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January 10, 1986

Re: Indian Point Unit No. 2
Docket No. 50-247

Mr. Hugh L. Thompson, Jr., Director
Division of PWR Licensing - A
Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Thompson:

The Attachments to this letter respond to a request for clarification regarding our pending Appendix R exemption on HVAC exhaust fans as discussed with members of your staff on September 6, 1985.

If you or your staff have any questions on this matter, please contact us.

Very truly yours,



cc: Office of Senior Resident Inspector
U. S. Nuclear Regulatory Commission
P. O. Box 38
Buchanan, New York 10511

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ATTACHMENT A

Clarification of HVAC Exhaust Fan Exemption

Consolidated Edison Company of New York, Inc.
January 1986

On July 13, 1983 we requested an exemption from Appendix R Section III.G requirements regarding the HVAC exhaust fans in the Primary Auxiliary Building (PAB) and the Auxiliary Feedwater Pump (AFP) room on the basis that there is sufficient time to establish compensatory measures to provide cooling for certain safe shutdown equipment. The exemption request is supported by room cooling analysis conservatively assuming the loss of HVAC in the PAB and AFP room. This analysis was made because the HVAC circuits do not meet the separation requirements of Section III.G.2 of Appendix R to 10 CFR 50. It shows that under worst case assumptions, there would be over one hour to establish portable room cooling in the PAB for the running Charging Pump and subsequently for the Residual Heat Removal Pump. For the AFP room, the analysis shows that there are over eight (8) hours before the roll-up door to outdoors would have to be opened for room cooling. We sought an exemption from Section III.G.2 separation requirements by providing portable exhaust fans powered by the security power system. This power system supplies perimeter lighting and is backed up by its own diesel generator. We have provided an on site portable exhaust blower, temporary duct (elephants trunk), extension cable and the necessary permanent power hookup adaptors to the perimeter lighting, and a lighting system activating switch. The alternate safe shutdown control procedure and operator training have been revised to include the provisions for providing portable HVAC in the PAB as well as opening the roll-up door in the AFP room.

During discussions with members of the NRC staff we were informed that providing a portable exhaust blower and opening the roll-up door are considered alternative shutdown capability, and accordingly fall under the requirements of Section III.G.3 of Appendix R. Thus, our pending exemption from Section III.G.2 would have to be clarified to properly cover an exemption under Section III.G.3. Section III.G.3 would require fixed detection and suppression in every room, area or zone in which PAB and AFP room HVAC circuits are contained, and are circumvented by using a portable exhaust blower or opening the roll-up door.

We have evaluated the fire zones where PAB or AFP room HVAC power circuits are routed and found that, in most cases, an exemption of the fixed detection and suppression requirement of Section III.G.3 was sought and has already been granted by the NRC. In the remaining zones, either an exemption from Section III.G.2 has already been granted or our fire hazards analysis shows that the lack of either fixed detection or suppression, or both, does not enhance fire protection safety in the plant. Hence, our pending exemption, which would allow using a portable exhaust blower and opening the roll-up door in lieu of separating circuits per Section III.G.2 in the affected fire zones, can also apply to the exemption from Section III.G.3 requirements, with the same technical basis.

Tables A-1 and A-2 provide the results of the detailed evaluation for the PAB and AFP room. HVAC circuits for the PAB and AFP room are contained in many of the same fire zones that are already circumvented by our Alternate Safe Shutdown System (ASSS). In those fire zones where

exemptions from Section III.G.3 have already been granted, the basis for the exemption is the same and is not repeated here. Accordingly, we refer you to our earlier submittals. Our evaluation of these zones shows that the basis for the exemption is unaffected by the inclusion of the HVAC circuits within their scope. For the fire zones that are not covered by existing exemptions from Section III.G.3 or Section III.G.2, their fire hazards analyses are contained in the Attachments to Tables A-1 and A-2.

TABLE A-1

FIRE DETECTION AND SUPPRESSION IN ZONES THAT ARE
CIRCUMVENTED BY HVAC ALTERNATE SHUTDOWN CAPABILITY FOR
THE PRIMARY AUXILIARY BUILDING

<u>Zone</u>	<u>Description</u>	<u>Fire Detection</u>	<u>Fire Suppression/Hose Stations</u>	<u>Exemption Request*</u>	<u>Comments</u>
1A	Electrical and Piping Tunnel	Ionization smoke detectors	Hose station in zone and in nearby zones	4.2(III.G.3.b)	Exemption Granted
2A	Primary water makeup pump room	Ionization smoke detectors	Hose stations in nearby zones	4.3(III.G.3.b)	Exemption Granted
7A	Corridor-PAB elev. 80'	Ionization smoke detectors	Hose stations in zone and in nearby zones	4.6(III.G.2.b)	See Attachment 1A
11	Cable Spreading Room	Ionization smoke detectors	Fixed manual Halon system in zone and hose stations in nearby zones	None	None
14	Switchgear Room	Ionization smoke detectors	Hose stations in nearby zones	4.8(III.G.3.b)	Exemption Granted
27A	Corridor-PAB elev. 98'	Ionization smoke detectors	Hose stations in zone and in nearby zones	None	See Attachment 1B
32A	Electrical Tunnel	Ionization smoke detectors and temperature sensor detectors	Water spray system and hose stations in nearby zones	None	None
59A	Ventilation Systems	Heat detectors for charcoal filters	Deluge system (manual mode) for the PAB and Containment charcoal filters	None	See Attachment 1C

Notes:

*The exemption request referenced is from our January 10, 1983 submittal

TABLE A-2

FIRE DETECTION AND SUPPRESSION IN ZONES THAT ARE
CIRCUMVENTED BY HVAC ALTERNATE SHUTDOWN CAPABILITY FOR
THE AUXILIARY FEEDPUMP ROOM

<u>Zone</u>	<u>Description</u>	<u>Fire Detection</u>	<u>Fire Suppression/Hose Stations</u>	<u>Exemption Request</u>	<u>Comments</u>
1A	Electrical and Piping Tunnel	Ionization smoke detectors	Hose station in zone and in nearby zones	4.2(III.G.3.b)	Exemption Granted
2	Containment Spray pump room	Ionization smoke detectors	Hose stations in nearby zones	4.3(III.G.3.b)	Exemption Granted
2A	Primary water makeup pump room	Ionization smoke detectors	Hose stations in nearby zones	4.3(III.G.3.b)	Exemption Granted
7A	Corridor-PAB elev. 80'	Ionization smoke detectors	Hose stations in zone and in nearby zones	4.6(III.G.2.b)	See Attachment 1A
11	Cable Spreading Room	Ionization smoke detectors	Fixed manual Halon system in zone and hose stations in nearby zones	None	None
14	Switchgear Room	Ionization smoke detectors	Hose stations in nearby zones	4.8(III.G.3.b)	Exemption Granted
23	AFP Room	Ionization smoke detectors	Hose stations in nearby zones and hydrant in yard	4.12(III.G.2.c)	See Attachment 1D
27A	Corridor-PAB elev. 98'	Ionization smoke detectors	Hose stations in zone and in nearby zones	None	See Attachment 1B

TABLE A-2

FIRE DETECTION AND SUPPRESSION IN ZONES THAT ARE
CIRCUMVENTED BY HVAC ALTERNATE SHUTDOWN CAPABILITY FOR
THE AUXILIARY FEEDPUMP ROOM

<u>Zone</u>	<u>Description</u>	<u>Fire Detection</u>	<u>Fire Suppression/Hose Stations</u>	<u>Exemption Request</u>	<u>Comments</u>
32A	Electrical Tunnel	Ionization smoke detectors and temperature sensor detectors	Water spray system and hose stations in zone	None	None
60A	Chemical Addition Area	None	Hydrants within 100 feet of zone	None	See Attachment 1E
65A	Main Steam and Feedwater Valve Area	None	Hydrant with 50 feet of zone	None	See Attachment 1F
74A	Electrical Penetration Area	Ionization smoke detectors	Hose stations in nearby zones	4.13(III.G.3.b)	Exemption Granted

Attachment 1A

Clarification of Exemption Request 4.6 for Fire
Zone 7A - (PAB elev. 80 ft. Corridor)

January 1986

In our January 10, 1983 submittal, we requested an exemption from Section III.G.2.b due to the lack of a 3-hour fire barrier separating redundant normal and alternate shutdown components in this fire zone. Penetrations were sealed and a 1-1/2 hour rated roll-up fire door between charging pump room (zone 5) and this zone (zone 7A) was installed to provide adequate separation of normal (pump 21) and alternate (pump 23) RCS makeup functions. The NRC accepted this configuration in approving our exemption from Section III.G.2.b as providing an acceptable level of fire protection equivalent to that provided by Section III.G. Since HVAC power circuits are routed in this zone and it is circumvented by use of a portable blower, we would need an exemption from Section III.G.3.b as well as Section III.G.2.b.

It should be noted that, in their review, the NRC was also concerned that the zone did not have a fixed fire suppression system nor appropriate fire barriers. On the basis of our fire hazards analysis for this zone, as summarized below, and our Alternate Safe Shutdown System (ASSS), the NRC concluded that an automatic fire suppression system was not necessary (see NRC letter of October 16, 1984). Hence, this zone has already been reviewed and approved for lack of fixed automatic fire suppression and this review is directly applicable to Section III.G.3.b requirements.

Zone 7A is a large open area containing miscellaneous plant equipment such as air receiver tanks, nitrogen bottles and radiation protection clothing as well as safety related components such as component cooling water heat exchangers, ASSS power feeds and transfer switches to charging pump 23, component cooling pump 23 and to transfer switch EDG-1 (for RHR pump 21). The fire load in this zone is low. Accessibility is limited in these locations. The quantity of transient combustibles that would be present at any time is not large and would, therefore, not constitute a significant fire hazard. It is not expected that a fire of considerable magnitude or duration would occur. The presence of smoke detectors in this area would permit a fire to be detected in its initial stages before significant damage occurred. If such a fire damaged shutdown-related systems before the arrival of the plant fire brigade, an alternate capability exists to achieve safe shutdown which is physically and electrically independent of the fire area. The charging pump 21 room (zone 5) is bounded by concrete walls, with all penetrations in the common wall with the corridor sealed to prevent fire propagation including a fire door which precludes passage of flame and hot gases. This makes zone 5 its own fire area (area C) as discussed in our May 23, 1985 submittal. If a fire occurred in either zone 7A or 5, no significant damage would be sustained in the other zone. Safe shutdown is achieved for a fire in zone 7A by using the normal power feeds to charging pump 21 in fire area C. Thus, with the fire protection and separation of normal and alternate shutdown capability provided in zone 7A, an automatic fire suppression system is not necessary.

Attachment 1B

Fire Hazards Analysis for Fire Zone 27A -
(PAB elev. 98 ft. Corridor)

January 1986

FIRE ZONE:	27A-CORRIDOR
Fire Area:	F
Building:	Primary Auxiliary
Elevation:	98'
Safety Related:	Yes
Construction/Boundaries	
North Wall:	Metal Sandwich Panel and concrete/zones 24A, 25A, 22A, 21A, 20A
East Wall:	Metal Sandwich Panel and exterior double door/exterior
South Wall:	Metal Sandwich Panel and concrete/zones 26A, 28A, 33A
West Wall:	Concrete and door/exterior
Ceiling:	Concrete and metal deck/exterior
Floor:	Concrete, grating, open stairwell/zones 7A, 8, 7, 6
Fire Detection:	Ionization type smoke detectors.
Fire Protection:	Hose stations at east and west ends of the zone. Carbon dioxide extinguishers in the zone.
Emergency Lighting (III.J of Appendix R):	EL-37, EL-37A, EL-38, EL-39
Safety Related Components:	Motor Control Center Nos. 26A and 26B (feed for motor operated safety related valves) and wiring for motor operated valves. Component Cooling Heat Exchangers.
Required Safe Shutdown Components:	Component cooling heat exchangers; but damage due to fire in this area is not credible.

Combustible Loading:	Step-off pad (11), zone 33A combustibles and assumed miscellaneous transient combustibles (wood, paper, plastic and lubricants) having a heat release content of 190,000 BTUs.
Total Combustibles, BTU:	5.4E06
Area, Sq. Ft.:	5,450
Fire Hazard, BTU/Sq. Ft.:	989
Fire Loading:	Low

This zone is a large open area interfacing with several other fire zones. The fire load in this zone is low. A fire of significant magnitude and duration is not expected to occur. The zone is inside the controlled area. Accessibility is, therefore, limited and there would not be large quantities of transient combustibles. A postulated fire would involve combustibles in the storage area (zone 33A) and possible ignition of miscellaneous combustibles in the corridor. Smoke and heat would be generated and possible fire damage to the roof of the building may occur. Such a postulated fire could not cause damage to the component cooling heat exchangers which are required for safe shutdown. The smoke detectors in this area would permit detection of a fire in its initial stages, allowing prompt response by the fire brigade. Due to the low fire loading and the substantial mechanical construction of the component cooling heat exchangers, as well as the large distance separating them from the storage area (zone 33A), fire damage to these safe shutdown components is not credible. Susceptability of mechanical components to fire damage is discussed in Attachment 3 of our May 23, 1985 submittal. Thus, there would be no effect on safe shutdown by the fire or by the water used for fire fighting. Also, the ASSS would be unaffected by a fire in zone 27A. Given the level of fire protection and separation in this zone, an automatic fire suppression system is not necessary.

Attachment 1C

Fire Hazards Analysis for Fire Zone 59A -
(Fan House elev. 72ft., 80ft., 92ft.)

January 1986

FIRE ZONE:	59A-PAB, FSB AND CONTAINMENT VENTILATION SYSTEMS
Fire Area:	F
Building:	Fan House
Elevation:	72', 80' and 92'
Safety Related:	Yes
Construction/Boundaries	
North Wall:	3'-6" concrete, 8" concrete block, duct and louvered openings to outside/containment and exterior
East Wall:	8" concrete block/zones 91A and 90A (FSB)
South Wall:	1'-6" concrete Elev. 80', 8" concrete block above and a double door to PAB/exterior and zone 7A
West Wall:	8" concrete block, louvered opening and pedestrian door/exterior
Ceiling:	Metal decking/exterior
Floor:	1'-0" concrete/zone 1A
Fire Detection:	Thermister wire for the Charcoal Filters.
Fire Protection:	Deluge Systems for the PAB and Containment Charcoal Filters. Carbon dioxide extinguishers in the zone. Hose station located in nearby zones. Yard Hydrants located outside the building within 150 feet.
Emergency Lighting (III.J of Appendix R):	EL-41, EL-42, EL-43, EL-44
Safety Related Components:	Charcoal Filters, Containment Penetration Cooling Fans

Required Safe Shutdown
Components:

Pneumatic instrumentation used
for shutdown with the ASSS (steam
generator level, pressurizer
level, and pressure), and ASSS
readout of SRM, T_H and T_C.

Combustible Loading:

Cable Insulation, Transient Type
3*, Charcoal Filters:

Containment Purge(16,000 lbs.)
Containment Press. Relief(380 lbs.)
Primary Aux. Bldg. (17,700 lbs.)
Fuel Storage Bldg. (840 lbs.)

Total Combustibles, BTU:

4.73E08

Area, Sq. Ft.:

1,400

Fire Hazard, BTU/Sq. Ft.:

338,000

Fire Loading:

High

Evaluation of Appendix R
(Section III.G)
Separation Criteria:

- o Exemption request 4.2 in
the January 10, 1983 submittal
addresses separation of normal
shutdown instrumentation from
this zone.
- o ASSS cable for Source Range
Monitor, Hot leg temperature
and Cold leg temperature is
routed to instruments in this
zone.
- o The floor/wall between zones
59A and 1A has been upgraded
to a three hour rated barrier.

The major combustible in this zone is the charcoal in the charcoal filter units which are protected by fixed suppression and detection. Section III.G.3 of Appendix R would require area-wide suppression. The high fire hazard (charcoal) is adequately protected, thereby limiting the potential for fire damage to other components. A fire involving one or more of the charcoal filters would not affect safe shutdown. If the ASSS components were to be damaged by fire in this zone, the corresponding normal components in zone 1A would be available since the interface zone 59A and 1A is a 3-hour barrier. Thus, with the fire protection and separation of normal and alternate shutdown capability provided in this zone, an automatic area-wide fire suppression system is not necessary.

Notes:

- * Transient Type 3 consists of assumed large amounts of miscellaneous combustibles (wood, paper, plastic, lubricants) having a heat release content of 439,000 BTUs.

Attachment 1D

Clarification of Exemption Request 4.12 for Fire
Zone 23 - (AFP room)

January 1986

In our January 10, 1983 submittal we requested an exemption from Section III.G.2.c due to the lack of an enclosure of cable and equipment of one redundant train in a fire barrier having a one-hour rating and an automatic fire suppression system in this zone. A non-combustible partial separation barrier was installed between motor-driven auxiliary feedwater pumps 21 and 23 and the power feed conduit from pump 23 box to the floor was provided with a thermal wrap. The NRC accepted this configuration in approving our exemption from Section III.G.2.c as providing an acceptable level of fire protection equivalent to that provided by Section III.G. Since HVAC power circuits are routed in this zone and they are circumvented by opening the roll-up door we would need an exemption from Section III.G.3.b as well as Section III.G.2.c. However, since part of Section III.G.2.c requires an automatic suppression system and we have an approved exemption from this requirement, this approval is directly applicable to Section III.G.3.b requirements for fixed suppression.

The fire load in this room is low. Combustible materials are widely dispersed. Since accessibility is limited in this location, the quantity of transient combustibles that would be present at any time would not be large and would, therefore, not constitute a significant fire hazard. Consequently, if a fire were to occur, it would not be expected to be of significant magnitude or duration.

The smoke detectors in this room would permit detection of a fire in its initial stages before significant damage can occur. The fire brigade would then respond and extinguish the fire using manual firefighting equipment. Until the fire brigade arrives, one shutdown-related division would be protected by the non-combustible partial separation barrier which protects the pump-motor assembly from radiant heat from a fire, while the cable/conduit wrap would protect the shutdown-related circuits from radiant energy and elevated air temperatures. Therefore, no loss of safety function is expected and installation of an automatic fire suppression system is not necessary.

Attachment 1E

Fire Hazards Analysis for Fire Zone 60A -
(Chemical Addition Area)

January 1986

FIRE ZONE:	60A - CHEMICAL ADDITION AREA
Fire Area:	K
Building:	Auxiliary Feed Pump Building
Elevation:	32'-6"
Safety Related:	Yes
Construction/Boundaries	
North Wall:	Concrete/zone 61A
East Wall:	Concrete/containment
South Wall:	Concrete/zone 74A
West Wall:	Concrete/exterior
Ceiling:	Concrete/zone 65A
Floor:	Concrete/zone 23
Fire Detection:	None
Fire Protection:	Two hydrants located within 100' of the building. Carbon dioxide extinguisher in the zone.
Emergency Lighting (III.J of Appendix R):	NA
Safety Related: Components:	Electric cable (power and control) for Atmospheric Relief Valves and AFW Regulator Valves, and control of AFW pumps.
Required Safe Shutdown Components:	None
Combustible Loading:	Transient Type 2*
Total Combustibles, BTU:	190,000
Area, Sq. Ft.:	1,210
Fire Hazard, BTU/Sq. Ft.:	157
Fire Loading:	Low

Note

* Transient type 2 consists of assumed moderate amounts of combustibles with a BTU input from wood, paper, plastic and lubricants having a content of 190,000 BTUs

The fire load in the this area is low. A fire of significant magnitude and duration is not expected to occur. Shutdown is accomplished by controlling regulator valves locally in zone 23 using backup nitrogen bottle supply. Zone 23 is separated from zone 60A by a 3-hour barrier (ceiling) and penetrations are sealed. The AFW pump could be powered from its normal power supply (underground feed into zone 23) or ASSS power feed. Thus, with the fire protection and separation of normal and alternate shutdown capability provided in this zone, automatic fire suppression and detection systems are not necessary.

Attachment 1F

Fire Hazards Analysis for Fire Zone 65A -
(Main Steam and Feedwater Valve Area)

January 1986

FIRE ZONE:	65A - MAINSTEAM AND FEEDWATER VALVE AREA
Fire Area:	K
Building:	Auxiliary Feedwater Building
Elevation:	43', 65' and 74'
Safety Related:	Yes
Construction/Boundaries	
North Wall:	Open to piping enclosure
East Wall:	Containment Wall - concrete/containment
South Wall:	Metal Sandwich Panel
West Wall:	4'-0" conc. to Elev. 80', Metal Sandwich Panel above.
Ceiling:	Metal decking (Elev. 90')
Floor:	1'-0" and 2'-0" concrete at Elev. 43', metal platform at Elev. 65' and 74'
Fire Detection:	None
Fire Protection:	Hydrant No. 25 located 50 feet from the south door. Carbon dioxide extinguisher located in a nearby zone.
Emergency Lighting (III.J of Appendix R)	EL-20, EL-21, EL-21A, EL-22, EL-22A, EL-22B, EL-22C, EL-22D, EL-22E, EL-22F, EL-23
Safety Related Components:	Elev. 43': Main Feedwater Stop and Check Valves. Electric cables for AFW regulator valves. Elev. 65': Main Steam Stop Valves, Atmospheric Relief Valves and Safety Valves for Steam Generators Nos. 21 and 22. Electric cables for remote operated valves.

Elev. 74': Main Steam Stop Valves, Atmospheric Relief Valves and Safety Valves for Steam Generators Nos. 23 and 24. Electric cables for remote operated valves.

Required Safe Shutdown Components:

S.G. safety valves, and cables for AFW regulator valves. The AFW regulator valves may be operated locally in zone 23. Damage to the safety relief valves is not credible. Although not essential for safe shutdown, decay heat can also be removed via the atmospheric relief valves.

Combustible Loading:

Transient Type 2

Total Combustibles, BTU:

190,000

Area, Sq. Ft.:

1,210

Fire Hazard, BTU/Sq. Ft.:

157

Fire Loading:

Low

The fire load in this zone is low. A fire of significant magnitude and duration is not expected to occur. Shutdown is accomplished by controlling AFW regulator valves locally in zone 23 using backup nitrogen bottle supply. Zone 65A is separated from zone 23 by other fire zones and a 3-hour barrier with zone 23 penetrations sealed. The AFP can be powered from its normal power supply (underground feed into zone 23) or ASSS power feed. The steam generator safety valves which are relied on for hot shutdown are of substantial mechanical construction and not susceptible to fire damage. Susceptibility of mechanical components to fire damage is discussed in Attachment 3 of our May 23, 1985 submittal. Thus, with the fire protection and inherent fire resistance of components in the zone and the separation of normal and alternate shutdown capability, automatic fire suppression and detection systems are not necessary.