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Nuclear Generation

June 26, 1992
JPN-92-032

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Mail Station P1-137
Washington, DC 20555

SUBJECT: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Revised, New or Temporary Exemptions From 10 CFR 50, Appendix R

REFERENCE: 1. NRC letter, R. A. Plasse to NYPA, dated June 8, 1992, regarding the meeting on May 28, 1992 to discuss the results of the new Appendix R Analysis and the potential exemptions needed as a result of this analysis.

Dear Sir:

Authority and NRC staff members met on May 28, 1992 to discuss draft exemption requests from the requirements of Appendix R to 10 CFR 50 (Reference 1). The exemption requests are in Attachment 1. These requests are a result of the recent reassessment of the Fire Protection Program at FitzPatrick.

The Authority is requesting a total of six exemptions. The exemptions have been divided into three exemption request categories: revised, new and temporary. The revised exemption requests ask that existing exemptions be modified to include additional fire areas or equipment. For each revised exemption request, the original exemption basis presented in the associated NRC safety evaluation remains. The new exemption request has not been previously submitted to the NRC and results from the new 1992 Appendix R reanalysis for FitzPatrick. The temporary exemption requests are presented because modifications necessary to bring the plant into compliance with Appendix R cannot be completed prior to startup.

The hardship to the Authority if these exemptions are not granted is that the plant will have to remain shutdown until the modifications are complete. The total cost of the modifications that would be implemented if the revised and new exemption requests are denied is estimated to cost approximately \$3,870,000. All the modifications discussed in the exemption requests would be completed prior to startup from the next refueling outage which translates into 20 months (i.e., 18-month cycle plus 2-month refueling outage). This 20 months reflects the longest schedule if the temporary exemption requests are denied. At a cost of \$12,000,000 per month in lost revenue (i.e., \$400,000 per day and 30 days per month) the estimated total lost revenue to the Authority is \$240,000,000 if FitzPatrick had to remain shutdown for an additional 20 months. This lost revenue estimate only includes the loss of income from FitzPatrick generated power and does not include the cost of replacement power. Therefore, if all the enclosed exemption requests are denied, the estimated total cost to the Authority is \$243,870,000.

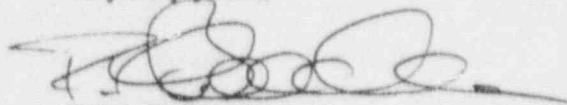
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These are only preliminary estimates of the time and cost it would take to complete the modifications if the exemptions are not granted. Detailed engineering, cost and schedule evaluations have not been prepared to support these estimates.

The Authority's fire protection staff are available to meet with your staff to further discuss these exemptions. If you have any questions regarding these exemption requests, please contact Mr. J. A. Gray, Jr.

Very truly yours,



Ralph E. Beedle
Executive Vice President
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cc:

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ATTACHMENT 1 TO JPN-92-032

REQUESTS FOR EXEMPTION FROM 10 CFR 50, APPENDIX R

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

NEW YORK POWER AUTHORITY

JUNE 26, 1992

1.0

INTRODUCTION

The Authority is requesting the exemptions listed in this attachment as a result of the recent reassessment of the Fire Protection Program at the James A. FitzPatrick Nuclear Power Plant.

The exemption requests are summarized in Section 2.0 and are divided into three exemption request categories: revised, new and temporary. The revised exemption requests are necessary to include additional fire areas and/or equipment. For each revised exemption request, the original exemption basis presented in the associated NRC safety evaluation remains unchanged. The new exemption request has not been previously submitted to the NRC and results from the new 1992 Appendix R reanalysis for FitzPatrick. The temporary exemption requests are necessary to permit plant startup before modifications to bring the plant into Appendix R compliance can be completed. The revised exemption requests are in Section 3.0, the new exemption requests are in Section 4.0, and the temporary exemption requests are in Section 5.0. The equipment descriptions reflect the configuration that the plant will be in when it starts up from the current refueling outage.

Table 1.0-1 lists the Fire Areas and Fire Zones at FitzPatrick.

Table 1.0-1
FitzPatrick Fire Areas/Fire Zones

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
IA	AD-1	Administration Building el. 272'
	AD-2	Administration Building el. 272'
	AD-3	Administration Building el. 272'
	AD-4	Administration Building el. 286'
	AD-5	Administration Building el. 286'
	AD-6	Administration Building el. 300'
	AS-1	Auxiliary Boiler Room el. 272'
	MG-1	Motor Generator Room el. 300'
IB	FP-1	West Diesel Fire Pump Room el. 255'
	CR-2	Radwaste Building Control Room el. 284'
	RW-1	Radwaste Building and Pipe Tunnel
	SH-13	Screenwell House
IC	CT-1	West Cable Tunnel el. 260'
	SW-1	Turbine Building Switchgear Room el. 272'
ID	CT-4	North Cable Tunnel el. 286'
IE	FP-2	Turbine Building Foam Room el. 272'
	TB-1	Turbine Building Basement el. 252', Mezzanine el. 292', and Operating Floor el. 300'
	OR-1	Turbine Building Turbine Oil Storage Room el. 252'
	OR-2	Turbine Building Turbine Oil Storage Room el. 272'
	OR-3	Turbine Building Miscellaneous Oil Storage Room el. 252'
II	CT-2	East Cable Tunnel el. 260'
	SW-2	Turbine Building Switchgear Room el. 272'
III	BR-1	Battery Room 1 el. 272'
	BR-2	Battery Room 2 el. 272'
IV	BR-3	Battery Room 3 el. 272'
	BR-4	Battery Room 4 el. 272'
V	EG-1	A Emergency Diesel Generator Room el. 272'
	EG-2	C Emergency Diesel Generator Room el. 272'
	EG-5	Emergency Diesel Generator South Switchgear Room el. 272'

Table 1.0-1
FitzPatrick Fire Areas/Fire Zones
(continued)

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
VI	EG-3	B Emergency Diesel Generator Room el. 272'
	EG-4	D Emergency Diesel Generator Room el. 272'
	EG-6	Emergency Diesel Generator North Switchgear Room el. 272'
VII	CR-1	Control Room el. 300'
	RR-1	Relay Room el. 284'
	CS-1	Cable Spreading Room el. 272'
VIII	RB-1C	Reactor Building Northeast and Northwest Quadrants el. 300'
IX	SB-1	Standby Gas Filter Room el. 272'
	RB-1A	Reactor Building East Side el. 272', Southeast Quadrant el. 300', and Entire Floor on el. 326', el. 344', and el. 369'
X	RB-1B	Reactor Building East Side el. 272' and Southwest Quadrant el. 300'
XI	CT-3	South Cable Tunnel el. 286'
XII	SP-1	South Safety Related Pump Room el. 255'
XIII	SP-2	North Safety Related Pump Room el. 255'
XIV	PC-1	Primary Containment (Drywell)
XV	SU-1	Torus Room
XVI	BR-5	Battery Room Corridor el. 272'
XVII	RB-1E	Reactor Building East Crescent Area el. 227'
XVIII	RB-1W	Reactor Building West Crescent Area el. 227'
YARD	XR-1	Transformer Area West of Turbine Building
	CAD-1	West End of Containment Air Dilution Building
	CAD-2	East End of Containment Air Dilution Building
	CST-V	Condensate Storage Tank Concrete Vault
	MH-2	Manhole No. 2 Located East of Reactor Building and South of Auxiliary Boiler Room

2.0 SUMMARY OF EXEMPTION REQUESTS

2.1 Revised

1. Revise an existing exemption from the requirements of 10 CFR 50, Appendix R, Sections III.L.1.b and III.L.2.b so that the reactor coolant level be permitted to drop below the top of the core for BWRs during use of alternative safe shutdown procedures which includes the possibility of Control Room evacuation following a fire in any of five fire zones: (1) Control Room; (2) Relay Room; (3) Cable Spreading Room; (4) North Cable Tunnel; (5) Battery Room Corridor.
2. Revise an existing exemption from the requirements of 10 CFR 50, Appendix R, Sections III.G.2, III.G.3 and III.L with respect to the separation of redundant safe shutdown circuits in that they are not in accordance with Section III.G.2 and alternate shutdown capability has not been provided in accordance with Sections III.G.3 and III.L in the Torus Room (Fire Area XV) and adjacent Fire Areas IX, X, XVII and XVIII.

2.2 New

1. Grant a new exemption from the requirements of 10 CFR 50, Appendix R, Section III.J that mandates permanently installed 8-hour Appendix R lighting in outdoor areas. The requested exemption is to use general outdoor lighting, outdoor security lights, vehicle headlights and/or flashlights for exterior access and egress routes not only for the Fire Areas listed in the exemption request, but for any Fire Area where exterior access and egress routes may be used.

2.3 Temporary

1. Grant a temporary exemption from the requirements of 10 CFR 50, Appendix R, Section III.G.1 with respect to the ventilation systems in the Emergency Service Water (ESW) and Residual Heat Removal Service Water (RHRSW) Pump Rooms (Fire Areas XII and XIII) being free of fire damage. The exemption is needed until the modifications can be completed to assure that one division of RHRSW and ESW and either the electric or diesel driven fire pump and the associated ventilation systems will be available in the event of a fire in Fire Areas IB or II. Interim compensatory actions will be implemented until the modifications are completed. See NYPA LER 91-021-00, dated November 27, 1991.

2. Grant a temporary exemption from the requirements of 10 CFR 50, Appendix R, Sections III.G.2 and III.G.3 with respect to a full area suppression system being required in the West Cable Tunnel (Fire Area IC) to protect redundant circuits that are installed in this area. The exemption is needed until modifications can be completed to provide fire suppression adequate for the hazards present. Interim compensatory actions will be implemented until the modifications are completed.

In addition, a full area suppression system is being installed in the East Cable Tunnel (Fire Area II). The inoperability of the existing suppression system is governed by the requirements of Branch Technical Position (BTP) 9.5-1, Appendix A. Therefore, the impact of a fire on the safe shutdown systems in the East Cable Tunnel is covered by the interim compensatory actions and permanent modifications discussed in the Pump Room Ventilation exemption request.

The inoperability of the existing suppression systems in both cable tunnels was discussed in NYPA LER 92-004-00, dated February 14, 1992.

3. Grant a temporary exemption from the requirements of 10 CFR 50, Appendix R, Section III.G.2 with respect to three-hour-rated fire barrier penetration seals. The exemption is needed until concerns associated with bondstrand, green lead and PVC (polyvinyl chloride) piping penetrations can be resolved and modifications can be completed to assure separation by a three-hour-rated fire barrier. Interim compensatory actions will be implemented until the modifications are completed.

3.0 REVISED EXEMPTIONS

3.1 Alternate Shutdown With Control Room Evacuation

Exemption Requested

In accordance with the provisions of 10 CFR 50.12(a), the New York Power Authority requests a revised exemption from the requirements of 10 CFR 50, Appendix R, Sections III.L.1.b and III.L.2.b as they apply to the James A. FitzPatrick Nuclear Power Plant so that the reactor coolant level be permitted to drop below the top of the core for BWRs during use of alternative safe shutdown procedures which includes the possibility of Control Room evacuation following a fire in any of five fire zones: (1) Control Room; (2) Relay Room; (3) Cable Spreading Room; (4) North Cable Tunnel; (5) Battery Room Corridor.

This exemption would extend the current exemption that allows the use of alternate shutdown with Control Room evacuation to two additional Fire Areas: 1) Fire Area ID (North Cable Tunnel) and 2) Fire Area XVI (Battery Room Corridor). The result of this request is to treat a fire in these two areas in the same fashion as the current exemption treats a fire in Fire Area VII (Control Room, Relay Room, Cable Spreading Room).

Fire Areas/Fire Zones Affected

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
ID	CT-4	North Cable Tunnel el. 286'
VII	CR-1	Control Room el. 300'
	RR-1	Relay Room el. 284'
	CS-1	Cable Spreading Room el. 272'
XVI	BR-5	Battery Room Corridor el. 272'

Technical JustificationBackground

The NRC approved the use of Automatic Depressurization System (ADS) in conjunction with the Residual Heat Removal (RHR) system in the Low Pressure Coolant Injection (LPCI) mode of operation for achieving remote reactor shutdown for a fire in Fire Area VII (Control Room, Relay Room, and Cable Spreading Room) in Reference 3.1-1.

In References 3.1-2 and 3.1-3, the Authority requested an exemption from the requirements of 10 CFR 50, Appendix R, Sections III.L.1.b and III.L.2.b so that the reactor coolant level be permitted to drop below the top of the core during the use of alternate safe shutdown following a postulated fire which renders the Control Room uninhabitable. That exemption request was based on an analysis which determined the amount of time available for operator action before ADS initiation was necessary. Assuming the loss of all high pressure makeup coincident with reactor scram and isolation, this analysis justified an increase in the operator response time from ten to thirty minutes. The NRC approved the exemption in Reference 3.1-4.

Physical Arrangement

Fire Areas ID and XVI associated with this revised exemption request are adjacent to Fire Area VII which is associated with the original exemption. Their arrangement supports a revised exemption because they are not discontinuous. The two additional Fire Areas are immediately adjacent to the Control Room Complex (Control Room, Relay Room, Cable Spreading Room). The north wall of the Cable Spreading Room (el. 272') is the south wall of the Battery Room Corridor (el. 272'). The east wall of the North Cable Tunnel (el. 286') is part of the west wall of the Relay Room (el. 284').

Fire Protection Features

The North Cable Tunnel (Fire Area ID) is bounded by three-hour-rated fire barriers. There are no significant fixed exposed combustibles in this area other than fire retardant cables. Smoke detection and automatic carbon dioxide suppression systems are provided throughout this area.

The Battery Room Corridor (Fire Area XVI) is bounded by three-hour-rated fire walls. There are no significant fixed exposed combustibles in this area other than fire retardant cables. A smoke detection system is provided throughout this area. In addition, a modification, that will be completed prior to startup from the current refueling outage, will provide an automatic wet pipe sprinkler system throughout this area.

Shutdown Systems Affected

For Fire Area ID, a fire could potentially disable the following systems: RHR (Division A - LPCI, Division A - Suppression Pool Cooling, Division B - Suppression Pool Cooling), Core Spray (Division A and B), RCIC, HPCI, Control Room Ventilation (Division A and B) and Relay Room Ventilation (Division A and B), and capability to actuate the SRVs from the Control Room (capability to actuate the SRVs from the Alternate Shutdown Panel has been assured).

For Fire Area XVI, a fire could potentially disable the following systems: RHR (Division A), Core Spray (Division A and B), RCIC, HPCI, Control Room Ventilation (Division A and B), and capability to actuate the SRVs from the Control Room (capability to actuate the SRVs from the Alternate Shutdown Panel has been assured). In addition, Control Room process monitoring and diagnostic instrumentation (Reactor Vessel level, Reactor Vessel pressure, Torus level, Torus pressure and RHR flow) may be lost due to loss of power supplies (i.e., due to the loss of Control Room Ventilation the power supplies overheat).

Prior Exemption Basis Still Valid

The Authority has reviewed its submittals and the NRC's transmittals (References 3.1-1 through 3.1-5). The basis of the Authority's analysis remains valid and is sufficiently conservative and states that the operator has up to thirty minutes to initiate manual actions outside the Control Room. This maximum operator action time of thirty minutes will not pose a threat to the fuel cladding integrity or compromise the alternate shutdown method proposed. A thirty minute operator action time will not compromise the ability of the suppression pool to condense steam in a stable condition during steam discharge via safety/relief valves, or compromise the integrity of the suppression pool.

The operator actions required to support the use of ADS/LPCI from the Alternate Shutdown Panels, for a fire in Fire Area ID or XVI, are a subset of those required for a fire in Fire Area VII. Therefore, the operator actions necessary to safely shutdown the plant in the event of a fire in Fire Areas ID or XVI would be less challenging than a fire in Fire Area VII.

Many systems that are postulated to be lost due to a postulated fire in either Fire Area ID or XVI, would be temporally available for use in the Control Room since their loss is not due to direct fire damage, but rather due to a loss of Control Room ventilation. Thus shutdown would initially start in the Control Room and operators would be dispatched, per procedures if the Control Room heats up, from the Control Room to the local control panels. As Control Room control and/or indication is lost (i.e., due to loss of ventilation, the Control Room slowly heats up and equipment becomes inoperable), these functions would be transferred to the operators at the local control panels. Therefore, safe shutdown scenarios (both operator action and operator action time) for postulated fires in Fire Areas ID and XVI are enveloped by the safe shutdown scenarios for postulated fires in Fire Area VII.

Battery Room Corridor Suppression System Exemption

The Authority had previously requested an exemption (References 3.1-5 and 3.1-6) from the requirements of 10 CFR 50, Appendix R, Section III.G.3 for the Battery Room Corridor. After the Authority committed to provide suppression in the Battery Room Corridor (Reference 3.1-7), the NRC granted the exemption (Reference 3.1-8). However, the exemption will no longer be required when the installation of a suppression system in this area is complete. The Authority has committed to complete the installation of this new system prior to startup from the current refueling outage (Reference 3.1-7) and will abandon the exemption.

Hardship to the Authority

The hardship to the Authority if this exemption is not granted is that the plant will have to remain shutdown until modifications are complete. The modifications that would be required are: provide alternate power for various components in the HPCI and/or RCIC systems and relocate the transformer and associated equipment so that process instrumentation would be available in the Control Room. These modifications are estimated to cost approximately \$420,000. The Authority estimates that it will take approximately two months after the present refueling outage to design, install and test these modifications. At a cost of \$12,000,000 per month in lost revenue (i.e., \$400,000 per day and 30 days per month) the estimated total lost revenue to the Authority is \$24,000,000 if FitzPatrick had to remain shutdown for an additional two months. This lost revenue estimate only includes the loss of income from FitzPatrick generated power and does not include the cost of replacement power. Therefore, the estimated total cost to the Authority is \$24,420,000.

These are only preliminary estimates of the time and cost that it would take to complete the above modifications. Detailed engineering, cost and schedule evaluations have not been prepared to support these estimates.

10 CFR 50.12 Criteria

This request satisfies the criteria outlined in 10 CFR 50.12(a)(1) for granting an exemption because (a) the exemption is authorized by law, (b) it will not present an undue risk to public health and safety and (c) it is consistent with the common defense and security.

10 CFR 50.12(a)(2) states that the Commission will not consider granting an exemption request unless special circumstances are present. Special circumstances are present whenever: (i) Application of the regulation in the particular circumstances conflicts with other rules or requirements of the Commission; (ii) 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; or (iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted or that are significantly in excess of those incurred by others similarly situated; or (iv) The exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption; or (v) The exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation; or (vi) There is present any other material circumstances not considered when the regulation was adopted for which it would be in the public interest to grant an exemption.

This exemption request satisfies criterion 10 CFR 50.12(a)(2)(ii) as follows:

- a) That for fire scenarios where the Control Room is evacuated, alternate shutdown capability exists, and
- b) The Authority demonstrated, in the analyses provided in Reference 3.1-3, that although there is a maximum time interval of 150 seconds during which the coolant level would drop below the top of the core, safe shutdown could be affected from the remote shutdown panels under a maximum operator action time of 30 minutes using approved alternate shutdown procedures without fuel damage.

References

- 3.1-1 NRC Letter from D. B. Vassallo; to J. P. Bayne; dated April 26, 1983; subject: "Alternate Safe Shutdown Capability, Modifications and Exemptions to Meet Appendix R of 10 CFR 50 - Fire Protection"
- 3.1-2 NYPA Letter JPN-85-49 from J. C. Brons; to D. B. Vassallo; dated June 14, 1985; subject: "Appendix R to 10 CFR 50, Section III.L Request for Exemption Regarding Alternate and Dedicated Shutdown Capability"
- 3.1-3 NYPA Letter JPN-85-90 from J. C. Brons; to D. R. Muller; dated December 17, 1985; subject: "Appendix R to 10 CFR 50, Section III.L Exemption Request Regarding Alternate and Dedicated Shutdown Capability"
- 3.1-4 NRC Letter from R. M. Bernero; to J. C. Brons; dated September 15, 1986; subject: "Exemption From Appendix R of 10 CFR 50 Concerning Core Uncovery During Alternate Safe Shutdown"
- 3.1-5 NYPA Letter JAFP-91-0454 from R. J. Converse; to NRC Document Control Desk; dated July 31, 1991; subject: "Appendix R to 10 CFR 50 Exemption Request for Area Wide Suppression in the Battery Room Corridor"
- 3.1-6 NYPA Letter JPN-91-040 from R. E. Beedle; to NRC Document Control Desk; dated August 6, 1991; subject: "Additional Information and Errata Regarding Two Appendix R of 10 CFR 50 Exemption Requests"
- 3.1-7 NYPA Letter JPN-91-043 from R. E. Beedle; to NRC Document Control Desk; dated August 16, 1991; subject: "Schedule for Short Term Fire Protection Actions"
- 3.1-8 NRC Letter from R. A. Capra; to R. E. Beedle; dated September 18, 1991; subject: "Issuance of a Technical Exemption from a Requirement of 10 CFR Part 50, Appendix R, for the James A. FitzPatrick Nuclear Power Plant (TAC No. 81184)"

3.2 Torus Room

Exemption Requested

In accordance with the provisions of 10 CFR 50.12(a), the New York Power Authority requests a revised exemption from the requirements of 10 CFR 50, Appendix R, Sections III.G.2, III.G.3 and III.L with respect to the separation of redundant safe shutdown circuits in that they are not in accordance with Section III.G.2 and alternate shutdown capability has not been provided in accordance with Sections III.G.3 and III.L in the Torus Room (Fire Area XV) and adjacent Fire Areas IX, X, XVII and XVIII.

This exemption would revise the current exemption to more accurately reflect the equipment in the Torus Room and adjacent areas. It would also provide a revised technical basis for the exemption to reflect the new area description.

Fire Areas/Fire Zones Affected

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
IX	SB-1 RB-1A	Standby Gas Filter Room el. 272' Reactor Building East Side el. 272', Southeast Quadrant el. 300', and Entire Floor on el. 326', el. 344', and el. 369'
X	RB-1B	Reactor Building East Side el. 272' and Southwest Quadrant el. 300'
XV	SU-1	Torus Room
XVII	RB-1E	Reactor Building East Crescent Area el. 227'
XVIII	RB-1W	Reactor Building West Crescent Area el. 227'

Technical JustificationBackground

In Reference 3.2-1, the NRC granted an exemption from the requirements of 10 CFR 50, Appendix R, Sections III.G.2, III.G.3 and III.L which stated that neither separation, suppression, detection and/or protection of redundant shutdown divisions nor the installation of an alternate shutdown capability is required for the Torus Room. Page 4 of the NRC's Safety Evaluation includes a description of the Torus Room:

"...the area contains only the suppression pool and is a controlled access area bounded on all sides by three-hour rated masonry construction; there are no combustible materials and no significant fire hazards in the area; and that shutdown related components in the area consist only of the RHR pump suction valves of both divisions. These valves are in an open position and all power cables to them have been disabled under a previously approved plant modification."

This paragraph does not accurately describe the Torus Room. However, the technical basis for the exemption remains valid.

Physical Arrangement

The Torus Room (Fire Area XV) is located in the Reactor Building with its floor being at el. 227'. This room is a controlled access area and is bounded on all sides by masonry construction.

The floor and more than half of the walls of the Torus Room are below grade (approximately el. 271'), adjacent to the exterior and thus not an issue since fire propagation from the exterior is not a concern. The walls that separate the Torus Room from the crescent areas (Fire Areas XVII and XVIII) are three-foot thick reinforced concrete. The unsealed penetrations in these walls are shown in Figures 3.2-1 and 3.2-2. The ceiling that separates the Torus Room from Reactor Building el. 272' (Fire Areas IX and X) is two-foot thick reinforced concrete. The unsealed penetrations in this ceiling are shown in Figure 3.2-3.

The Torus Room contains the torus, valves, pipes, non-combustible insulation, instrument tubes and cables installed in conduits. This area is essentially devoid of exposed combustible.

Fire Protection Features

The Torus Room has neither an automatic fire detection system nor an automatic fire suppression system. Due to the area configuration and the combustible loading, this area was exempted (Reference 3.2-1) from the requirements necessitating these systems. Manual sprays are available from hose stations located in Fire Area IX.

Adjacent to the Torus Room are the East and West Crescent Areas (Fire Areas XVII and XVIII respectively). They are provided with automatic smoke detection systems. Water curtains are provided to separate the East and West Crescent Areas and to separate the East Crescent Area from Fire Area IX. Manual sprays are available from hose stations located in Fire Areas IX, X, XVII and XVIII.

The RCIC enclosure, which is in the West Crescent Area, is constructed of three-hour fire-rated walls and ceiling. Curbs are also provided to prevent the spread of oil. Finally the RCIC Turbine is protected with an automatic water spray system. Consequently a fire in this enclosure will neither affect the West Crescent Area nor the Torus Room.

The HPCI enclosure straddles the boundary between the East and West Crescent Areas and since the enclosure is open (i.e., it has no ceiling) it is split by the water curtain between the crescent areas. The enclosure consists of a seven-and-one-half foot high spray shield wall to limit the spread of spraying oil and a curb to limit the spread of leaking oil in the event of a HPCI system oil line break. Finally the HPCI turbine is protected with an automatic water spray and manual foam suppression system. Consequently, a fire in this enclosure is not likely to affect the crescent areas or the Torus Room.

From above, the Torus Room is bounded by Reactor Building el. 272' (Fire Areas IX and X). This area is provided with automatic smoke detection systems. Water curtains are provided to separate Fire Area IX from Fire Areas X and XVII and to separate Fire Area X from Fire Area IX. Manual sprays are available from hose stations located in Fire Areas IX and X.

Shutdown Systems Affected

The Torus Room contains valves and components associated with the HPCI and RCIC systems. Conservatively, these systems will be considered disabled for a postulated fire in the Torus Room.

This area also contains equipment and cables associated with the Containment Atmosphere Dilution (CAD) System, specifically the nitrogen supply for the ADS accumulators. Although the CAD System is not required for Appendix R safe shutdown, a postulated failure (i.e., the spurious opening of a CAD valve) may divert the nitrogen supply and could, if not detected and corrected, affect the long-term operability of the ADS valves. Manual actions will be taken per procedures to assure CAD operability.

In addition, the Torus Room contains Core Spray suction valves 14MOV-7A and 14MOV-7B. While neither of these valves are needed for a fire originating in the Torus Room, 14MOV-7A needs to be available for a fire in the eastern portion of the HPCI enclosure while 14MOV-7B needs to be available for a fire in the western portion of the HPCI enclosure. See the discussion on the HPCI enclosure provided under "Fire Originating Within the Crescent Area (Fire Areas XVII and XVIII)".

Finally the Torus Room contains valves 10MOV-151A and 10MOV-151B (RHR suction valves) which are in the open position with all power cables to them disabled. Thus this flow path would be available for safe shutdown during a fire in this area. This valve configuration was accepted by the NRC in granting the Torus Room exemption (Reference 3.2-1).

Shutdown Systems Available

Either RHR-LPCI/Suppression Pool Cooling (Division A) or RHR-LPCI/Suppression Pool Cooling (Division B) will be available for safe shutdown in the Torus Room. Control Room ADS actuation capability is available. In addition, for a fire originating in the HPCI enclosure either Core Spray (Division A) or Core Spray (Division B) will be available.

Fire Originating Within the Torus Room (Fire Area XV)

The required safe shutdown equipment which is located in the Torus Room and subject to fire-induced failures is limited to the following instrumentation: Torus level (23LT-202A and 23LT-202B) and Torus temperature (161TI-131A and 161TI-131B). As described above, all RCIC and HPCI valves located in the Torus Room and 10MOV-151A, 10MOV-151B, 14MOV-7A, and 14MOV-7B are assumed lost in the event of a torus fire.

Redundant torus level sensors are separated by a distance of greater than 110 feet on the opposite side of the torus without intervening exposed combustibles (see Figure 3.2-4). Considering the type, spacing and quantities of fixed combustibles and the low probability of transient combustibles to be located within the Torus Room, it is not considered possible for a fire in the Torus Room to propagate the intervening distance. Any associated fire damage would be localized to the immediate vicinity of the fire. The 110 foot separation with the radiant shielding of the drywell is more than adequate to assure that both the redundant torus level sensors are not lost.

For torus temperature measurement, the plant uses Resistance Temperature Detectors (RTDs). There are 32 RTDs (16 per Division) installed in 16 thermowells uniformly spaced around the torus. Each thermowell contains one Division A RTD and one Division B RTD. The 16 Division A RTDs enter the west side of the Torus Room from el. 272' of the reactor building. A portion of the RTDs are routed clockwise with the remainder routed counter-clockwise. The 16 Division B RTDs enter the east side of the Torus Room from the East Crescent Area, a portion of the RTDs are routed clockwise with the remainder routed counter-clockwise (see Figure 3.2-4).

Each channel of torus temperature instrumentation averages the temperature from its associated division RTDs. This instrumentation has the capability to recognize and discard failed RTDs. Consequently, the loss of multiple RTDs within a division does not disable an entire channel. In addition, the operator can survey the RTDs individually in the Relay Room.

Although considered incredible, if it is assumed that all the RTDs and associated cabling located within a 120 degree arc of the Torus Room is lost due to a fire, sufficient RTDs would be unaffected to assure the operability of at least one division of torus temperature sensors.

Since the Torus Room is essentially devoid of exposed combustibles, there is no fire exposure hazard to equipment and/or cabling in the crescent areas or Reactor Building el. 272'.

Fire Originating Within the Crescent Area (Fire Areas XVII and XVIIi)

The wall separating the East and West Crescent Areas from the Torus Room is three-foot thick reinforced concrete containing a number of unsealed openings (see Figures 3.2-1 and 3.2-2).

A fire in either the East or West Crescent Area is not expected to damage circuits and/or equipment in the Torus Room via the unrated seals and/or unsealed openings based on the following:

- a) The crescent area has a floor-to-ceiling height of approximately 40 feet, this allows vertical rise of the thermal plume, thus limiting its horizontal spread and decreasing its temperature due to mixing with air,
- b) The vast majority of exposed combustibles in this area are installed above the non-fire-rated flood control bulkhead penetrations into the Torus Room, thereby limiting the fire exposure to the bulkhead,
- c) Except for the flood control bulkhead, which is not near the HPCI enclosure (see Figures 3.2-1 and 3.2-2), the non-fire-rated seal assemblies and unsealed penetrations are small,

- d) The HPCI oil will be contained in the HPCI enclosure and the Torus Room circuitry and/or equipment will not be directly exposed to the oil,
- e) The suppression systems (water spray and foam) installed in the HPCI enclosure will limit the extent and severity of the fire, and
- f) Fire detection and manual fire fighting would limit the extent of fire damage in this area.

In the unlikely event that a fire in the East or West Crescent Area caused damage in the Torus Room, this damage would not cause loss of redundant safe shutdown capability based on the following:

- a) There are no exposed combustibles in the immediate vicinity of the unsealed openings, therefore, fire spread cannot occur and any damage which does occur would be limited to the immediate vicinity of the opening,
- b) For a fire in the East Crescent Area, Division A systems are relied upon for safe shutdown and Division A torus level and temperature indication will not be lost even if it is assumed that all circuitry and/or equipment within the portion of the Torus Room adjacent to the East Crescent Area is lost,
- c) For a fire in the West Crescent Area, Division B systems are relied upon for safe shutdown and Division B torus level and temperature indication will not be lost even if it is assumed that all circuitry and/or equipment within the portion of the Torus Room adjacent to the West Crescent Area is lost,
- d) For a HPCI enclosure fire, circuitry associated with Core Spray suction valves 14MOV-7A and 14MOV-7B (the only equipment in the Torus Room required to support Core Spray operation) is located in excess of 60 feet from the HPCI enclosure, thus due to the lack of fixed intervening exposed combustibles, it is not credible to postulate that a HPCI enclosure fire can spread within the Torus Room in such a manner that the circuitry for either Core Spray suction valves would be rendered inoperable,
- e) Sensing lines associated with torus level sensors 23LT-202A and 23LT-202B are located in excess of 100 feet from the HPCI enclosure, therefore, for the same reasons stated in (d) above, it is not credible to assume that either torus level sensors would be rendered inoperable, and
- f) If all cabling and equipment associated with torus temperature sensors 161TI-131A and 161TI-131B located in a 120 degree arc of the torus adjacent to the HPCI enclosure was assumed lost, both 161TI-131A and 161TI-131B would be available.

Fire Origination on Reactor Building el. 272' (Fire Areas IX and X)

Fire Area IX is above the east portion of the Torus Room and contains Division B circuitry and equipment. Therefore, the plant relies on Division A circuitry and equipment for safe shutdown.

Fire Area X is above the west portion of the Torus Room and contains Division A circuitry and equipment. Therefore, the plant relies on Division B circuitry and equipment for safe shutdown.

The various unsealed mechanical penetrations (see Figure 3.2-3) that are in the fire barrier separating the Reactor Building el. 272' from the Torus Room are either spares or contain pipes, conduits and/or tubing. In addition, there is a personnel access (ladder penetration RS-7) which is covered by grating.

Due to the configuration of these penetrations and surrounding combustibles, it is unlikely that any burning debris will fall into the Torus Room.

Further, burning debris from Fire Area IX, with the exception of the torus temperature indication, will only fall on Division B circuitry and/or equipment in the Torus Room. Since Fire Area IX contains Division B circuitry and equipment, the plant relies on Division A circuitry and equipment for safe shutdown due to a fire in Fire Area IX.

Similarly, burning debris from Fire Area X, with the exception of the torus temperature indication, will only fall on Division A circuitry and/or equipment in the Torus Room. Since Fire Area X contains Division A circuitry and equipment, the plant relies on Division B circuitry and equipment for safe shutdown due to a fire in Fire Area X.

The impact of any of this flaming debris on the Torus Room including the impact on the torus temperature indication is enveloped by the previous discussion provided under "Fire Originating Within the Torus Room (Fire Area XV)".

Hardship to the Authority

The hardship to the Authority if this exemption is not granted is that the plant will have to remain shutdown until modifications are complete. The modifications that would be required are: provide full area suppression and detection, seal open penetrations in the fire barriers and provide additional one-hour-rated fire barriers and wraps. These modifications are estimated to cost approximately \$3,350,000. The Authority estimates that it will take approximately two months after the present refueling outage to design, install and test these modifications. At a cost of \$12,000,000 per month in lost revenue (i.e., \$400,000 per day and 30 days per month) the estimated total lost revenue to the Authority is \$24,000,000 if FitzPatrick had to remain shutdown for an additional two months. This lost revenue estimate only includes the loss of income from FitzPatrick generated power and does not include the cost of replacement power. Therefore, the estimated total cost to the Authority is \$27,350,000.

These are only preliminary estimates of the time and cost that it would take to complete the above modifications. Detailed engineering, cost and schedule evaluations have not been prepared to support these estimates.

10 CFR 50.12 Criteria

This request satisfies the criteria outlined in 10 CFR 50.12(a)(1) for granting an exemption because (a) the exemption is authorized by law, (b) it will not present an undue risk to public health and safety and (c) it is consistent with the common defense and security.

10 CFR 50.12(a)(2) states that the Commission will not consider granting an exemption request unless special circumstances are present. Special circumstances are present whenever: (i) Application of the regulation in the particular circumstances conflicts with other rules or requirements of the Commission; (ii) 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; or (iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted or that are significantly in excess of those incurred by others similarly situated; or (iv) The exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption; or (v) The exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation; or (vi) There is present any other material circumstances not considered when the regulation was adopted for which it would be in the public interest to grant an exemption.

This exemption request satisfies criteria 10 CFR 50.12(a)(2)(ii) and (iii) as follows:

- a) The modifications required to achieve compliance with Sections III.G and III.L would not significantly enhance the level of fire safety above that provided by existing fire protection, and
- b) It would be costly to modify the Torus Room to comply with Sections III.G and III.L.

References

- 3.2-1 NRC Letter from D. B. Vassallo; to J. P. Bayne; dated July 1, 1983; subject: "Exemption Requests - 10 CFR 50.48 Fire Protection and Appendix R to 10 CFR 50"



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Figure 3.2-3
Unsealed Penetration Arrangement - Reactor Building el. 272'-0"

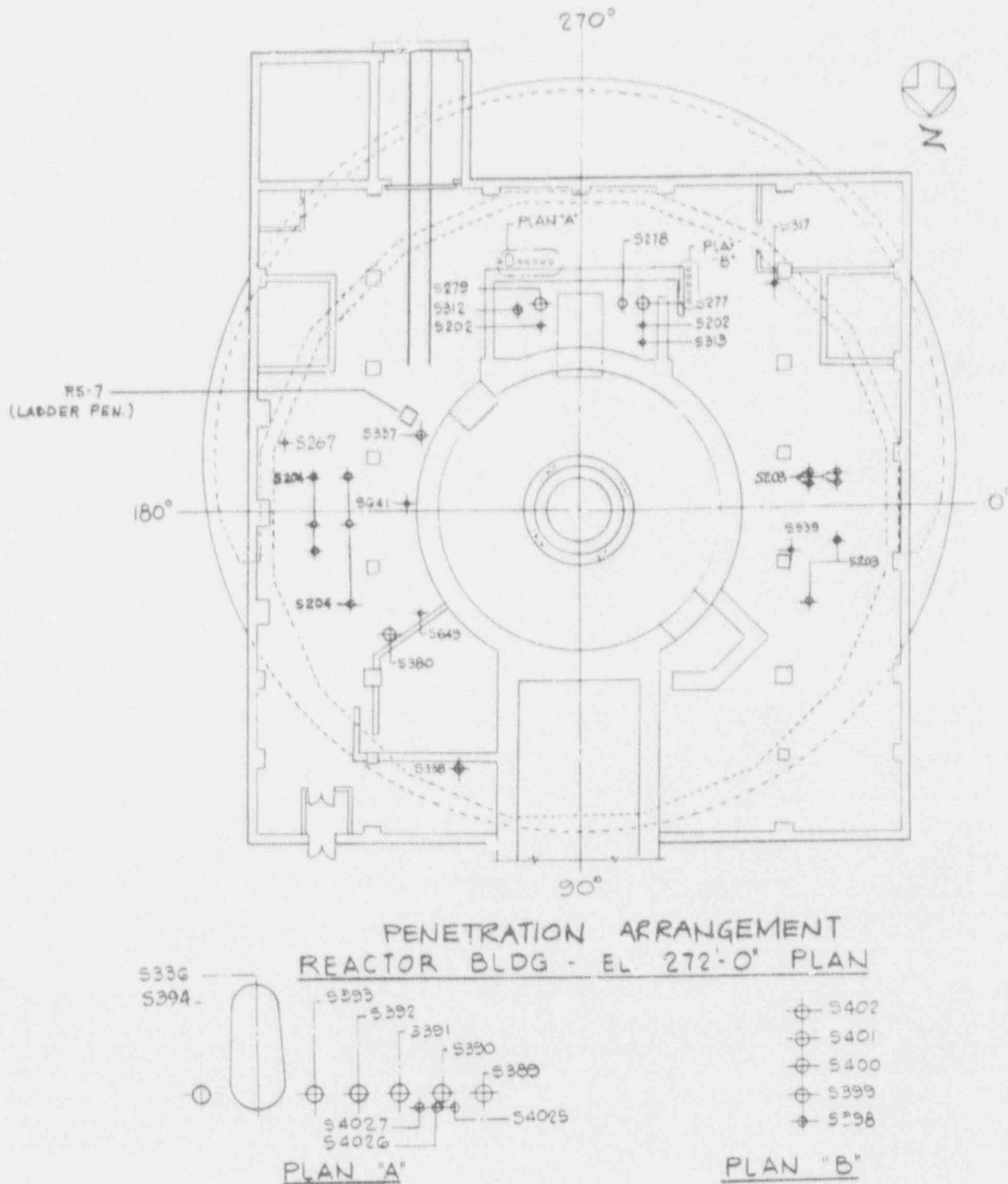
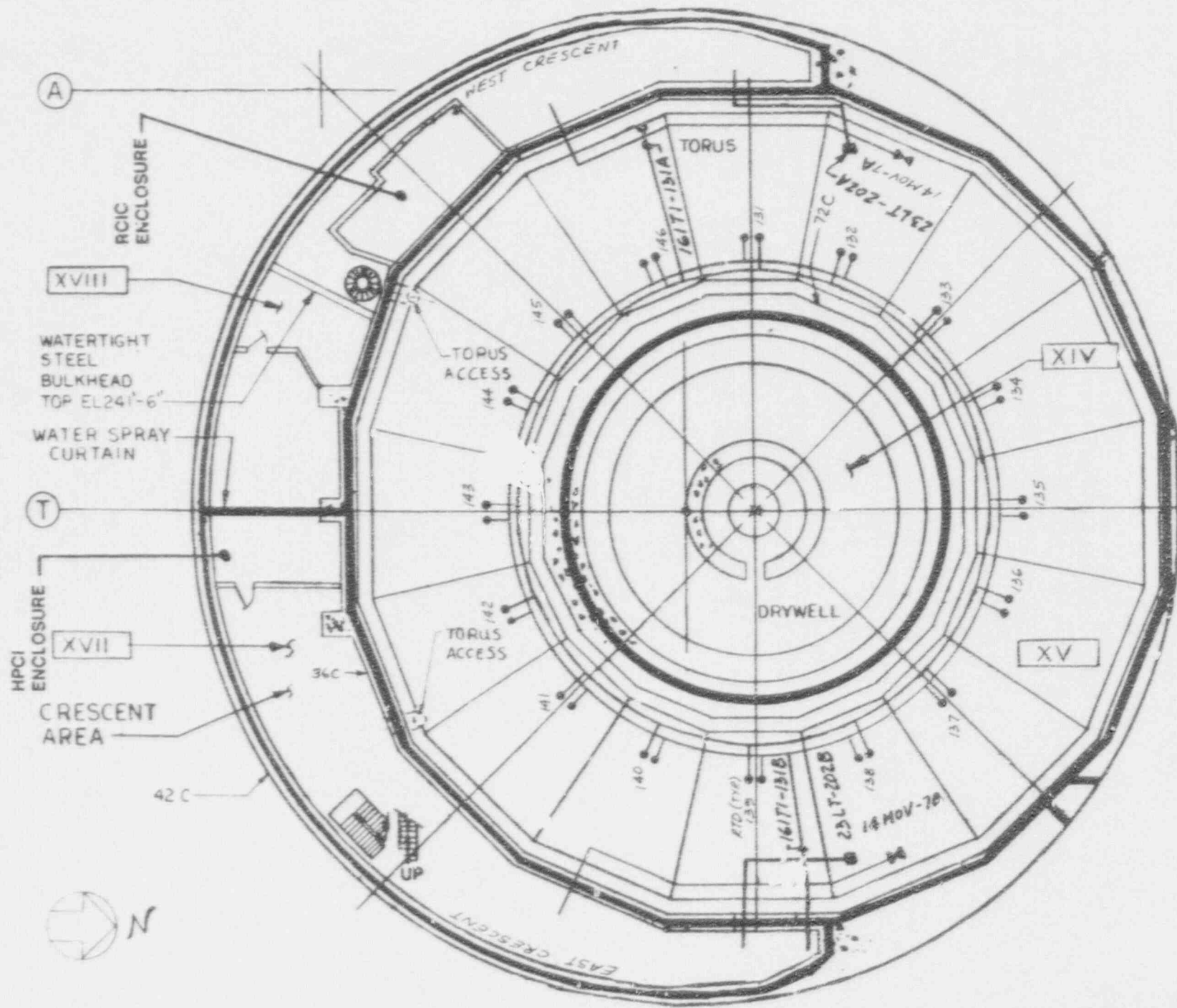


Figure 3.2-4
Equipment Instrument Arrangement - Torus Room el. 227'-6"



4.0 NEW EXEMPTIONS

4.1 Outdoor 8-Hour Appendix R Lighting

Exemption Requested

In accordance with the provisions of 10 CFR 50.12(a), the New York Power Authority requests an exemption from the requirements of 10 CFR 50, Appendix R, Section III.J as they apply to the James A. FitzPatrick Nuclear Power Plant that mandates permanently installed 8-hour Appendix R lighting in outdoor areas. The requested exemption is to use general outdoor lights, outdoor security lights, vehicle headlights and/or flashlights for exterior access and egress routes not only for the Fire Areas listed in this exemption request, but for any Fire Area where exterior access and egress routes may be used.

A fire in Fire Area ID, VII, IX, X, XI, XV, XVII or XVIII requires operator actions in the Containment Atmosphere Dilution (CAD) Shack which is reached via exterior access and egress routes. A fire in Fire Area IV, VII or XVI requires the transport of equipment from the warehouse to the plant. Operator actions take place inside buildings or next to doors where interior 8-hour Appendix R lighting is available.

Fire Areas/Fire Zones Affected

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
ID	CT-4	North Cable Tunnel el. 286'
IV	BR-3	Battery Room 3 el. 272'
	BR-4	Battery Room 4 el. 272'
VII	CR-1	Control Room el. 300'
	RR-1	Relay Room el. 284'
	CS-1	Cable Spreading Room el. 272'
IX	SB-1	Standby Gas Filter Room el. 272'
	RB-1A	Reactor Building East Side el. 272', Southeast Quadrant el. 300', and Entire Floor on el. 326', el. 344', and el. 369'
X	RB-1B	Reactor Building East Side el. 272' and Southwest Quadrant el. 300'
XI	CT-3	South Cable Tunnel el. 286'
XV	SU-1	Torus Room
XVI	BR-5	Battery Room Corridor el. 272'
XVII	RB-1E	Reactor Building East Crescent Area el. 227'
XVIII	RB-1W	Reactor Building West Crescent Area el. 227'

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
YARD	CAD-1	West End of Containment Air Dilution Building
	CAD-2	East End of Containment Air Dilution Building
	CST-1	Condensate Storage Tank Concrete Vault
	MH-2	Manhole No. 2 Located East of Reactor Building and South of Auxiliary Boiler Room

Technical Justification

Plant procedures for an Appendix R safe shutdown require various operator actions be performed at different areas in the plant. However, a fire in Fire Areas ID, VII, IX, X, XI, XV, XVII and XVIII will require manual operator actions in the Containment Atmosphere Dilution (CAD) Shack via access and egress routes outside the buildings. A fire in Fire Areas IV, VII and XVI will require personnel to transport specific components from the warehouse facility via access and egress routes outside the buildings. Figure 4.1-1 is a plot plan showing typical exterior access and egress routes between the Administration Building and the CAD Shack and between the Turbine Building and the warehouse.

For locations inside buildings where access, egress and operator actions are required for Appendix R safe shutdown, 8-hour Appendix R lighting has been installed or will be installed prior to startup from the current refueling outage. The exterior portions of the access and egress routes to and from the CAD Shack and the warehouse are not provided with 8-hour Appendix R lighting.

The safe shutdown components (27AOV-128A, 27AOV-128B and 27CAD-905) requiring operator actions are located in the CAD Shack and will be illuminated by 8-hour Appendix R lighting in the event of loss of the plant's 115KV offsite supply. This 8-hour Appendix R lighting will be installed prior to startup from the current refueling outage.

A mobile diesel generator, and it's associated hardware are stored in the warehouse and will be utilized to meet the portable ventilation requirements postulated in the FitzPatrick Appendix R Analysis. Inside the warehouse, both the storage location and the access/egress routes will be provided with 8-hour Appendix R lighting. This 8-hour Appendix R lighting will be installed prior to startup from the current refueling outage.

Inside the plant 8-hour Appendix R lighting will be provided along the access/egress routes leading to exterior doors A-272-13 and A-272-14 of the Administration Building and exterior door E-272-1 of the Turbine Building. This 8-hour Appendix R lighting will be installed prior to startup from the current refueling outage. Personnel could exit from door A-272-13 or A-272-14 when proceeding to the CAD Shack. Personnel retrieving the mobile diesel generator from the warehouse could exit from door E-272-1. A vehicle will be used to transport the mobile diesel generator between the warehouse and the plant. The mobile diesel generator and it's associated equipment will be setup just outside of door E-272-1 where illumination from 8-hour Appendix R lighting just inside door E-272-1 will be available.

During daylight hours outdoor lighting is not necessary and during nighttime hours the Authority intends, via this exemption request, to use general outdoor lights, outdoor security lights, vehicle headlights and/or flashlights for exterior access and egress routes.

The station perimeter fence is illuminated by the station security lighting system which has backup power from the security diesel generator. This diesel generator is operated by automated circuitry and the diesel generator operability is monitored by security personnel. This assures that the security diesel generator will automatically start and pick up the security lighting circuits upon a loss of offsite power. The security diesel generator is designed to continuously supply power to the security lighting system in excess of eight hours. The security diesel generator is located in an area which is separated from those fire areas that contain safe shutdown components. The associated cables and conduits for the security perimeter lighting is not routed through any of the plant's internal fire areas.

Outdoor lighting is powered from the 13.2KV Lake Road System. This system is used only outside the plant and is independent of all internal plant electrical systems. Therefore, a loss of the 13.2KV Lake Road System is not considered credible during an internal plant fire. Cable and conduit for the exterior flood lights are not routed through any fire areas of the plant and therefore would not be affected by a fire inside the plant.

In the unlikely event that the 13.2KV Lake Road System was unavailable, portable lighting would be adequate for providing illumination on the outside access/egress routes. For personnel on foot, portable flashlights are stored in the emergency equipment lockers at various locations throughout the plant for use during emergencies. Flashlights are also stored in the Abnormal Operating Procedure equipment cabinets (Control Room el. 300', Relay Room el. 284'), Remote Shutdown Panel (Reactor Building el. 300'), Alternate Shutdown Panel 1 (Reactor Building el. 272'), Alternate Shutdown Panel 2 (Reactor Building East Crescent el. 227') and Alternate Shutdown Panel 3 (Emergency Diesel Generator North Switchgear Room el. 272'). There are also two additional large portable hand lights in the Control Room that are constantly trickle charged in order to assure their availability during emergencies. In addition, twenty-two hydrant stations around the plant are equipped with portable flashlights. Storage locations are inventoried periodically per the plant procedures which assures that the correct number of flashlights are present and that they are operable.

The above stated provisions assure that plant personnel will have adequate illumination for exterior access and egress in the event of an Appendix R fire and a loss of the plant's 115KV offsite power.

Hardship to the Authority

The hardship to the Authority if this exemption is not granted is that the plant will have to remain shutdown until modifications are complete. The modifications that would be required are: providing weatherproof lighting for the access and egress routes between the plant and the CAD Shack and the warehouse. These modifications are estimated to cost approximately \$100,000. The Authority estimates that it will take approximately two months after the present refueling outage to design, install and test these modifications. At a cost of \$12,000,000 per month in lost revenue (i.e., \$400,000 per day and 30 days per month) the estimated total lost revenue to the Authority is \$24,000,000 if FitzPatrick had to remain shutdown for an additional two months. This lost revenue estimate only includes the loss of income from FitzPatrick generated power and does not include the cost of replacement power. Therefore, the estimated total cost to the Authority is \$24,100,000.

These are only preliminary estimates of the time and cost that it would take to complete the above modifications. Detailed engineering, cost and schedule evaluations have not been prepared to support these estimates.

10 CFR 50.12 Criteria

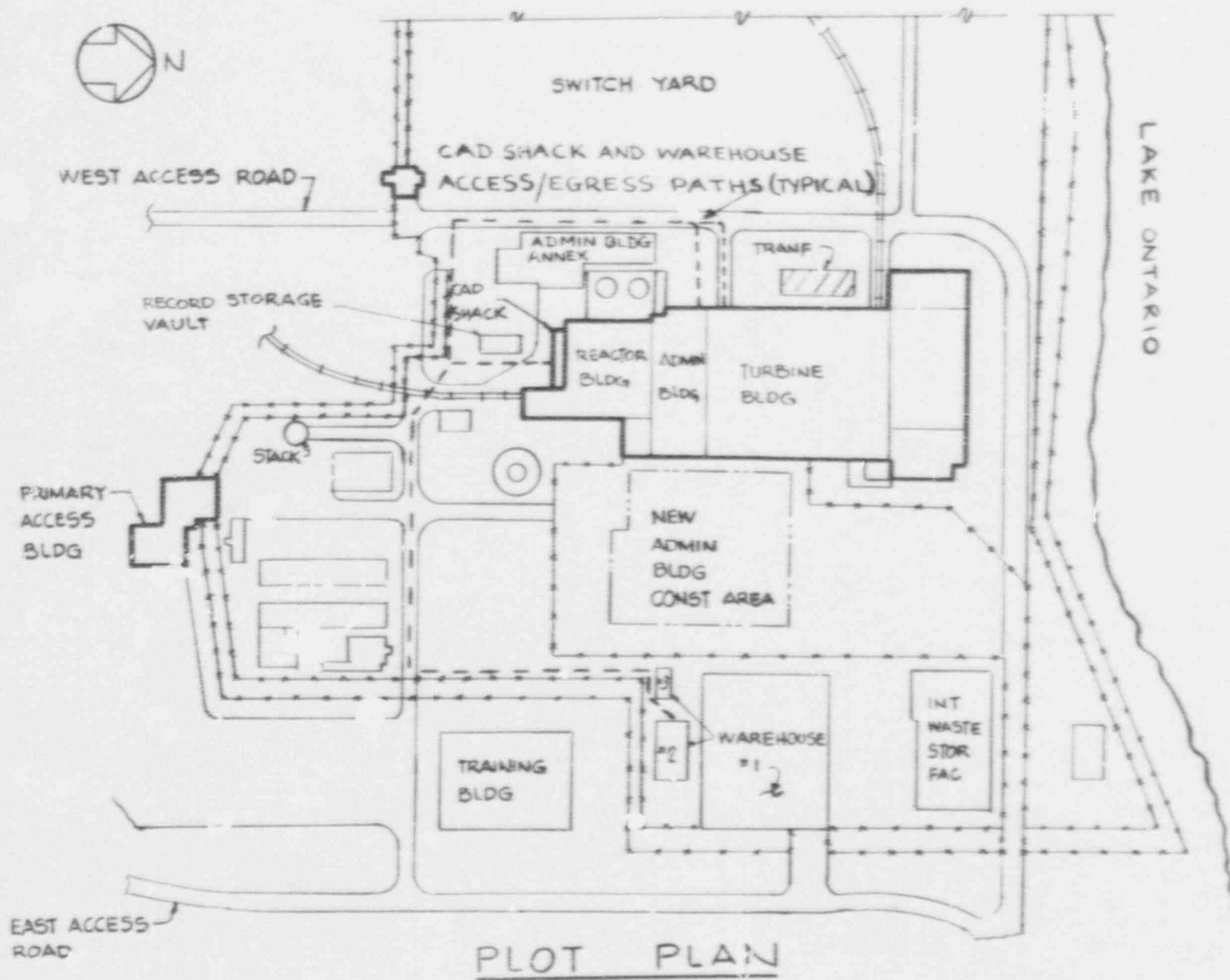
This request satisfies the criteria outlined in 10 CFR 50.12(a)(1) for granting an exemption because (a) the exemption is authorized by law, (b) it will not present an undue risk to public health and safety and (c) it is consistent with the common defense and security.

10 CFR 50.12(a)(2) states that the Commission will not consider granting an exemption request unless special circumstances are present. Special circumstances are present whenever: (i) Application of the regulation in the particular circumstances conflicts with other rules or requirements of the Commission; (ii) 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; or (iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted or that are significantly in excess of those incurred by others similarly situated; or (iv) The exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption; or (v) The exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation; or (vi) There is present any other material circumstances not considered when the regulation was adopted for which it would be in the public interest to grant an exemption.

This exemption request satisfies criteria 10 CFR 50.12(a)(2)(ii) and (iii) as follows:

- a) The use of the exterior security lighting with backup power from the security diesel, the exterior plant lighting supplied by the 13.2KV Lake Road System, the use of vehicle headlights and/or the use of flashlights for outside access/egress routes will provide the necessary illumination and satisfy the intent of Section III.J,
- b) Such an exemption has been granted to other applicants (e.g., Indian Point 3, North Anna Units 1 and 2 and Trojan Nuclear Plant), and
- c) The modifications required to achieve compliance with Section III.J would not significantly enhance the level of safety for exterior access and egress routes illuminated by the existing lighting systems.

Figure 4.1-1
Typical Exterior Access and Egress Routes



5.0 TEMPORARY EXEMPTIONS

5.1 Pump Room Ventilation

Exemption Requested

In accordance with the provisions of 10 CFR 50.12(a), the New York Power Authority requests a temporary exemption from the requirements of 10 CFR 50, Appendix R, Section III.G.1 as they apply to the James A. FitzPatrick Nuclear Power Plant with respect to the ventilation systems in the Emergency Service Water (ESW) and Residual Heat Removal Service Water (RHRSW) Pump Rooms (Fire Areas XII and XIII) being free of fire damage. The exemption is needed until the modifications can be completed to assure that one division of RHRSW and ESW pumps and either the electric driven fire pump or diesel driven fire pump and their associated ventilation systems will be available in the event of a fire in Fire Areas IB or II. The modifications are scheduled to be completed prior to startup from the Reload 11/Cycle 12 refueling outage which is currently scheduled to begin in October 1993. Interim compensatory actions will be implemented until the modifications are completed.

The RHRSW A Pump and C Pump, the ESW A Pump and the Electric Fire Pump are located in the North Safety Related Pump Room (Fire Area XIII). The RHRSW B Pump and D Pump as well as the ESW B Pump are located in the South Safety Related Pump Room (Fire Area XII). The Diesel Fire Pump is located in the West Diesel Fire Pump Room (Fire Area IB). These rooms are separate compartments in the Screenwell House (Figure 5.1-1). Air to cool these compartments is drawn from and exhausted to the Screenwell House. Control Panels for the exhaust fans serving these compartments are located in the Screenwell House.

A fire in the Screenwell House (Fire Area IB/Fire Zone SH-13) could damage the Control Panels which could deenergize the exhaust fans. Additionally, the fire could close the dampers in the room air intakes. A fire in the East Cable Tunnel (Fire Area II/Fire Zone CT-2) could damage cables which could deenergize the exhaust fans. The loss of cooling to these compartments when the pumps are operating could cause the pumps to overheat and fail. See NYPA LER 91-021-00 (Reference 5.1-1).

The Authority is in the process of developing modifications that will assure that ventilation is available to one division of RHRSW and ESW and either the electric or diesel driven fire pump in the event of a fire in the Screenwell House or in the East Cable tunnel. However, it is anticipated that the modifications will be extensive and, due to the procurement of long lead time equipment, will require approximately eighteen months to complete. Therefore, the Authority proposes interim compensatory actions until the modifications are complete.

Fire Areas/Fire Zones Affected

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
IB	FP-1	West Diesel Fire Pump Room el. 255'
	CR-2	Radwaste Building Control Room el. 284'
	RW-1	Radwaste Building and Pipe Tunnel
	SH-13	Screenwell House
II	CT-2	East Cable Tunnel el. 260'
	SW-2	Turbine Building Switchgear Room el. 272'

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
XII	SP-1	South Safety Related Pump Room el. 255'
XIII	SP-2	North Safety Related Pump Room el. 255'

Technical Justification

Background

The ventilation systems in the Safety Related Pump Room, the West Diesel Fire Pump Room were modified in 1979 as a result of the Authority's Branch Technical Position (BTP) 9-5.1, Appendix A fire protection work. These modifications are covered by the License Condition issued as part of Amendment 47 to the FitzPatrick Operation License (References 5.1-2 and 5.1-3). The ventilation systems were interlocked with the fire detection system and a separate source of ventilation intake air from the East Cable Tunnel was assumed in the event of a fire in the Screenwell House. The concerns associated with the ventilation systems were identified after a review of fire scenarios indicated that ventilation would be inadequate if the fire detection system actuated or if the respective control panels were lost. The resulting inadequate ventilation could render the pumps in the room inoperable.

Physical Arrangement

As shown in Figure 5.1-1, the RHRSW A Pump and C Pump, the ESW A Pump and the Electric Fire Pump are located in the North Safety Related Pump Room (Fire Area XIII). The RHRSW B Pump and D Pump as well as the ESW B Pump are located in the South Safety Related Pump Room (Fire Area XII). The Diesel Fire Pump is located in the West Diesel Fire Pump Room (Fire Area IB). These rooms are separate compartments in the Screenwell House. Air to ventilate these compartments is drawn through openings at el. 255' and exhausted through openings at el. 272' of the Screenwell House. Control Panels for the exhaust fans serving these compartments are located in the Screenwell House at el. 272' approximately 10 feet apart.

Existing Fire Protection Features

Three-hour barriers surround the North and South Safety Related Pump Rooms as well as the West Diesel Fire Pump Room, except for the ventilation exhaust fan openings, nine pump supports, two unprotected steel plate assemblies, and a 30 by 30 steel access plate, three-hour-rated penetration seals have been installed in these barriers. The exhaust fan openings were exempted from having fire dampers as discussed in References 5.1-4 and 5.1-5. Penetration seals are not installed where vertical turbine pumps penetrate the room floor. The steel plate assemblies consist of caps welded to spare sleeved penetrations. The access cover is constructed of diamond plate steel and covers an access hole to the intake area below the room.

Ionization type smoke detectors are provided in both the Safety Related Pump Rooms and the West Diesel Fire Pump Room. These annunciate in the Control Room.

Thermal fire detectors are also located in the Safety Related Pump Rooms, the West Diesel Fire Pump Room and at the room air intakes. These detectors annunciate an alarm in the Control Room and activate their associated ETLs (electro-thermal links) when the temperature exceeds 135 degrees F. These ETLs will be disabled as part of the interim compensatory actions.

High area temperature detectors are installed in the Safety Related Pump Rooms. These detectors also annunciate a trouble alarm in the Control Room if the area temperature exceeds 104 degrees F.

The fire dampers in the Safety Related Pump Room ventilation system air intakes are equipped with ETLs which activate by thermal fire detection actuation or when the temperature of the ETL exceeds 165 degrees F.

Manual fire suppression (hose stations and portable extinguishers) are located throughout the Screenwell House area and in the Safety Related Pump Rooms.

Area detection and suppression have not been installed in the Screenwell House because of the noncombustible construction of the building and the low combustible loading. The Screenwell House is an open area of approximately 19,600 ft² with a roof at el. 301' 8".

Screenwell House Fire

The safe shutdown components and circuitry relied for safe shutdown in the event of a fire in the Screenwell House (Fire Area IB/Fire Zone SH-13) consists of Control Panel 73HV-11B and fire dampers 73FD-1A and 73FD-1B.

Given the negligible quantities of exposed combustibles in the immediate area of the control panels or the dampers, the possibility of a fire starting in or propagating to these areas is considered unlikely. However, if a fire is postulated which could damage panel 73HV-11B, the damage would be isolated to within the panel and/or be limited to the area around the panel given the negligible amount of exposed combustibles. Therefore, a postulated fire which could damage both 73HV-11B, redundant panel 73HV-11A and their associated circuitry before the fire is detected and extinguished, is also unlikely. In a similar manner, a postulated fire that would close fire dampers 73FD-1A and 73FD-1B would be unlikely to affect fire dampers 73FD-1C and 73FD-1D.

As previously stated, there are negligible intervening exposed combustibles in the immediate vicinity of Control Panel 73HV-11B. Redundant division Control Panel 73HV-11A is approximately ten feet away on the same elevation. Exposed combustibles in the vicinity of the panels consist of a fire hose which is located between the two panels. Thirteen redundant Division A safe shutdown cables are routed above the panel are located approximately six feet away and other non safe shutdown circuitry is routed adjacent to panel 73HV-11B. Cables and circuitry within twenty feet of panel 73HV-11B are routed in noncombustible enclosures (i.e. junction boxes or metal conduit) and, therefore, are not considered intervening exposed combustibles. There are no other potential sources of ignition or combustibles within twenty feet of panel 73HV-11B.

Similarly, there is negligible intervening exposed combustibles in the immediate vicinity of Fire Dampers 73FD-1A and 73FD-1B. The redundant dampers 73FD-1C and 73FD-1E are located approximately 5 feet and 20 feet respectively from damper 73FD-1B. Exposed combustibles in the vicinity consist of a traveling screen motor, gearbox and clutch are located above and approximately two feet away from Fire Damper 73FD-1A. These contain small amounts of lubricants and gear oil. The gears and chain are covered by a metal guard which would shield the motor and gearbox from the fire damper. A one-half inch PVC (polyvinyl chloride) pipe is also routed above the dampers. This PVC pipe is a chemical sample line which carries a sodium hypochlorite solution. Cables and circuits in the area are routed in noncombustible enclosures and therefore are not considered intervening combustibles. However, there are cable trays routed through the Screenwell House whose closest approach to either of the fire dampers is approximate twenty feet. A temporary diked area is located east of the North Safety Related Pump Room and contains approximately 900 gallons of chemicals (see Figure 5.1-2). The chemicals are utilized in the cleaning of the Service Water System. Discussions with the manufacturer indicate that they are of limited combustibility, Class IIIB. In addition, the chemicals are contained in three steel supported plastic tanks. The Authority has diked the area and is in the process of taking further measures to assure adequate protection of the fire dampers from the minimal fire hazard associated with these chemicals and their storage and delivery system. There are no other potential sources of ignition or combustibles within 20 feet of either fire damper. No redundant division safe-shutdown circuits are located within 20 feet of either fire damper.

Three cables associated with the Division A EDG ventilation system are located south of the pump rooms, approximately fifty feet from panel 73HV-11B and fire dampers 73FD-1A and 73FD-1B. Redundant cables associated with the Division B EDG ventilation system will be rerouted from the area to assure divisional separation prior to startup from the current refueling outage. In both cases these cables are associated with the CO₂ suppression system and subsequent closure of the CO₂ activated dampers in the EDG Switchgear Room.

The remaining cables associated with Division A and B Safety Related Pump Room ventilation systems that are routed through the Screenwell House will be disabled by interim compensatory actions (c) and (d). For this reason, their loss will not affect either ventilation system.

Cable Tunnel Fire

In the event of a fire in the East Cable Tunnel (Fire Area II/Fire Zone CT-2), the Division A Safety Related Pump Room Ventilation System is relied upon for safe shutdown. The East Cable Tunnel runs behind the west wall of both Safety-Related Pump Rooms. A significant quantity of combustible material (primarily electrical cables associated with both safe and normal shutdown) exists in the cable tunnel. The East Cable Tunnel is equipped with ionization type smoke detectors that annunciate in the Control Room and will also be protected by the interim compensatory actions that are discussed in the Cable Tunnel Suppression Systems exemption request.

Two cables (ISWVARK003 and ISWVARC115) required to support the operation of fan 73FN-3A are located in the East Cable Tunnel. Cable ISWVARK003 is protected by a one-hour wrap while Cable (ISWVARC115) is unprotected. Loss of either of these cables could result in the loss of the Division A Safety Related Pump Room ventilation system. This will not cause loss of the ESW or RHRSW pumps because portable ventilation will be provided to assure cooling.

Interim Compensatory Actions

The Authority proposes to implement the following interim compensatory measures until modifications can be completed to assure that one division or train and the associated ventilation system will be available in the event of a fire in the Screenwell House or in the East Cable Tunnel:

- a) Close fire doors 76FDR-SP-255-2 and 76FDR-SP-255-4 to assure separation between the North and South Safety Related Pump Rooms and the East Cable Tunnel.
- b) Close fire damper 73FD-1F to assure separation between the North Safety Related Pump Room and the West Diesel Fire Pump Room.
- c) ETLs associated with four fire dampers (73-FD-1A, 73-FD-1B, 73-FD-1C, and 73-FD-1D) will be replaced with 165 degree F fusible-links (closure of the dampers is annunciated in the Control Room).
- d) Modify the fire detection circuitry to assure that two fans (73FN-3A and 73FN-3B) will not stop in the event of detection activation. The existing logic circuitry turns these fans off if the associated thermal detector in the area is activated.
- e) Combustible free zones will be established around Control Panels 73HV-11B and 73HV-11A and around fire dampers 73FD-1A, 73FD-1B, 73FD-1C and 73FD-1D.
- f) Portable smoke ejectors will be readily available to ventilate the North Safety Related Pump Room in the unlikely event of a fire. Two, two-stage, portable smoke ejectors, rated at 9500 CFM or greater, clearly labeled "For Fire Protection Use Only" will be placed inside the West Diesel Fire Pump Room. The operations staff and the plant fire brigade will be instructed on the purpose of these fans.
- g) Establish a one-hour roving fire watch who will be instructed to assure that the combustible free zones are maintained.

Please note, that in the East Cable Tunnel, a continuous fire watch has been posted until the modifications associated with the suppression system are complete (see the Cable Tunnel Suppression Systems exemption request).

Bases for Interim Compensatory Actions

The actions described above will provide an equivalent level of protection. Early detection is assured by thermal detection, area smoke detection, fire watches, and high area temperature detection all of which alarm in the Control Room.

In the event of a fire in the East Cable Tunnel, ventilation of the North Safety Related Pump Room is assured by dedicated portable ventilation fans.

Hardship to the Authority

The hardship to the Authority if this exemption is not granted is that the plant will have to remain shutdown until the modifications are complete. As previously stated the modifications would be completed prior to startup from the next refueling outage which translates into 20 months (i.e., 18-month cycle plus 2-month refueling outage). At a cost of \$12,000,000 per month in lost revenue (i.e., \$400,000 per day and 30 days per month) the estimated total lost revenue to the Authority is \$240,000,000 if FitzPatrick had to remain shutdown for an additional twenty months. This lost revenue estimate only includes the loss of income from FitzPatrick generated power and does not include the cost of replacement power.

10 CFR 50.12 Criteria

This request satisfies the criteria outlined in 10 CFR 50.12(a)(1) for granting an exemption because (a) the exemption is authorized by law, (b) it will not present an undue risk to public health and safety and (c) it is consistent with the common defense and security.

10 CFR 50.12(a)(2) states that the Commission will not consider granting an exemption request unless special circumstances are present. Special circumstances are present whenever: (i) Application of the regulation in the particular circumstances conflicts with other rules or requirements of the Commission; (ii) 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; or (iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted or that are significantly in excess of those incurred by others similarly situated; or (iv) The exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption; or (v) The exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation; or (vi) There is present any other material circumstances not considered when the regulation was adopted for which it would be in the public interest to grant an exemption.

This exemption request satisfies criteria 10 CFR 50.12(a)(2)(iii) and (v) as follows:

- a) The interim compensatory actions described above provide an equivalent level of protection,
- b) The exemption would provide temporary relief until the ventilation system is modified to be in compliance with Appendix R, and
- c) To remain shutdown until the modification is complete would result in significant replacement power costs to the public with no incremental benefit to the public health and safety.

References

- 5.1-1 LER 91-021-00; dated November 27, 1991; subject: "Residual Heat Removal, Emergency Diesel Generators, and Fire Pumps Potentially Made Inoperable Due to Inadequate Modification Installation Activities"; transmitted by NYPA Letter JAFP-91-0786 from R. J. Converse; to NRC Document Control Desk; dated November 27, 1991; subject: "Licensee Event Report: 91-021-00 - RHRSW/ESW Pump Room Fire Dampers"
- 5.1-2 NRC Letter from T. A. Ippolito; to G. T. Berry; dated August 1, 1979; regarding: Amendment No. 47 to the FitzPatrick Operating License and the Supporting Safety Evaluation Report
- 5.1-3 NRC Letter from T. A. Ippolito; to G. T. Berry; dated October 3, 1980; subject: "Review of Fire Protection Safety Evaluation Supplement Items"
- 5.1-4 NYPA Letter JPN-85-28 from J. P. Bayne; to D. B. Vassallo; dated April 12, 1985; subject: "Appendix R to 10 CFR 50 Exemption Request for Fire Dampers Not Required to Enhance Fire Protection"
- 5.1-5 NRC Letter from R. M. Bernero; to J. C. Brons; dated April 30, 1986; subject: "Exemption From Appendix R to 10 CFR 50 Concerning Installation of Fire Dampers"

Figure 5.1-1
Safety Related Pump Rooms and West Diesel Fire Pump Room

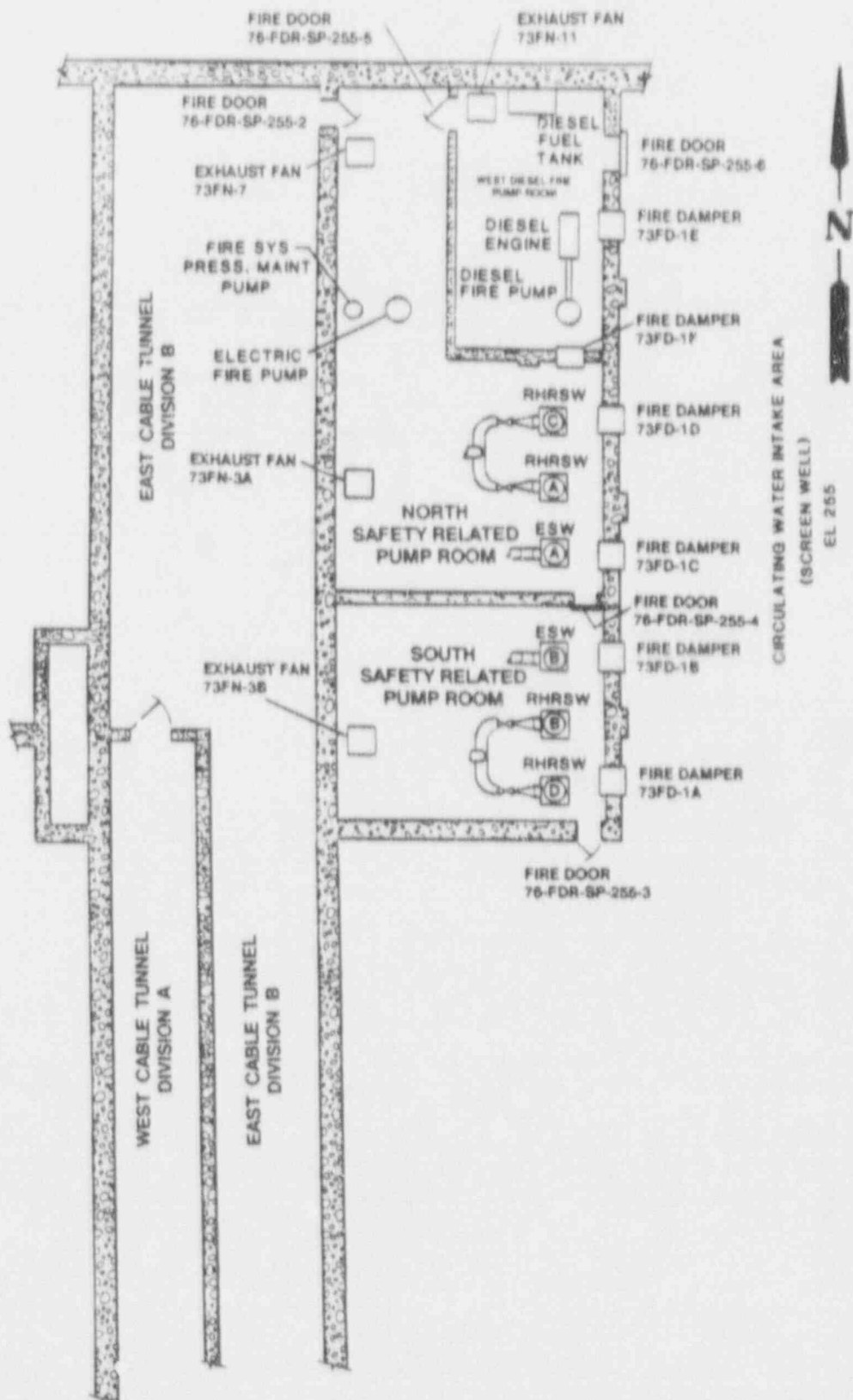
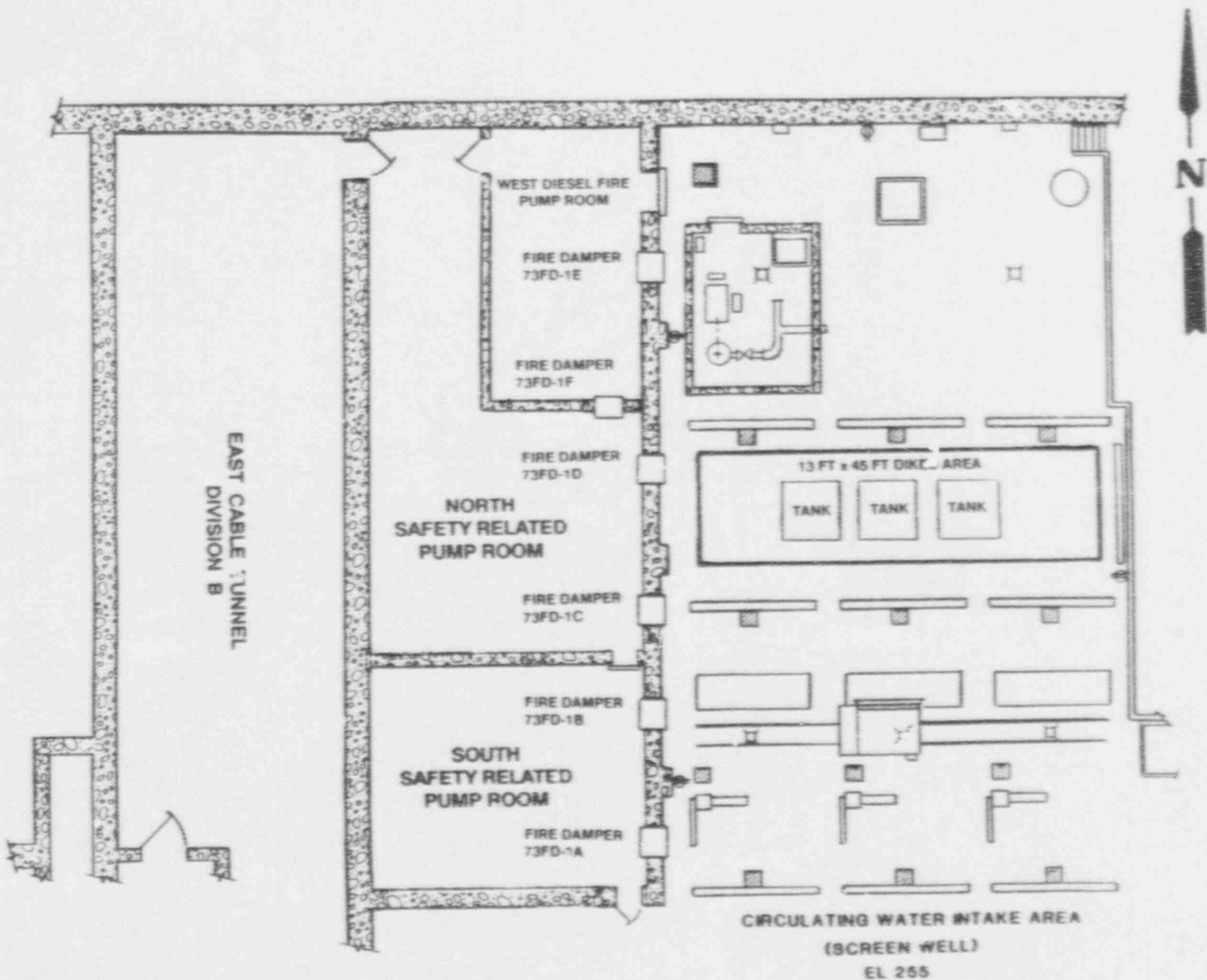


Figure 5.1-2
Screenwell House General Arrangement



5.2 Cable Tunnel Suppression Systems

Exemption Requested

In accordance with the provisions of 10 CFR 50.12(a), the New York Power Authority requests a temporary exemption from the requirements of 10 CFR 50, Appendix R, Sections III.G.2 and III.G.3 as they apply to the James A. FitzPatrick Nuclear Power Plant with respect to a full area suppression system being required in the West Cable Tunnel (Fire Area IC) to protect redundant circuits that are installed in this area. The exemption is needed until modifications can be completed to provide fire suppression adequate for the hazards present. Interim compensatory actions will be implemented until the modifications are completed.

In addition, a full area suppression system is being installed in the East Cable Tunnel (Fire Area II). The inoperability of the existing suppression system is governed by the requirements of Branch Technical Position (BTP) 9.5-1, Appendix A and the Technical Specifications. Therefore, the impact of a fire on the safe shutdown systems in the East Cable Tunnel is covered by the interim compensatory actions and permanent modifications discussed in the Pump Room Ventilation exemption request.

The inoperability of the existing suppression systems in both cable tunnels was discussed in NYPA LER 92-004-00 (Reference 5.2-1).

The Authority has developed modifications to the cable tunnel suppression systems. The demolition and installation of the new systems will be done in series so that at least one tunnel has an available suppression system. Although the existing systems have been declared inoperable, they are still available and will provide a level of protection. The schedule for the installation of this new system is lengthened by this two-phase demolition/construction approach. The modifications are extensive and will be completed no later than July 31, 1993. Therefore, the Authority proposes interim compensatory actions until the modifications are complete.

In addition, the submittal of this exemption request and the implementation of the interim compensatory actions discussed in the exemption request fulfill the requirements of the FitzPatrick Technical Specification Sections 3.12.B.1.b, 3.12.B.2 and 6.9.B.2.

Fire Areas/Fire Zones Affected

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
IC	CT-1	West Cable Tunnel el. 260'
	SW-1	Turbine Building Switchgear Room el. 272'
II	CT-2	East Cable Tunnel el. 260'
	SW-2	Turbine Building Switchgear Room el. 272'

Technical Justification

Background

The automatic fire suppression systems in the East and West Cable Tunnels were declared inoperable on January 15, 1992 (Reference 5.2-1). The systems were declared inoperable after a review of the hydraulic design calculations indicated that the spray systems did not provide adequate coverage.

Fire Protection Features

The West Cable Tunnel is bounded by three-hour-rated fire barriers and by three-hour-rated fire barrier penetrations with the exception of the piping penetrations discussed in the Piping Penetrations exemption request and two penetrations (S-1378 and S-1379) which extend from the floor of the tunnel to the roof of a main steam tunnel below. Radiation monitors are inserted into these accessways to measure radiation levels inside the main steam tunnel. They are covered by steel plates.

The East Cable Tunnel is bounded by three-hour-rated fire barriers and by three-hour-rated fire barrier penetrations with the exception of the piping penetrations discussed in the Piping Penetrations exemption request.

Shutdown Systems Affected

A fire in the West Cable Tunnel could render inoperable the following systems: Core Spray (Division A), RCIC, RHR - LPCI (Division A) and Emergency Diesel Generators (Division A).

A fire in the East Cable Tunnel could render inoperable the following systems: HPCI, RHR - LPCI (Division B) and Core Spray (Division B).

Shutdown Systems Available

For a fire in the West Cable Tunnel the following systems are available for safe shutdown: RHR - Suppression Pool Cooling (Division B), RHR - LPCI (Division B), Core Spray (Division B), ADS Valves, HPCI, Emergency Diesel Generators (Division B) and Emergency Service Water (Division B). The Control Room instrumentation available for this fire is: RV level (02-3LI-85B and 02-3LR-9B), RV pressure (06PI-61B and 06PI-90B), Torus temperature (161TI-131B) and Torus level (23LI-202B).

For a fire in the East Cable Tunnel the following systems are available for safe shutdown: RHR - Suppression Pool Cooling (Division A), RHR - LPCI (Division A), Core Spray (Division A), ADS Valves, RCIC, Emergency Diesel Generators (Division A) and Emergency Service Water (Division A). The Control Room instrumentation available for this fire is: RV level (02-3LI-85A, 02-3LI-91 and 02-3LI-92), RV pressure (06PI-61A, 06PI-62 and 06PI-90C), Torus temperature (161TI-131A) and Torus level (23LI-202A).

Redundant Circuits

The only circuits required for safe shutdown in the West Cable Tunnel are: the power feed to the Division B Load Center L-16 (Cable 1HOEBBH001) and the circuitry associated with Division B Battery Room Ventilation (Cable 1ABVBBK055). In the event cable 1ABVBBK055 is damaged due to fire, AOP-58 (Abnormal Operating Procedure) could assure cooling of the Division B Battery Room and Charger Room ventilation. For this reason, the potential loss of this cable is not a concern.

Cable 1ABVBBK055 is protected with a one-hour-rated fire barrier that has been qualified by testing. Cable 1HOEBBH001 is currently protected with a rated fire barrier. However, the qualification test included several test anomalies of electrical conductor temperatures at the conclusion of the one hour fire exposure. The Authority has reviewed test results from other vendors of similar configurations and fire wrap materials in which the test results concluded that these raceway protective systems were qualified one-hour-rated fire barriers. Based on these reviews, the Authority concludes that the cable raceway protective system of cable 1HOEBBH001 is qualified as a one-hour-rated fire barrier.

The only redundant circuits in the East Cable Tunnel are those associated with the Safety Related Pump Room Ventilation. Cable 1SWVARK003 is provided with a one-hour-rated fire barrier, while cable 1SWVARK115 is not provided with a barrier. The interim compensatory actions and the modifications that are discussed in the Pump Room Ventilation exemption request preclude the need to ensure that these circuits are free of fire damage.

Interim Compensatory Actions

The Authority proposes to implement the following two interim compensatory actions until fire suppression systems capable of providing coverage adequate for the East and West Cable Tunnels can be installed:

- a) A continuous fire watch will be posted in each tunnel.
- b) Daily walkdowns will be conducted to assure that transient combustibles in each tunnel are held to an absolute minimum.

Bases for Interim Compensatory Actions

The actions described above will provide an equivalent level of protection. Early detection and suppression are assured by:

- a) Backup manual fire suppression will be available with installed hose stations throughout the each tunnel as well as hose stations in adjacent areas,
- b) Portable carbon dioxide fire extinguishers are installed throughout each tunnel, and
- c) The existing automatic ionization smoke detection system will provide early indication of a fire in either tunnel to operators in the Control Room.

Hardship to the Authority

The hardship to the Authority if this exemption is not granted is that the plant will have to remain shutdown until the modifications are complete. As previously stated the modifications would be completed by July 31, 1993 which translates into 12 months (i.e., August 1992 through July 1993). At a cost of \$12,000,000 per month in lost revenue (i.e., \$400,000 per day and 30 days per month) the estimated total lost revenue to the Authority is \$144,000,000 if FitzPatrick had to remain shutdown for an additional twelve months. This lost revenue estimate only includes the loss of income from FitzPatrick generated power and does not include the cost of replacement power.

10 CFR 50.12 Criteria

This request satisfies the criteria outlined in 10 CFR 50.12(a)(1) for granting an exemption because (a) the exemption is authorized by law, (b) it will not present an undue risk to public health and safety and (c) it is consistent with the common defense and security.

10 CFR 50.12(a)(2) states that the Commission will not consider granting an exemption request unless special circumstances are present. Special circumstances are present whenever: (i) Application of the regulation in the particular circumstances conflicts with other rules or requirements of the Commission; (ii) 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; or (iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted or that are significantly in excess of those incurred by others similarly situated; or (iv) The exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption; or (v) The exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation; or (vi) There is present any other material circumstances not considered when the regulation was adopted for which it would be in the public interest to grant an exemption.

This exemption request satisfies criteria 10 CFR 50.12(a)(2)(iii) and (v) as follows:

- a) The interim compensatory actions described above provide an equivalent level of protection,
- b) The exemption would provide temporary relief until the suppression systems are modified to be in compliance with Appendix R, and
- c) To remain shutdown until the modification is complete would result in significant replacement power costs to the public with no incremental benefit to the public health and safety.

References

- 5.2-1 LER 91-004-00; dated February 14, 1992; subject: "Automatic Fire Suppression Systems in Safety-Related Cable Tunnels Declared Inoperable Due to Inadequate Design and Review for Appendix R Requirements"; transmitted by NYPA Letter JAFP-92-0154 from R. J. Converse; to NRC Document Control Desk; dated February 14, 1992; subject: "Licensee Event Report: 92-004-00 - Cable Tunnel Fire Suppression Sprays Inoperable Due to Inadequate Design and Appendix R Review"

5.3 Piping Penetrations

Exemption Requested

In accordance with the provisions of 10 CFR 50.12(a), the New York Power Authority requests a temporary exemption from the requirements of 10 CFR 50, Appendix R, Sections III.G.2 as they apply to the James A. FitzPatrick Nuclear Power Plant with respect to three-hour-rated fire barrier penetration seals. The exemption is needed until concerns associated with bondstrand, greenthread and PVC (polyvinyl chloride) piping penetrations can be resolved and modifications can be completed to assure separation by a three-hour-rated fire barrier. Interim compensatory actions will be implemented until the modifications are completed. The modifications are scheduled to be completed by November 30, 1992.

The Authority has developed or is in the process of developing modifications that will address the concerns associated with bondstrand, greenthread and PVC piping penetrations. However, the modifications are extensive. Therefore, the Authority proposes interim compensatory actions until the modifications are completed.

Fire Areas/Fire Zones Affected

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
IA	AD-1	Administration Building el. 272'
	AD-2	Administration Building el. 272'
	AD-3	Administration Building el. 272'
	AD-4	Administration Building el. 286'
	AD-5	Administration Building el. 286'
	AD-6	Administration Building el. 300'
	AS-1	Auxiliary Boiler Room el. 272'
	MG-1	Motor Generator Room el. 300'
IB	FP-1	West Diesel Fire Pump Room el. 255'
	CR-2	Radwaste Building Control Room el. 284'
	RW-1	Radwaste Building and Pipe Tunnel
	SH-13	Screenwell House
IC	CT-1	West Cable Tunnel el. 260'
	SW-1	Turbine Building Switchgear Room el. 272'
IE	FP-2	Turbine Building Foam Room el. 272'
	TB-1	Turbine Building Basement el. 252', Mezzanine el. 292', and Operating Floor el. 300'
	OR-1	Turbine Building Turbine Oil Storage Room el. 252'
	OR-2	Turbine Building Turbine Oil Storage Room el. 272'
	OR-3	Turbine Building Miscellaneous Oil Storage Room el. 252'
II	CT-2	East Cable Tunnel el. 260'
	SW-2	Turbine Building Switchgear Room el. 272'

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
VII	CR-1	Control Room el. 300'
	RR-1	Relay Room el. 284'
	CS-1	Cable Spreading Room el. 272'
VIII	RB-1C	Reactor Building Northeast and Northwest Quadrants el. 300'
IX	SB-1	Standby Gas Filter Room el. 272'
	RB-1A	Reactor Building East Side el. 272', Southeast Quadrant el. 300', and Entire Floor on el. 326', el. 344', and el. 369'
X	RB-1B	Reactor Building East Side el. 272' and Southwest Quadrant el. 300'

Technical Justification

Background

As a result of the recent fire barrier penetration seal baseline inspection, the Authority identified several fire barrier penetrations that have penetrating items of bondstrand, greenthread or PVC piping. In accordance with the requirements of Technical Specification Section 3.12.F, "Fire Barrier Penetration Seals," the Authority declared the penetrations inoperable because of a lack of qualifying tests and the potential of the piping to degrade the existing three-hour-rated fire barrier penetration seals. Subsequently, the Authority has identified additional bondstrand, greenthread and PVC piping penetrations and declared them inoperable.

Walkdowns of bondstrand, greenthread and PVC piping began in February 1992 to identify the affected fire barrier penetration seals. Preliminary testing of typical bondstrand, greenthread and PVC piping penetration configurations began about this time also. The preliminary testing revealed that the ability of penetration seals of closed (or non-vented) piping systems meeting the requirements for a three-hour-rated fire barrier penetration seal is highly probable. However, the ability of penetration seals of open (or vented) piping systems meeting the requirements for a three-hour-rated fire barrier penetration seal is questionable.

For the purpose of this issue, a closed (or non-vented) piping system is one in which the piping is continuous. An open (or vented) piping system is one that freely communicates with the atmosphere, as in vent and drain lines.

During these preliminary tests, the Authority observed that as piping of an open piping system (i.e., a "U"-shaped drain configuration) was subjected to an exposure fire, gases released from the inside surfaces of the heated pipe were exhausted through one open end of the pipe and air was drawn into the other open end. This circular flow continued for approximately ten minutes during the initial stages of the three-hour fire endurance test when the exhaust flow self-ignited. This ignition is believed to be the result of oxygen being introduced into the system. This phenomena was confirmed, when during a test, the exhaust flow of a closed piping system did not exhibit this self-ignition. The flame that developed on the unexposed side of the open piping system was approximately 6 inches above the end of the pipe and the quantity of smoke which was considered excessive.

A formal test is currently scheduled for July 1992. In this test, typical bondstrand, greenthread and PVC piping penetration configurations will be evaluated per the requirements of ASTM E-119 and ASTM E-814. Both open and closed piping systems will be tested. It is expected that the closed piping system penetration configurations will meet the requirements of a three-hour-rated fire barrier penetration seal. It is also expected that the resulting test data from the open piping system penetration configurations will enable the Authority to institute the appropriate modifications which will address the concern.

Table 5.3-1 provides a location listing of the bondstrand, greenthread and PVC open piping systems that penetrate three-hour-rated fire barriers (both Appendix R fire barriers and Branch Technical Position (BTP) 9.5-1, Appendix A fire barriers). Table 5.3-2 provides a location listing of the bondstrand and greenthread closed piping systems that penetrate three-hour rated fire barriers (both Appendix R fire barriers and BTP 9.5-1, Appendix A fire barriers).

Interim Compensatory Actions

The Authority proposes to implement hourly fire watch patrols in each of the Fire Area where bondstrand, greenthread or PVC piping systems penetrate three-hour-rated fire barriers.

Basis For Interim Compensatory Actions

The action described above in conjunction with other existing fire protection features will provide an equivalent level of protection and assure that a fire in the vicinity of an inoperable fire barrier penetration seal will be promptly detected and extinguished. These features include:

- a) Automatic suppression and/or detection systems,
- b) Manual hose stations and portable fire extinguishers, and
- c) The on-site trained fire brigade.

The Authority also believes that the establishment of an hourly fire watch patrol will be consistent with ALARA practices while the establishment of a continuous fire watch may be in conflict with these practices.

Hardship to the Authority

The hardship to the Authority if this exemption is not granted is that the plant will have to remain shutdown until the modifications are complete. As previously stated the modifications would be completed by November 30, 1992 which translates into four months (i.e., August 1992 through November 1992). At a cost of \$12,000,000 per month in lost revenue (i.e., \$400,000 per day and 30 days per month) the estimated total lost revenue to the Authority is \$48,000,000 if FitzPatrick had to remain shutdown for an additional four months. This lost revenue estimate only includes the loss of income from FitzPatrick generated power and does not include the cost of replacement power.

10 CFR 50.12 Criteria

This request satisfies the criteria outlined in 10 CFR 50.12(a)(1) for granting an exemption because (a) the exemption is authorized by law, (b) it will not present an undue risk to public health and safety and (c) it is consistent with the common defense and security.

10 CFR 50.12(a)(2) states that the Commission will not consider granting an exemption request unless special circumstances are present. Special circumstances are present whenever: (i) Application of the regulation in the particular circumstances conflicts with other rules or requirements of the Commission; (ii) 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; or (iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted or that are significantly in excess of those incurred by others similarly situated; or (iv) The exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption; or (v) The exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation; or (vi) There is present any other material circumstances not considered when the regulation was adopted for which it would be in the public interest to grant an exemption.

This exemption request satisfies criteria 10 CFR 50.12(a)(2)(iii) and (iv) as follows:

- a) The Authority intends to assure that the subject penetrations are qualified as and/or modified to become three-hour-rated fire barriers,
- b) Interim compensatory actions will be implemented until the subject penetrations are considered three-hour-rated fire barriers,
- c) The interim compensatory actions provide a level of protection that meets or exceeds the Appendix R requirements, and
- d) To remain shutdown until the qualifications and modifications are complete would result in significant replacement power costs to the public with no incremental benefit to the public health and safety.

Table 5.3-1
Location of Open Piping Penetrations

<u>PENETRATION NUMBER</u>	<u>SIDE 1 AREA DESCRIPTION (Fire Area/Fire Zone)</u>	<u>SIDE 2 AREA DESCRIPTION (Fire Area/Fire Zone)</u>
3 Drain Lines	Turbine Building (IE/TB-1)	Pipe Tunnel (IB/RW-1)
3 Drain Lines	West Cable Tunnel (IC/CT-1)	Chemistry Laboratory (IA/AD-3)
S-144	West Cable Tunnel (IC/CT-1)	Chemistry Laboratory (IA/AD-3)
S-145	West Cable Tunnel (IC/CT-1)	Chemistry Laboratory (IA/AD-3)
S-150	West Cable Tunnel (IC/CT-1)	Rad. Decon. Area (IA/AD-3)
S-202	West Cable Tunnel (IC/CT-1)	Rad. Issue Office (IA/AD-3)
S-206	West Cable Tunnel (IC/CT-1)	Chemistry Laboratory (IA/AD-3)
S-207	West Cable Tunnel (IC/CT-1)	Chemistry Laboratory (IA/AD-3)
S-208	West Cable Tunnel (IC/CT-1)	Chemistry Laboratory (IA/AD-3)
S-210	West Cable Tunnel (IC/CT-1)	Rad. Issue Office (IA/AD-3)
S-211	West Cable Tunnel (IC/CT-1)	Chemistry Laboratory (IA/AD-3)

Table 5.3-1
Location of Open Piping Penetrations
 (continued)

<u>PENETRATION NUMBER</u>	<u>SIDE 1 AREA DESCRIPTION</u> (Fire Area/Fire Zone)	<u>SIDE 2 AREA DESCRIPTION</u> (Fire Area/Fire Zone)
S-329	Reactor Building (IX/RB-1A)	Pipe Tunnel (IB/RW-1)
S-620	Reactor Building (IX/RB-1A)	Reactor Building (VIII/RB-1C)
S-621	Reactor Building (IX/RB-1A)	Reactor Building (VIII/RB-1C)
S-865	Reactor Building (IX/RB-1A)	Reactor Building (X/RB-1B)
S-1366	Turbine Building (IE/TB-1)	Chemistry Laboratory (IA/AD-3)
S-1387	West Cable Tunnel (IC/CT-1)	Pipe Tunnel (IB/RW-1)
S-1391	West Cable Tunnel (IC/CT-1)	Pipe Tunnel (IB/RW-1)
S-4013	West Cable Tunnel (IC/CT-1)	East Cable Tunnel (II/CT-2)
S-4024	Reactor Building (IX/RB-1A)	Reactor Building (VIII/RB-1C)

Table 5.3-2
Location of Closed Piping Penetrations

<u>PENETRATION NUMBER</u>	<u>SIDE 1 AREA DESCRIPTION</u> (Fire Area/Fire Zone)	<u>SIDE 2 AREA DESCRIPTION</u> (Fire Area/Fire Zone)
S-33	Auxiliary Boiler Room (IA/AS-1)	Cable Spreading Room (VII/CS-1)
S-47	Administration Building (IA/AD-3)	Cable Spreading Room (VII/CS-1)
S-48	Administration Building (IA/AD-3)	Cable Spreading Room (VII/CS-1)
S-212	West Cable Tunnel (IC/CT-1)	Telephone Room (IA/AD-1)
S-370	Reactor Building (IX/RB-1A)	Pipe Tunnel (IB/RW-1)
S-371	Reactor Building (IX/RB-1A)	Pipe Tunnel (IB/RW-1)
S-372	Reactor Building (IX/RB-1A)	Pipe Tunnel (IB/RW-1)
S-374	Reactor Building (IX/RB-1A)	Pipe Tunnel (IB/RW-1)
S-557	Motor Generator Room (IA/MG-1)	Reactor Building (IX/RB-1A)
S-559	Motor Generator Room (IA/MG-1)	Reactor Building (VIII/RB-1C)
S-790	Reactor Building (IX/RB-1A)	Auxiliary Boiler Room (IA/AS-1)
S-801	Reactor Building (IX/RB-1A)	Reactor Building (IX/RB-1B)

Table 5.3-2
Location of Closed Piping Penetrations
 (continued)

<u>PENETRATION NUMBER</u>	<u>SIDE 1 AREA DESCRIPTION</u> (Fire Area/Fire Zone)	<u>SIDE 2 AREA DESCRIPTION</u> (Fire Area/Fire Zone)
S-1384	West Cable Tunnel (IC/CT-1)	East Cable Tunnel (II/CT-2)
S-1386	Turbine Building (IE/TB-1)	East Cable Tunnel (II/CT-2)
S-1679	Turbine Building (IE/TB-1)	Screenwell House (IB/SH-13)
S-1814	Screenwell House (IB/SH-13)	East Cable Tunnel (II/CT-2)
S-1815	Screenwell House (IB/SH-13)	East Cable Tunnel (II/CT-2)
S-2001	West Cable Tunnel (IC/CT-1)	East Cable Tunnel (II/CT-2)
S-2002	West Cable Tunnel (IC/CT-1)	East Cable Tunnel (II/CT-2)
S-2100	Auxiliary Boiler Room (IA/AS-1)	Pipe Tunnel (IB/RW-1)
WS-50	Turbine Building (IE/TB-1)	Radwaste Building (IB/RW-1)
WS-60	Turbine Building (IE/TB-1)	Radwaste Building (IB/RW-1)
WS-41 i	Radwaste Building (IB/RW-1)	Screenwell House (IB/SH-13)