

April 30, 1986

Docket No. 50-333

Mr. John C. Brons
Senior Vice President -
Nuclear Generation
Power Authority of the State
of New York
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Dear Mr. Brons:

SUBJECT: EXEMPTION FROM APPENDIX R TO 10 CFR 50 CONCERNING
INSTALLATION OF FIRE DAMPERS

Re: James A. FitzPatrick Nuclear Power Plant

The Commission has issued the enclosed Exemption from the requirement of Section III.G.2 of Appendix R to 10 CFR 50, that ventilation penetrations in fire-barriers separating redundant shutdown-related systems be provided with fire dampers. The Exemption specifically applies to three fire dampers (73FD-1, 73FD-2, 73FD-3) located in the floor/ceiling assembly between the screenwell house and safety-related pump houses.

The Exemption is being forwarded to the Office of the Federal Register for publication.

The Commission has denied the remaining requests for exemption contained in your letter dated April 12, 1985 for 14 other dampers located in barns fire barriers on the basis that an equivalent level of safety to that attained by compliance with Section III.G. has not been provided. A copy of our Safety Evaluation supporting this conclusion is enclosed.

Also enclosed for your information is a copy of an Environmental Assessment and Finding of No Significant Impact which has been published in the Federal Register.

Sincerely,

/s/

Robert M. Bernero, Director
Division of BWR Licensing
Office of Nuclear Reactor Regulation

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Enclosures:
As stated

cc w/enclosure:
See next page

Previously concurred

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SNorris:rs
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Power Authority of the State of New York

James A. FitzPatrick Nuclear
Power Plant

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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UNITED STATES NUCLEAR REGULATORY COMMISSION

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

ENVIRONMENTAL ASSESSMENT AND

FINDING OF NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (NRC/the Commission) is considering issuance of an exemption from the requirements of Appendix R of 10 CFR 50 to the Power Authority of the State of New York (PASNY/the licensee) for the James A. FitzPatrick Nuclear Power Plant located in Oswego County, New York.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action:

The licensee would be exempted from the requirement of Section III.G.2 of Appendix R to 10 CFR 50 that ventilation-related penetrations in fire barriers separating redundant shutdown-related systems be provided with fire dampers. Specifically, the exemption would apply to three fire dampers located in the floor/ceiling assembly between the screenwell house and safety-related pump houses.

The Need for the Proposed Action

Because of low combustible loadings, a fire in one of these areas would be of low intensity and short duration. Furthermore, safe shutdown could be effected if a fire occurred in the screenwell house or either pump house, because a single fire in any one of these areas would not render

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redundant shutdown systems located in the remaining areas inoperable. Therefore, installation of fire dampers in the floor/ceiling assembly would not enhance the level of fire protection and are unnecessary.

Environmental Impacts of the Proposed Action

The proposed action would not impact the ability to effect safe shutdown of the plant in the event of a fire in the above mentioned areas and would provide an acceptable level of safety, equivalent to that attained by compliance with Section III.G of Appendix R to 10 CFR 50. On this basis, the Commission concludes there are no significant radiological environmental impacts associated with this proposed exemption.

With regard to potential nonradiological impacts, the proposed exemption involves features located entirely within the restricted areas as defined in 10 CFR Part 20. It does not affect nonradiological plant effluents and has no other environmental impact. Therefore, the Commission concludes that there are no significant nonradiological environmental impacts associated with the proposed exemption.

Alternative Use of Resources:

This action involves no use of resources not previously considered in the Final Environmental Statement (construction permit and operating license) for the James A. FitzPatrick Nuclear Power Plant.

Agencies and Persons Consulted:

The NRC staff reviewed the licensee's request and did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

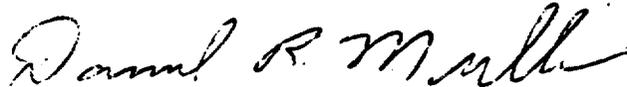
The Commission has determined not to prepare an environmental impact statement for the proposed exemption.

Based upon the foregoing environmental assessment, we conclude that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see the application for exemption dated April 12, 1985 which is available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Penfield Library, State University College of Oswego, Oswego, New York.

Dated at Bethesda, Maryland, this 23rd day of April 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, appearing to read "Daniel R. Muller".

Daniel R. Muller, Director
BWR Project Directorate #2
Division of BWR Licensing

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

POWER AUTHORITY OF THE STATE
OF NEW YORK

(James A. FitzPatrick Nuclear
Power Plant)

Docket No. 50-333

EXEMPTION

I.

The Power Authority of the State of New York (PASNY/the licensee) is the holder of Facility Operating License No. DPR-59 which authorizes the licensee to operate the James A. FitzPatrick Nuclear Power Plant (the facility) at power levels not in excess of 2436 megawatts thermal. The facility is a boiling water reactor (BWR) located at the licensee's site in Oswego County, New York. The license provides, among other things, that it is subject to all rules, regulations and Orders of the Commission now or hereafter in effect.

II.

Section III.G. of Appendix R to 10 CFR 50 requires that one train of cables and equipment necessary to achieve and maintain safe shutdown be maintained free of fire damage by one of the following means:

- a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide a fire resistance equivalent to that required of the barrier;
- b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area, and;

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- c. Enclosure of cables and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

If these conditions are not met, Section III.G.3 requires an alternative shutdown capability independent of the fire area of concern. It also requires that a fixed suppression system be installed in the fire area of concern if it contains a large concentration of cables or other combustibles. These alternative requirements are not deemed to be equivalent. However, they provide equivalent protection for those configurations in which they are accepted.

Because it is not possible to predict the specific conditions under which fires may occur and propagate, the design basis protective features are specified in the rule rather than the design basis fire. Plant specific features may require protection different than the measures specified in Section III.G. In such a case, the licensee must demonstrate, by means of a detailed fire hazards analysis, that existing protection or existing protection in conjunction with proposed modifications will provide a level of safety equivalent to the technical requirements of Section III.G of Appendix R.

In summary, Section III.G is related to fire protection features for ensuring that systems and associated circuits used to achieve and maintain safe shutdown are free of fire damage. Fire protection configurations must either meet the specific requirements of Section III.G, or an alternative fire protection configuration must be justified by a fire hazard analysis.

Our general criteria for accepting an alternative fire protection configuration are the following:

- o The alternative assures that one train of equipment necessary to achieve hot shutdown from either the control room or emergency control stations is free of fire damage.
- o The alternative assures that fire damage to at least one train of equipment necessary to achieve cold shutdown is limited such that it can be repaired within a reasonable time (minor repairs with components stored on-site).
- o Modifications required to meet Section III.G would not enhance fire protection safety above that provided by either existing or proposed alternatives.
- o Modifications required to meet Section III.G would be detrimental to overall facility safety.

By letter dated April 12, 1985, the licensee requested approval for an exemption from the technical requirement of Section III.G.2 of Appendix R to 10 CFR 50 that ventilation penetrations in fire barriers separating redundant shutdown-related systems be provided with fire dampers.

Specifically, the dampers to which this Exemption applies are three dampers (73FD-1, 73FD-2, 73FD-3) located in the floor/ceiling assembly between the screenwell house and safety-related pump houses. The licensee's basis for concluding that these dampers are not required is that the fire-related barriers in which they would be installed have been derated because of low combustible fire loading and resulting low fire severity.

We have evaluated the licensee's requested exemption. Since the fire hazard in the screenwell house and both pump houses is minimal because of low combustible loadings, we find that the installation of a damper in each ventilation opening in the associated fire barriers is not necessary to satisfy our fire protection guidelines. A potential concern we considered in our evaluation was the propagation of smoke and hot gases, beyond the room where the fire originates, to redundant shutdown-related systems in

the adjoining rooms. For a fire originating in the screenwell house, it would be necessary, under this scenario, for the fire to propagate vertically downward. Because smoke and heat from a fire tend to rise and spread laterally, we would not expect this to occur. Also, if a fire were to occur in the screenwell house, shutdown could be achieved using systems in either pump house. In addition, due to the absence of fire dampers in the floor/ceiling assembly between each of the pump houses and the screenwell house, products of combustion from a fire originating in either pump house might spread upward into the screenwell house. However, in this case safe shutdown could be achieved using undamaged systems in the redundant pump house which shares no unprotected common boundaries. On these bases, we conclude that fire dampers are not necessary in the floor/ceiling assemblies and that the licensee's alternate fire protection configuration achieves an acceptable level of safety, equivalent to that attained by compliance with Section III.G. Therefore, we find the exemption from the requirement for installing three fire dampers in the floor/ceiling assembly between the screenwell house and safety-related pump rooms to be justified and acceptable.

III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, this exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The Commission further determines that special circumstances, as provided in 10 CFR 50.12(a)(2)(ii), are present justifying the exemption, namely that application of the regulation in the particular circumstances

would not serve the underlying purpose of the rule and is not necessary to achieve the underlying purpose of the rule - to ensure the ability to effect safe shutdown of the plant. Safe shutdown could be effected if a fire occurred in the screenwell house or either pump house because a single fire in any one of these areas would not render redundant shutdown systems located in the remaining areas inoperable.

Accordingly, the Commission hereby grants an exemption as described in Section II above from Section III.G.2 of Appendix R to 10 CFR 50 to the extent that the installation of three fire dampers (73FD-1, 73FD-2, 73FD-3) in ventilation penetrations in the floor/ceiling assembly between the screenwell house and safety-related pump houses are not required.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this Exemption will have no significant impact on the environment. (April 29, 1986 51 FR 15982)

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert M. Bernero, Director
Division of BWR Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 30th day of April 1986.



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO EXEMPTION REQUEST FROM APPENDIX R TO 10 CFR 50

FACILITY OPERATING LICENSE NO. DPR-59

POWER AUTHORITY OF THE STATE OF NEW YORK

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

Introduction

By letter dated April 12, 1985, the licensee requested approval for an exemption from the technical requirements of Section III.G.2 of Appendix R to 10 CFR 50.

Section III.G.2 of Appendix R requires that one train of cables and equipment necessary to achieve and maintain safe shutdown be maintained free of fire damage by one of the following means:

- a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide a fire resistance equivalent to that required of the barrier;
- b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area, and;
- c. Enclosure of cables and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

If these conditions are not met, Section III.G.3 requires an alternative shutdown capability independent of the fire area of concern. It also requires that a fixed suppression system be installed in the fire area of concern if it contains a large concentration of cables or other combustibles. These alternative requirements are not deemed to be equivalent. However, they provide equivalent protection for those configurations in which they are accepted.

Because it is not possible to predict the specific conditions under which fires may occur and propagate, the design basis protective features are specified in the rule rather than the design basis fire. Plant specific features may require protection different than the measures specified in Section III.G. In such a case, the licensee must demonstrate, by means of a detailed fire hazards analysis, that existing protection or existing protection in conjunction with proposed modifications will provide a level of safety equivalent to the technical requirements of Section III.G of Appendix R.

In summary, Section III.G is related to fire protection features for ensuring that systems and associated circuits used to achieve and maintain safe shutdown are free of fire damage. Fire protection configurations must either meet the specific requirements of Section III.G, or an alternative fire protection configuration must be justified by a fire hazard analysis.

Our general criteria for accepting an alternative fire protection configuration are the following:

- ° The alternative assures that one train of equipment necessary to achieve hot shutdown from either the control room or emergency control stations is free of fire damage.
- ° The alternative assures that fire damage to at least one train of equipment necessary to achieve cold shutdown is limited such that it can be repaired within a reasonable time (minor repairs with components stored on-site).
- ° Modifications required to meet Section III.G would not enhance fire protection safety above that provided by either existing or proposed alternatives.
- ° Modifications required to meet Section III.G would be detrimental to overall facility safety.

Exemption Requested

The licensee requested an exemption from the Technical Requirement of Section III.G.2 to the extent that they require that redundant shutdown-related systems be separated by either 1 or 3-hour fire-rated barriers with ventilation openings protected by fire dampers.

Discussion

As part of an independent assessment conducted of the plant fire protection program, the licensee identified seventeen fire dampers for HVAC-related penetrations of fire barriers that the licensee concludes are not required because "...they will not enhance fire protection...". The location of these dampers are stipulated in the April 12, 1985 letter.

The licensee's basis for concluding that the dampers are not required can be categorized as one or more of the following: (1) the damper would be installed in a fire-rated wall or barrier which has been derated based upon low combustible fire loading and resulting low fire severity; (2) fire dampers are not required in one hour barriers; or, (3) fire-rated barriers separating fire areas that contain components of the same division are not required.

Evaluation (Screen House and Safety-Related Pump Houses)

We had two concerns with the absence of fire dampers between the screen house and the two safety-related pump houses. The first was that an effective fire barrier had not been provided to isolate safety-related systems from significant fire hazards in accordance with the guidelines contained in Appendix A to BTP APCSB 9.5-1. However, the fire hazard in each of these locations is minimal, as described in the above-referenced letter. Therefore,

a fire damper in these barriers is not necessary to satisfy our fire protection guidelines.

Our second concern was that in the event of a fire in any of these areas, smoke and hot gases would propagate beyond the room of origin and damage redundant shutdown-related systems in adjoining areas. However, the licensee has indicated that for this scenario to occur, it would be necessary for fire to propagate vertically downward from the screenwell house. Because smoke and heat from a fire tend to rise and spread laterally, we do not expect this to happen. Due to the absence of fire dampers in the floor/ceiling assembly between each of the pump houses and the screenwell house, products of combustion might spread upward into the screenwell house. However, safe shutdown could still be achieved using undamaged systems in the redundant pump house which shares no unprotected common boundaries. Similarly, if a fire occurs in the screenwell house, shutdown could be achieved using systems in either pump house. On these bases we conclude that fire dampers are not necessary in the floor/ceiling assemblies.

Conclusion (Screen House and Safety-Related Pump House)

Based on our evaluation, we conclude that the licensee's alternate fire protection configuration achieves an acceptable level of safety, equivalent to that attained by compliance with Section III.G. Therefore, the licensee's request for exemption from the requirement for three fire dampers in the floor/ceiling assembly between the screenwell house and safety-related pump rooms should be granted.

Evaluation (Several Plant Locations)

With regard to the remaining fourteen fire dampers identified in the April 12, 1985 exemption request, we were also concerned that the absence of dampers in fire barriers would have an adverse effect on the ability to maintain one safe shutdown division free of fire damage which would conflict with our fire protection guidelines.

For two dampers located in fire barriers which define the perimeter of the cable tunnels, the licensee has indicated that since systems located on both sides of the barrier are of the same shutdown division, fire propagation through the barrier will have no effect on safe shutdown capability. However, the cable tunnels represent a significant fire hazard to the plant because of the presence of cables with combustible cable insulation. Therefore, fire dampers are necessary to satisfy Section D.1(a) of Appendix A to BTP APCSB 9.5-1 which requires that safety systems be isolated from unacceptable fire hazards.

With regard to the remaining twelve dampers, the licensee's approach is based on "down grading" existing multi-hour fire barriers and justifying the absence of fire dampers on the basis of test results and that the National Fire Protection Association does not require fire dampers in 1-hour fire-rated walls. However, this approach negates the basis by which we accepted the fire protection program at Fitzpatrick during our review of the program to the guidelines of Appendix A to BTP APCSB 9.5-1. In addition, since these barriers, as designed, possess a fire rating in excess of 2-hours, NFPA Standard No. 90A requires that fire dampers be installed where HVAC penetrations exist.

Fire tests on 1-hour rated walls with unprotected HVAC duct penetrations were conducted with continuous ducts without air registers. The licensee has not established that the configuration of ducts at Fitzpatrick reflect the tested configuration. Therefore, the results of these tests may not be applicable to this issue.

If fire dampers were not installed in these barriers we would not have reasonable assurance that a fire, if one should occur, would be confined to the room of origin. Because the areas on both sides of the barriers contain redundant shutdown systems, fire may result in damage such that safe shutdown could not be achieved and maintained.

Conclusion (Several Plant Areas)

Based on our evaluation, we conclude that the licensee's alternate fire protection configuration does not achieve an equivalent level of safety to that attained by complying with Section III.G. Therefore, the licensee's request for exemption from the requirement to install fourteen fire dampers should be denied.

Principal Contributor: D. Kubicki

Dated: April 30, 1986