



Entergy Nuclear Northeast  
Entergy Nuclear Operations, Inc.  
James A. Fitzpatrick NPP  
P.O. Box 110  
Lycoming, NY 13093  
Tel 315 349 6024 Fax 315 349 6480

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JAFP-05-0118

T.A. Sullivan  
Site Vice President - JAF

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

SUBJECT: James A. FitzPatrick Nuclear Power Plant  
Docket No. 50-333  
License No. DPR-59  
**Request For Exemption From 10 CFR 50,  
Appendix R, III.G.2.c Requirement For A  
One-Hour Rated Fire Barrier Wrap**

REFERENCE: 1. NRC Information Notice 2005-07: Results of Hemyc  
Electrical Raceway Fire Barrier System Full Scale Fire  
Testing, dated April 1, 2005.

Dear Sir or Madam:

Pursuant to the provisions of 10 CFR 50.12(a), Entergy Nuclear Operations, Inc. (ENO) is submitting a request for an exemption from the requirements of 10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," as it applies to the James A. FitzPatrick Nuclear Power Plant (JAF) for Fire Area 1C.

NRC Information Notice 2005-07 (Reference 1) provided licensees the details of Hemyc electrical raceway fire barrier system (ERFBS) full-scale fire tests conducted by the NRC's Office of Nuclear Regulatory Research. The test results concluded that the Hemyc ERFBS does not provide the level of protection expected for a one-hour rated fire barrier, as originally designed.

Enclosure 1 summarizes the bases for this exemption request, provides a detailed evaluation of the installed fire barrier wrap and its application, and provides the adequacy of the existing fire barrier wrap to maintain the circuit functional during a fire, thereby providing an equivalent level of fire protection and safe shutdown capability in accordance with 10 CFR 50.48 and 10 CFR 50, Appendix R.

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If you have any questions, please contact Mr. Rick Plasse, Regulatory Compliance Manager, at (315) 349-6793.

Very truly yours,



T.A. Sullivan  
Site Vice President

TAS:GB:gb

Enclosure 1: Request for Exemption

cc: Mr. Samuel J. Collins  
Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406-1415

Mr. John P. Boska, Project Manager  
Project Directorate 1  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Mail Stop O-8B-1  
Washington, DC 20555-0001

Office of the Resident Inspector  
U.S. Nuclear Regulatory Commission  
James A. FitzPatrick Nuclear Power Plant  
P.O. Box 136  
Lycoming, NY 13093

Enclosure 1 to JAFP-05-0118  
Entergy Nuclear Operations, Inc. - James A. FitzPatrick  
Docket No. 50-333

Request for Exemption from 10 CFR 50, Appendix R, III.G.2.c  
Requirement for a One-Hour Rated Fire Barrier Wrap

**EVALUATION PURSUANT TO 10 CFR 50.12 CRITERIA**

**1. Exemption Requested**

In accordance with the requirements of 10 CFR 50.12(a)(2)(ii), the James A. FitzPatrick Nuclear Power Plant (JAF) requests exemption to the requirements of 10 CFR 50, Appendix R, Section III.G.2.c to the extent that a fire barrier wrap (Hemyc) used to protect a safe shutdown power cable located in the West Cable Tunnel, lacks sufficient evidence to demonstrate that it meets the acceptance criteria for a rated 1 hour fire barrier. This exemption request is consistent with an exemption granted to JAF for a 30 minute fire barrier wrap (FP-60) in the same location (Reference 1).

**2. Physical Arrangement and Fire Protection Features**

**Fire Area Boundaries**

The West Cable Tunnel (Fire Area 1C/Fire Zone CT-1) is a tunnel through which the majority of Division I cables from the Control Room Complex to the Electrical Switchgear Rooms are routed (Figure 1).

Fire Area 1C/Fire Zone CT-1 is separated from the adjoining plant areas by 3 hour rated fire barriers (with the exception of the non-rated exterior barriers which are below-grade).

There is no exposed structural steel in or supporting fire rated barriers in the West Cable Tunnel.

**Safe Shutdown Capabilities**

For a postulated fire in the West Cable Tunnel (CT-1), safe shutdown compliance strategy credits High Pressure Coolant Injection (HPCI) for reactor coolant makeup and B Train Residual Heat Removal (RHR) for suppression pool cooling. Cold shutdown is achieved using B Train Alternate Shutdown Cooling (ASD).

Fire Area 1C contains A Train safe shutdown equipment and cables. Therefore, postulating the occurrence of a fire in Fire Area 1C, safe shutdown capabilities are dependent upon B Train equipment and subsequently B Train DC power and the HVAC equipment which supports it (Reference 2). Air Handling Unit 72AHU-30B is required to provide proper ventilation of Battery Room B (Fire Area 4/Fire Zone BR-3). The 600 volt power cable (1ABVBBK055) which supplies power to the air handling unit is partially routed in Fire Area 1C, Fire Zone CT-1.

Ventilation of Battery Room B is required to support Appendix R safe shutdown compliance. However, loss of the air handling unit will not cause the immediate loss of any safe shutdown function. Per calculation (Reference 3), it will take 2 hours for the B Battery Room (BR-3) to heat up to the point it will exceed the manufacturers qualification of the batteries. This value is based on the worst case heat up rate resulting from the loss of ventilation from a fire in the Battery Room Corridor (Fire Area 16/Fire Zone BR-5), which shares a common barrier with the Battery Rooms. To ensure the availability and operability of 72AHU-30B to ventilate the B Battery Room during a fire in Fire Area 1C, Fire Zone CT-1, the approximately 40 feet of 5 inch conduit (conduit number 1CK201BD1) containing 1ABVBBK055 was wrapped with Hemyc to comply with 10CFR50 Appendix R, Section III.G.2.c.

### Fire Barrier Wrap Capabilities

The Hemyc Electrical Raceway Fire Barrier System (ERFBS) is constructed of Hemyc mats consisting of Kaowool insulation inside an outer covering of Siltemp high-temperature fabric. Hemyc mats that are directly wrapped around the electrical raceway utilize 2-inch-thick Kaowool blankets.

### **NRC Tested Configuration**

Based on the NRC March 2005 Hemyc tests, the closest test configuration to the actual configuration used at JAF is the 4 inch cable filled conduit wrapped with Hemyc. The Hemyc material tested by the NRC used Refrasil fabric for both the internal and external covering which, based on analysis performed by Sandia National Laboratory, is expected to perform similar to Siltemp. Stainless steel bands were used for attachment to the conduit. The spacing of the banding was per Promatec's maximum spacing requirement of 9 inch centers. The test specimen used butt joints with 6 inch wide collar over wraps and a minimum 2 inch overlap at the blanket seams. Tests were also performed on Hemyc wrapped structural supports consisting of 2 inch tube steel and unistrut as well as 18" by 24" by 8" junction boxes.

The tested 4 inch cable filled conduit (30.0% fill) reached a single point temperature of 325°F at 43 minutes, however, the maximum temperature achieved on the internal bare #8 wire after 60 minutes was 199°F. The test data documents that the wrapped unistrut and tube steel supports reached a single point temperature of 325°F at a distance of 3 inches in from the exposed support steel after 22-32 and 13-25 minutes respectively. The banded junction box reached its failure criteria (average temperature increase of 250°F) after 31 minutes.

During the fire testing, the outer layer of Refrasil material consistently experienced a phenomenon of thermal shrinkage. This shrinkage led to the mats contracting and opening gaps in the ERFBS at the over wrapped butt joints and at the 2 inch overlap. The stitched joints of the junction boxes also opened up, however, the Hemyc material on the banded junction box remained in place (References 4 and 5). It appeared that the 6 inch collars would often contract and move with one side of the material. Refrasil shrinkage was common during the testing, usually great enough to expose the conduit. The 2 inch overlapping joints also experienced failures. In these examples, Refrasil shrinkage led to the joints being pulled apart under the ½ inch Stainless Steel banding.

### **JAF Installed Configuration**

While the configuration used at JAF was not specifically tested, the testing performed by the NRC supports the expectation that the installed configuration will meet or exceed a 30 minute fire rating. The Hemyc wrap at JAF consists of aluminized Siltemp on the inner and outer covering that, by materials of construction, can be expected to have better heat resistive properties than non-aluminized Siltemp or the Refrasil material tested by the NRC. The aluminized Siltemp is coated with a reflective material that serves to reflect more radiant energy versus the standard Siltemp or Refrasil. The overlap collars used at JAF are also larger than those used on the test specimen and the banding is generally spaced less than 9 inches on center. The tested configuration used 6 inch collars, while the JAF configuration has collars approximately 8 to 9 inches, which would reduce the potential for openings as documented in the NRC test. The protected conduit at JAF is a 5 inch cable filled conduit (27.2% fill) which has a thermal mass per unit length greater than the 4 inch conduit used in the test. Although the Hemyc wrap

used at JAF may be subject to similar thermal shrink, which could potentially expose the conduit, the additional thermal mass of the conduit would inherently provide additional fire endurance by effectively reducing the rate of rise of the internal temperature of the conduit and, therefore, the exposure to the cable.

The 5 inch conduit is secured in place near the ceiling with 5 seismically qualified structural supports. The first 3 feet 9 inches of the conduit where it passes through the concrete wall to the north is 5 inch flex-conduit. The remainder is rigid conduit with one inline pull box. All of the supports are completely wrapped with Hemyc (no exposed steel) up to the ceiling mounted base plate. A portion of the base plates are left exposed. The base plates are Hilti bolted to the concrete ceiling, which would act as a heat sink for a fire in this area, thereby minimizing the heat transfer into the supports. Based on this configuration it is not expected that the heat transfer through the exposed base plates or Hemyc wrapped supports would be sufficient to adversely impact the functionality of the protected cable or reduce the fire resistance of the conduit wrap.

The 5 inch conduit at JAF contains an approximately 12" by 18" by 8" pull box inline with the conduit. Although this is similar in shape to the junction box tested, the Hemyc has been applied in a different manner than the tested junction box configuration. Based on photographs provided by the NRC, it appears the junction box was wrapped using 2 individual Hemyc mats (each mat covering 3 sides of the junction box) stitched together and then banded with stainless steel bands. The pull box at JAF is wrapped in a manner consistent with the rest of the conduit. The pull box is completely wrapped horizontally with one piece of Hemyc and then banded in place using 3 stainless steel bands spaced 8 inches on center. The vertical end pieces were then stitched in place and further secured by the conduit wrap butted against it. This configuration results in very few stitched joints, which is the primary weak point documented in the test report. If the pull box wrap were to shrink during a fire, the exposure would be expected at the corners of the end pieces. This is not expected to heat up the pull box to the point it would cause the cable to fail. Based on the configuration of the wrap on the pull box versus the banded junction box tested, it is expected that the pull box would perform better than the 31 minutes documented in the test.

In addition to the above, observations of the limited temperature rise experienced on the bare #8 wire support expectations that the cable within the JAF conduit would remain functional through the 1 hour Appendix R requirement. The bare #8 wire located on the inside of the 4 inch filled conduit reached a maximum temperature of 199°F after 1 hour. This temperature is just slightly above the 90°C (194°F) normal rated temperature of the JAF cable and well below the 250°C (482°F) short circuit rating (Reference 6). No internal temperature was recorded on the junction box tested and the heat transfer through the supports into the conduit is expected to be minimal. Demonstrating that the maximum recorded temperature is below the cable insulation ignition temperature complies with the guidance provided for fire barrier wraps in Generic Letter 86-10.

As demonstrated above, the JAF configuration will meet or exceed a 30 minute fire rating. Additionally, based on the 199°F internal temperature documented in the test, there is reasonable assurance that the cable would maintain functionality through the 1 hour Appendix R requirement.

#### Fixed Combustibles and Ignition Sources

The majority (over 90%) of the in-situ combustible loading in the West Cable Tunnel is cable (Reference 7) which has been determined by analysis to meet standards similar to

## Enclosure 1 to JAFP-05-0118

IEEE Standard 383-1974. Specifically, the original cables for JAF were specified and ordered prior to issuance of IEEE 383-1974. An analysis was performed by JAF (Reference 8) which evaluated the flame retardant standards specified for the cable used in open raceway and it was determined that the cable installed at JAF meets performance criteria similar to IEEE 383-1974.

Cables that are identified to be from a manufacturer not included in the original purchase orders have been verified as meeting IEEE 383-1974 specifications for flame spread based on their manufacturer's catalog specifications.

The remaining combustibles located within the West Cable Tunnel are made up of (1) a fiberglass water tank (shower waste tank 74TK-3). The fiberglass tank is of cylindrical construction, with the axis parallel to horizon. The tank has two small pumps associated with it. The pumps are unlikely ignition sources for the tank due to the curved tank surface, which minimizes the potential for "banking" of heat under the tank, as well as the generally low ignitability of the fiberglass tank itself. The distance of the tank from the subject wrap is approximately 21 feet; (2) fiberglass ("Bondstrand") piping of 3 inch nominal diameter. The only fiberglass components within 20 feet of the protected cable are two sections of the Bondstrand piping both of which serve the Chemistry laboratory drains. In two places, the Bondstrand piping comes within close proximity (less the 5 feet) of the Hemyc, however, the quantity of pipe that comes this close to the wrap is less than 10 feet. The remainder of the materials are typically fiberglass ladders used for fire brigade or maintenance purposes. All of the ladders are stored in excess of 50 feet from the subject wrap.

The equivalent fire severity for the entire zone is approximately 60 minutes (Reference 7). The combustible loading that contributes to this fire severity is spread out over the entire 13,400 square foot area (i.e., the total area of Fire Zone CT-1). The nature and configuration of combustibles in the immediate area of the fire barrier wrap consists of limited combustibility cables in horizontal cable trays. For this reason, the fire severity in the vicinity of the wrap is expected to be significantly below 60 minutes. Transient combustible materials that may be brought into the area are controlled by administrative procedure (Reference 9).

This zone has no significant in-situ ignition sources other than the cables themselves. Hot work and ignition sources are controlled throughout the site by administrative procedure (Reference 10). The procedure requires that hot work be controlled by issuance of a hot work permit and requires that the work area be inspected prior to the commencement of hot work activities to assure that procedural requirements are satisfied. Furthermore, the procedure requires that the area be cleared of combustible material, including combustible and flammable liquids, within 35 feet of the work area if practical, or that the combustibles be covered with fire resistant cloth. The procedure requires a qualified fire watch, equipped with a suitable fire extinguisher, be present during and for 30 minutes following completion of the hot work activities.

Additional controls are currently required in the West Cable Tunnel due to an existing Appendix R exemption regarding FP-60 raceway fire barrier wrap (Reference 1). The hot work procedure includes controls for introducing hot work or ignition sources within the vicinity of the FP-60 cable wrap, the large fiberglass tank located in the southeast corner, and the Bondstrand piping in proximity to the FP-60 cable wrap. Similar requirements are being added to the procedure to ensure these additional controls are implemented for hot work in the proximity of the Hemyc wrap.

### Fire Detection Capabilities

The West Cable Tunnel (CT-1) is provided with automatic area-wide early warning smoke detection which is monitored in the Main Control Room. A postulated fire in the zone is expected to involve electrical cable insulation and is expected to be a slowly developing, high smoke-generating event. The smoke detection system is expected to actuate during the incipient stages of a fire involving electrical cable insulation and to provide an alarm in the control room.

The detection system was designed and installed in accordance with National Fire Protection Association (NFPA) standard 72D, 1979 Edition, Proprietary Signaling Systems and NFPA-72E, 1978 Edition, Automatic Detectors. In some cases the installed system does not meet the code of record. These code deviations are related to lack of electrical supervision of circuits, lack of recording of alarms, lack of qualification for environmental conditions, over loading of fire detection signaling lines, some beam pockets lacking detectors, and power supplies not meeting NFPA standards. Completed evaluations (Reference 11) determined that the code deviations do not adversely impact safety performance. The completed engineering evaluations also conclude that the detection system meets the intent of the NFPA standards and that there is no adverse impact on the operability of the system. These evaluations were reviewed and are unchanged by this exemption request.

These code deviations were previously reviewed for an Appendix R exemption and found to be acceptable as they pertain to the protection of the West Cable Tunnel (Reference 1). Additionally, compensatory measures for loss of fire detection systems protecting safety-related areas, including the system protecting the West Cable Tunnel, are established in accordance with the JAF Technical Requirements Manual (TRM).

### Fire Suppression Capabilities

The West Cable Tunnel (CT-1) is protected by an automatic area-wide wet pipe sprinkler system. The sprinkler system utilizes 165°F rated sprinklers and is designed to suppress a floor based transient exposure fire. The sprinkler system in the West Cable Tunnel is designed and installed in accordance with NFPA-13, 1991 Edition, Installation of Sprinkler Systems. In addition, an in-tray automatic wet pipe water spray system, utilizing 135°F spray nozzles, is designed and installed to suppress a tray based fire. The water spray system meets the design requirements of NFPA-15, 1990 Edition, Water Spray Systems.

The sprinkler system is designed and installed as an Extra Hazard (Group 1) occupancy. The system is capable of providing 0.3 gpm/ft<sup>2</sup> to the most hydraulically remote 2,500 ft<sup>2</sup> as well as 0.15 gpm/ft<sup>2</sup> of cable tray horizontal area.

Water hose lines and portable fire extinguishers are available in the zone to support manual suppression activities. In the unlikely event access to hose stations within the West Cable Tunnel are blocked due to the effects of fire, hose stations located on the 272' elevation of the Administration Building could be utilized for manual suppression. Compensatory measures are established in accordance with the TRM in the event the automatic or manual suppression systems protecting the West Cable Tunnel are out of service.

Plant Risk

The total core damage frequency for a fire in Fire Zone CT-1 was estimated as  $7.21 \times 10^{-7}/\text{yr}$  (Reference 12). This low value is due in part to the limited amounts of transient combustibles that are brought into the zone and their low heat release rates. A review of the JAF Fire PRA database shows that neither the air handling unit (72AHU-30B), nor the cable supplying it (1ABVBBK055), are risk significant.

**JUSTIFICATION FOR EXEMPTION**

The requested exemption satisfies the 10 CFR 50.12 criteria as stated below:

**1. The requested exemption is authorized by law**

10 CFR 50.12(a) authorizes the Nuclear Regulatory Commission to grant this exemption.

**2. The requested exemption does not present an undue risk to the public health and safety**

Although the Hemyc fire barrier wrap installed in the West Cable Tunnel has less than a 1 hour fire endurance rating, it will provide a reasonable level of resistance to fire (at least 30 minutes). The area where the fire barrier wrap is located has no significant ignition sources other than cables, has available manual suppression capability, and is equipped with automatic fire suppression and fire detection. In addition, administrative controls limit the presence of transient combustible materials and transient ignition sources. Under these circumstances, there is an adequate level of fire safety such that there is reasonable assurance that at least one means of achieving and maintaining safe shutdown conditions will remain available during and after any postulated fire in the plant.

Additionally, as discussed in the Safe Shutdown Capabilities section of this request, Air Handling Unit 72AHU-30B is required to provide proper ventilation of Battery Room B, however, loss of the AHU will not cause the immediate loss of any safety function. Per calculation (Reference 3), it will take two hours for the B Battery Room to heat up to the point it will exceed the manufacturer's qualification of the batteries.

Based on the determination that safe shutdown can be achieved with the current configuration, the requested exemption does not present an undue risk to the public health and safety. In addition, an Appendix R exemption currently exists for a fire barrier wrap located in the same vicinity of the West Cable Tunnel. Nothing in this fire area has changed since the prior exemption was reviewed and approved (Reference 1).

Similar Exemptions

**James A. FitzPatrick**

By letter dated May 29, 2001 (Reference 1) the NRC issued an exemption to JAF which permitted the use of a fire barrier wrap (FP-60) with a fire endurance rating of less than one-hour. The criteria for granting the exemption and concluding that the exemption would not pose an undue risk to the public health and safety was based on the availability of automatic detection, automatic suppression, limited fire hazards, and administrative controls.

The protected cable in question is located in the same vicinity of the West Cable Tunnel as the FP-60 cable wrap which was approved for exemption in 2001. Although the confirmatory testing results of the Hemyc ERFBS indicated that the wrap did not provide the level of protection expected for a 1 hour fire barrier, the thermal performance exhibited by the Hemyc wrap is equivalent to the thermal performance credited in the FP-60 exemption (30 minutes).

**Three Mile Island Unit 1**

The NRC issued an exemption dated April 20, 1999 (Reference 13) which permitted the use of a fire barrier wrap with a fire endurance rating of less than one-hour. The criteria for granting the exemption and concluding that the exemption would not pose an undue risk to the public health and safety was based on the availability of automatic detection, automatic suppression, and limited fire hazards in the zone.

**3. The requested exemption is consistent with the common defense and security**

The common defense and security are not affected by this exemption request.

**4. Special circumstances are present as defined in 10 CFR 50.12(a)(2)**

10 CFR 50.12(a)(2) states, in part:

*"The commission will not consider granting an exemption unless special circumstances are present. Special circumstances are present whenever...(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;..."*

**5. Underlying purpose of the rule**

Achieve and Maintain Hot Shutdown – III.G.2.c

The underlying purpose of the rule is to provide reasonable assurance that at least one means of achieving and maintaining safe shutdown conditions will remain available during and after any postulated fire. Based on the existing fire protection features in the West Cable Tunnel and the issuance of a prior Appendix R exemption (Reference 1), it can be concluded that the underlying purpose of the rule is satisfied. Accordingly, the request for an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.G.2.c with respect to Fire Area 1C/Fire Zone CT-1 meets the special circumstances delineated in 10 CFR Part 50.12(a)(2)(ii), i.e., the application of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of the rule.

## CONCLUSION

The defense-in-depth objectives of the Fire Protection Program are, 1) to prevent fires from starting, 2) to detect rapidly, control and extinguish promptly those that do occur, and 3) to provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant. The fire hazards analysis of Fire Zone CT-1 and the existing protection of the fire wrapped cable in question show that these objectives are adequately met. Supporting the first objective is that there are no in-situ ignition sources other than cables in the area and transient ignition sources are controlled. The second objective is supported by the fact that there is a smoke detection system, general area wet pipe sprinkler system, in-tray wet pipe water spray system, and manual suppression capability. The third objective is supported by the fire wrap which provides protection from fire damage for at least 30 minutes.

This exemption request is warranted under the provisions of 10 CFR 50.12, in that it is authorized by law, does not present an undue risk to the public health and safety and is consistent with the common defense and security.

This exemption request is consistent with the objective of Appendix R, which is the ability to achieve and maintain safe shutdown during a fire. There is no need to, or safety benefit associated with, meeting the performance requirements of a one-hour fire rated barrier wrap since the use of the installed fire barrier wrap with a fire endurance rating less than one-hour has been shown to be a safe and effective means of protecting the cable and thereby achieving safe shutdown.

The information contained in this exemption request will permit the staff to complete its review of the FitzPatrick Appendix R fire protection program and issue a Safety Evaluation Report documenting their approval of the use of the installed fire barrier wrap to protect the safe shutdown capability of the plant.

The Appendix R exemptions issued by the NRC for JAF have been reviewed. The bases of these exemptions are not affected by this exemption request and will remain valid if the exemption is granted.

## REFERENCES

1. NRC Letter and SER, Guy S. Vissing to M. Kansler (Entergy), James A. FitzPatrick Nuclear Power Plant - Exemption From Certain Requirements of Section III.G.2.c of Appendix R to 10 CFR Part 50 (TAC No. MB0395), May 29, 2001
2. JAF-RPT-FPS-01975, Safe Shutdown Analysis Report, Revision 1
3. Calculation 02268.5004-US(N)-005, Charger Room BR-4 and Battery Room BR-3 Temperatures Based Upon Appendix R Fire in Corridor BR-5, Revision 1
4. NRC Memorandum from Mark H. Salley to David C. Lew, Preliminary Hemyc 1-Hour Fire Rated Electrical Raceway Fire Barrier Systems Test Data, April 6, 2005
5. NRC Information Notice 2005-07, Results of Hemyc Electrical Raceway Fire Barrier System Full Scale Fire Testing, April 1, 2005

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6. APO-76, Specification for Furnishing and Delivery of 600V Power Cable, Revision 1
7. JAF-RPT-04-00478, JAF Fire Hazards Analysis, Revision 0
8. Ebasco Letter RVR-92-11R from R. V. Rebbapragada, Evaluation of the Flame Retardant Characteristics of Cables Installed at JAFNPP, November 20, 1992
9. ENN-DC-161, Transient Combustible Program, Revision 1
10. ENN-DC-127, Control of Hot Work and Ignition Sources, Revision 1
11. JAF-RPT-FPS-01532, NFPA Code Conformance Review Project Summary of Open Items, Revision 10
12. JAF-RPT-MISC-02211, JAF Individual Plant Examination for External Events, Revision 0
13. NRC Letter and SER, T. Colburn to J. Langenbach (TMI), Three Mile Island Nuclear Generating Station, Unit 1, 10 CFR Part 50 Appendix R Exemption Request (TAC No. M97747), April 20, 1999

# West Cable Tunnel / Elev. 258'

## Fire Area/Zone IC/CT-1

