU-6B, WDL-V-1, WDL-V-2

Exemption Requested

Exemption is requested from the requirements of 10 CFR 50 Appendix R, Section III.G.2 to allow manual correction of spurious operation of MU-V-1A in AB-FZ-6 and CB-FA-2e; MU-V-1B in AB-FZ-5, AB-FZ-6, AB-FZ-9, CB-FA-2e, FH-FZ-2, FH-FZ-5; MU-V-2A and 2B in CB-FA-2c; MU-V-3 in CB-FA-1, CB-FA-2d and FH-FZ-6; MU-V-6A and 6B in AB-FZ-6; and WDL-V-1 and 2 in AB-FZ-6.

Justification

The letdown flow path consists of a letdown cooler, pressure reduction, makeup tank and/or bleed tanks, and several valves in series parallel arrangement. Letdown need not be immediately available for hot shutdown. Sufficient time (up to four hours) is available to manually line-up the valves for letdown flow. One path is normally open during normal operation. A valve can be manually corrected if it spuriously closes due to hot short. This action is achievable in four hours. Post-fire shutdown procedures will specify the required action.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. Sufficient time and available personnel exist to allow this manual operation and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual correction of spurious operation of these valves. Therefore, the exemption being requested meets the special circumstances delineated in 10 CFR 50.12(a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10 CFR 50.12 (a)(2)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of materials, fabrication and installation costs.

11. Intermediate Cooling Valves IC-V-1A and IC-V-1B

Exemption Requested

Exemption is requested from the requirements of 10CFR50 Appendix R, Section III.G.2 to allow manual correction of spurious operation of IC-V-1A in AB-FZ-6; and IC-V-1B in AB-FZ-5, AB-FZ-6, AB-FZ-9, CB-FA-2e, FH-FZ-2 and FH-FZ-5.

Justification

These valves are required for the letdown coolers. Spurious closure of these valves due to a hot short can be corrected in four hours. This action is achievable in four hours. Post-fire shutdown procedures will specify the required action.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. Sufficient time and available personnel exist to allow this manual operation and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual correction of spurious operation of these valves. Therefore, the exemption being requested meets the special circumstances delineated in 10CFR50.12 (a) (2) (ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10CFR50.12 (a) (2) (iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of materials, fabrication and installation costs.

12. Nuclear River Valves NR-V-15A, and NR-V-15B

Exemption Requested

Exemption is requested from the requirements of 10CFR 50 Appendix R Section III.G.2 to allow manual correction of spurious operation within four hours for valves NR-V-15A in AB-FZ-5, AB-FZ-6a, CB-FA-2e (all were previously identified as 30 minute manual actions) and in IB-FZ-1, IB-FZ-2, IB-FZ-4, IB-FZ-6, IB-FZ-8, CB-FA-2b, CB-FA-2g, CB-FA-3b, and TB-FA-1; and valve NR-V-15B in AB-FZ-5, AB-FZ-6a, CB-FA-2b, CB-FA-2e (all were previously identified as 30 minute manual actions) and in IB-FZ-1, IB-FZ-2, IB-FZ-4, IB-FZ-6, IB-FZ-8, CB-FA-2g, CB-FA-3b, and TB-FA-1.

Justification

Manual correction of spurious operation is required within four hours for the letdown cooling function. This action is achievable in two hours. Post-fire shutdown procedures will specify the required action.

The underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. The rule requires fire protection for circuits and components associated with shutdown-related valves. These valves are not located in the fire areas of concern. Sufficient time and available personnel exist to allow these manual actions and maintain the plant in a safe shutdown condition, in lieu of providing fire protection for the components. Thus, the underlying purpose of the rule is satisfied allowing manual correction of spurious operation of these valves. Therefore, the exemption being requested meets the special circumstances delineated in 10CFR 50.12 (a) (2) (ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10CFR 50.12 (a) (2) (iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs consist of additional engineering, procurement of materials, fabrication and installation costs.

13. Steel Plate Doors (IB-FZ-8)

Exemption Requested

Exemption is requested from Section III.G.2 to the extent that the three-hour fire rated barrier of fire zone IB-FZ-8 contains two steel plate doors which are not listed for fire services by a recognized testing agency.

Justification

Each steel plate door (approx. 3 ft. x 7 ft.) is used for flood protection and is bolted in place. One door is located in the portion of the wall common to fire zone AB-FZ-4 and the other is in the portion of the wall common to fire zone FH-FZ-1, each of which is provided with an area wide automatic sprinkler system. The combustible load in fire zone IB-FZ-8 is very low, which precludes conflagration. The two doors are over 50 ft. apart, which precludes a fire in fire zone IB-FZ-8 from exposing both fire zones AB-FZ-4 and FH-FZ-1 simultaneously since there is no continuity of combustibles.

Based on the fire suppression system installed, the low combustible load in fire zone IB-FZ-8, and the distance between the steel flood doors, replacement with listed fire doors would not materially enhance the ability to achieve safe shutdown in the event of a fire.

The underlying purpose of the rule is to provide assurance that one of the redundant trains of safe shutdown equipment is free of fire damage through adequate separation and protection, in order to ensure safe shutdown capability during and after any postulated fire in the plant. This assurance is being accomplished by providing area wide automatic sprinkler coverage in fire zones AB-FZ-4 and FH-FZ-1 which adjoin IB-FZ-8, by providing adequate separation between the steel doors and by the low combustible loading in IB-FZ-8. Therefore, the exemption being requested meets the special circumstances delineated in 10CFR 50.12(a)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. In addition, the special circumstances of 10CFR 50.12(a)(iii) apply in that providing additional protection features, required by the regulations, would not result in a significant increase in the level of protection provided and would result in undue hardship and cost significantly in excess of those incurred by others similarly situated. These costs, consist of additional engineering, procurement of materials, fabrication and installation costs.