



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

January 5, 1995

*Docket File*

Mr. William J. Cahill, Jr.  
Executive Vice President - Nuclear  
Generation  
Power Authority of the State of  
New York  
123 Main Street  
White Plains, NY 10601

SUBJECT: ISSUANCE OF AN EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50,  
APPENDIX R, SECTION III.G.2 - INDIAN POINT NUCLEAR GENERATING  
UNIT NO. 3 (TAC NO. M88323)

Dear Mr. Cahill:

By letter dated November 30, 1993, as supplemented July 6, 1994, you requested an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.G.2, which specifies requirements to ensure that one train of redundant equipment necessary to achieve and maintain hot shutdown remains free of fire damage.

The Commission, pursuant to 10 CFR 50.12, has granted to Indian Point Nuclear Generating Unit No. 3, the enclosed Exemption from the requirements of 10 CFR Part 50, Appendix R, Paragraphs III.G.2.f, to the extent that the redundant wide-range steam generator water level sensing lines and the redundant pressurizer level sensing lines, located inside containment, need not be separated by noncombustible radiant energy shields. We find that granting the exemption is authorized by law, will not present an undue risk to the public health and safety, is consistent with the common defense and security, and meets the special circumstances described in 10 CFR 50.12(a)(2)(ii), in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule.

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EXEMPTION COPY

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W. Cahill

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January 5, 1995

A copy of the enclosed Exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,



Michael J. Case, Acting Director  
Project Directorate I-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-286

Enclosure: Exemption

cc w/encl: See next page

William J. Cahill, Jr.  
Power Authority of the State  
of New York

Indian Point Nuclear Generating  
Station Unit No. 3

cc:

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Resident Inspector  
Indian Point 3 Nuclear Power Plant  
U.S. Nuclear Regulatory Commission  
P.O. Box 337  
Buchanan, NY 10511

Mr. Gerald C. Goldstein  
Assistant General Counsel  
Power Authority of the State  
of New York  
1633 Broadway  
New York, NY 10019

Mr. Charles W. Jackson  
Manager, Nuclear Safety and  
Licensing  
Consolidated Edison Company  
of New York, Inc.  
Broadway and Bleakley Avenues  
Buchanan, NY 10511

Mr. Robert G. Schoenberger  
First Executive Vice President  
and Chief Operating Officer  
Power Authority of the State  
of New York  
123 Main Street  
White Plains, NY 10601

Mayor, Village of Buchanan  
236 Tate Avenue  
Buchanan, NY 10511

Mr. Leslie M. Hill  
Resident Manager  
Indian Point 3 Nuclear Power Plant  
P.O. Box 215  
Buchanan, NY 10511

Mr. Richard L. Patch, Director  
Quality Assurance  
Power Authority of the State  
of New York  
123 Main Street  
White Plains, NY 10601

Ms. Charlene D. Faison  
Director, Nuclear Licensing  
Power Authority of the State  
of New York  
123 Main Street  
White Plains, NY 10601

Union of Concerned Scientists  
Attn: Mr. Robert D. Pollard  
1616 P Street, NW, Suite 310  
Washington, DC 20036

Ms. Donna Ross  
New York State Energy Office  
2 Empire State Plaza  
16th Floor  
Albany, NY 12223

Charles Donaldson, Esquire  
Assistant Attorney General  
New York Department of Law  
120 Broadway  
New York, NY 10271

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
POWER AUTHORITY OF THE STATE	)	Docket No. 50-286
OF NEW YORK	)	
	)	
(Indian Point Nuclear Generating	)	
Unit No. 3)	)	

EXEMPTION

I.

The Power Authority of the State of New York (the licensee) is the holder of Facility Operating License No. DPR-64, which authorizes operation of the Indian Point Nuclear Generating Unit No. 3 (IP3). The license provides, among other things, that the licensee is subject to all rules, regulations, and orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facility consists of a pressurized water reactor at the licensee's site located in Westchester County, New York.

II.

By letter dated November 30, 1993, as supplemented July 6, 1994, the licensee requested an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.G.2, which specifies requirements to ensure that one train of redundant equipment necessary to achieve and maintain hot shutdown remains free of fire damage. Specifically, the licensee requested an exemption from Section III.G.2.f such that the redundant wide-range steam

generator water level sensing lines and the redundant pressurizer level sensing lines, located inside containment, need not be separated by noncombustible radiant energy shields.

The steam generator water level and the pressurizer water level are parameters needed to achieve and maintain safe shutdown following a fire. The wide-range steam generator water level sensing lines and the pressurizer level sensing lines transmit pressure changes from the steam generator and the pressurizer to their respective pressure transmitters.

The redundant wide-range steam generator sensing lines are routed within 20 feet of each other at elevation 48'-0" (Fire Zone 70A). The lines run vertically along a wall from elevation 48'-0" to their respective transmitters, which are located in a common instrument rack at elevation 68'-0" (Fire Zone 70A). At this point, the sensing lines are separated by about 2 feet. The three redundant pressurizer level sensing lines are spaced about 8 feet apart at elevation 117'-0" (Fire Zone 86A). From here the lines are routed down the outside of the concrete structure surrounding the pressurizer. At elevation 95'-0" (Fire Zone 86A) the lines penetrate the floor and continue down the inside of the crane wall to the elevation of their respective low level sensing lines. At this point, each reference leg is paired with its variable leg. The redundant lines then run in opposite directions along the inside of the crane wall until they penetrate the wall at approximately the 65'-0" elevation (Fire Zone 70A). The sensing lines enter a common instrument rack on elevation 68'-0" (Fire Zone 87A).

The cables inside containment are rubber insulated with a glass/asbestos braided jacket. As reported in a fire test that was transmitted to the NRC by

letter dated November 22, 1982, and accepted in NRC Safety Evaluation dated February 2, 1984, the cables will not propagate a fire to any significant degree.

Fire detection inside containment in Fire Zones 70A, 77A, and 71A at elevation 68'-0" includes four photo electric smoke detectors, one mounted above each reactor coolant pump. Fire suppression at this elevation includes nine carbon dioxide extinguishers and three water hose stations. In Fire Zones 70A and 71A, at elevation 46 feet, there are four water hoses, five carbon dioxide extinguishers, and three photoelectric smoke detectors located in the penetration area.

Section III.G.2 of Appendix R to 10 CFR Part 50 provides options for the protection of cables and equipment and associated nonsafety circuits of redundant trains located inside noninerted containments. Certain segments of the wide-range steam generator water level sensing lines and the pressurizer level sensing lines are not provided with the level of fire protection required by Section III.G.2 of Appendix R to 10 CFR Part 50. The licensee has requested an exemption from Section III.G.2.f which specifies that such equipment be separated by a noncombustible radiant energy shield.

### III.

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health and safety, and are consistent with the common defense and security and (2) when special circumstances are present as set forth in 10 CFR 50.12(a)(2).

The staff was concerned that the lack of radiant energy shields between these redundant trains of instrument sensing lines could result in erroneous pressurizer or steam generator level indications in the event of a fire. The wide-range steam generator sensing lines are routed within 20 feet of each other starting at elevation 48'-0" (Fire Zone 70A) up into the transmitter at elevation 68'-0" (Fire Zone 70A). With the exception of reactor coolant pump lube oil (discussed below), the maximum fire severity of the in-situ combustibles located within 20 feet of the wide-range steam generator sensing lines is less than 6 minutes. A fire involving these combustibles would be of limited magnitude and extent. In addition, the smoke and hot gases from the fire would be directed upwards into the higher elevations of the containment and away from the sensing lines. Therefore, the staff does not believe that these in-situ combustibles present a threat to the sensing lines. A transient combustible fire appears to be the only type of fire that could directly expose the wide-range steam generator lines, because transient combustibles can only be placed in the vicinity of the lines at the instrument rack where they converge (Instrument Rack 21). The licensee has addressed this potential transient fire exposure by providing a radiant energy shield in the front of the instrument rack that will protect one channel of steam generator wide-level instrumentation from a floor-based transient combustible fire at elevation 68'-0".

The three pressurizer sensing lines are spaced approximately 8 feet apart from their initiation point at elevation 117'-0" (Fire Zone 86 A) down the outside of the concrete structure surrounding the pressurizer down to the 95'-0" level. After penetrating the 95'-0" level (Fire Zone 86A) they are

routed down the inside of the crane wall (Fire Zone 70A) to the elevation of their respective low-level sensing lines. The reference leg is paired with its variable leg. The redundant lines then run in opposite directions along the inside of the crane wall until they penetrate the wall at about the 65'-0" elevation (Fire Zone 70A). Their route is terminated upon entering a common instrument rack (Fire Zone 87A).

A fire involving the cables in the vicinity of the pressurizer sensing lines could expose the sensing lines to elevated temperatures. However, it is expected that a cable fire in the vicinity of the sensing lines will not damage the sensing lines because of the large open containment and the limited potential for flame propagation along the cables.

Each of the four reactor coolant pumps is provided with a seismically designed oil collection system that collects oil from pressurized and unpressurized oil leakage sites from the reactor coolant pump lube oil system. This provides reasonable assurance that a lube oil leak will be contained by the oil collection system. The oil collection system should prevent escaping oil from reaching potential hot surfaces which will significantly reduce the probability of a fire.

Fire detection and manual fire suppression is available in the vicinity of the sensing lines. In the event of a fire, it is expected that the detector will alarm and the fire brigade will respond to extinguish the fire in its incipient stages.

On the basis of its evaluation, the NRC staff concludes that a postulated fire in the vicinity of the redundant wide-range steam generator water level sensing lines and the redundant pressurizer level sensing lines in containment



Fire Zones 70A, 77A, and 86A would not prevent the operators from achieving and maintaining safe shutdown. The NRC staff also concludes that the level of fire protection provided for the wide-range steam generator water level sensing lines and the pressurizer level sensing lines is adequate and that the lack of radiant energy shields is an acceptable exemption from the technical requirements of Section III.G.2.f of Appendix R to 10 CFR Part 50.

In summary, the licensee has established that special circumstances are present. The exemption request satisfies the criteria of 10 CFR 50.12

(a)(2)(ii) as follows: The underlying purpose of the rule is to ensure that safe shutdown can occur notwithstanding the possibility of a fire.

Application of the rule is not necessary to achieve the underlying purpose because with respect to the possibility of a fire affecting safe shutdown, (1) the fixed combustible loading in containment is insignificant and the location of the sensing lines are remote from the fixed combustibles that do exist; (2) automatic smoke detectors are installed above each of the reactor coolant pumps; (3) personnel access to the containment is restricted during power operations, thus, the potential for transient combustible material to accumulate is low; (4) the inherent fire retardant properties of the power cables used in containment would minimize fire propagation; and, (5) the effects of a fire inside containment are bounded by the worst case loss-of-coolant accident analysis, thus safe shutdown would be achievable.

#### IV.

Accordingly, the Commission has determined, pursuant to 10 CFR 50.12, that (1) the Exemption as described in Section III is authorized by law, will not endanger life or property, and is otherwise in the public interest and

(2) special circumstances exist pursuant to 10 CFR 50.12(a)(2)(ii).

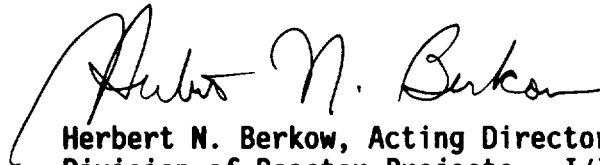
Therefore, the Commission hereby grants the following Exemption:

- (1) The Power Authority of the State of New York is exempt from the requirement of 10 CFR Part 50, Appendix J, Section III.G.2.f, to the extent that the redundant wide-range steam generator water level sensing lines and the redundant pressurizer level sensing lines, located inside containment, need not be separated by noncombustible radiant energy shields.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this Exemption will have no significant impact on the quality of the human environment (59 FR 11810).

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Acting Director  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,  
this 5th day of January 1995

(2) special circumstances exist pursuant to 10 CFR 50.12(a)(2)(ii).

Therefore, the Commission hereby grants the following Exemption:

- (1) The Power Authority of the State of New York is exempt from the requirement of 10 CFR Part 50, Appendix J, Section III.G.2.f, to the extent that the redundant wide-range steam generator water level sensing lines and the redundant pressurizer level sensing lines, located inside containment, need not be separated by noncombustible radiant energy shields.

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This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

ORIGINAL SIGNED BY:

Herbert N. Berkow, Acting Director  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,  
this 5th day of January 1995

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\*See previous concurrence

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A copy of the enclosed Exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by:

Michael J. Case, Acting Director  
Project Directorate I-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-286

Enclosure: Exemption

cc w/encl: See next page

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