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August 10, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Zion Station Units 1 and 2
Fire Protection
NRC Docket Nos. 50-295 and 50-304

Reference (a): July 30, 1982, letter from
F. G. Lentine to H. R. Denton.

Dear Mr. Denton:

Reference (a) provided Commonwealth Edison's response on associated circuits related to Zion Station's post fire shutdown capability. That report contained several requests for exemption from the provisions of 10 CFR 50, Appendix R, Section III.G.2. In order to assist you in your review, we have extracted those requests from the various sections of the report and compiled them in a single list. That list is provided in the Attachment to this letter.

Three (3) copies of this letter and the Attachment are provided for your use.

Please address questions regarding this matter to this office.

Very truly yours,

F. G. Lentine

F. G. Lentine
Nuclear Licensing Administrator

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Attachment

4716N

Book

List of Requested Exemptions

1. Section 2.1.2.1. Exemption from Section III.G of 10 CFR 50, Appendix R for cabling associated with the auxiliary feedwater flow indication in fire area 11.4-0.

Based on:

- a. Cable 45874 is separated from other flow indication channel cables in this area by at least 20 feet. This separation includes an elevator with two-hour rated fire walls.
- b. Fire area 11.4-0 has smoke detectors installed in the area of safety-related cable trays which are located in the area near cable 45874 and the other cables listed in Subsection 2.1.2.1.a. A charcoal absorber bank surrounded by partial concrete walls is located 80 feet from cable 45874 and 80 feet from the other three cables and is protected with an automatic sprinkler system. Two hundred forty gallons of oil in small containers are in an approved enclosed metal storage cabinet located 60 feet from cable 45874 and 60 feet from the other three cables with intervening walls between the cabinet and the cables. There is a fire detector over this storage cabinet.
- c. Fire area 11.4-0 is a limited access area.
- d. Fire area 11.4-0 is equipped with four manual hose stations and thirteen portable fire extinguishers.

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2. Section 3.1.2.5(2). The 480V motor control center feeds are not separated by a three-hour fire rated wall. An exemption is requested for MCC power feeds in fire area 11.2-0 to Section III.G of 10 CFR 50, Appendix R based on the following:
 - a. The minimum horizontal separation of the power feeds to the Division 18 MCC's and Division 19 MCC's is 37 feet.
 - b. The minimum horizontal separation between a Division 18 MCC (1383A) and a Division 19 MCC (1393A) is 56 feet.
 - c. The fire loading in the area is 13,000 BTU/ft² and consists of 32,600 pounds of cable insulation and a transient load.
 - d. Portable fire extinguishers and manual hose stations are located within the area.

3. Section 3.7.2.1. In areas 11.2-0, 11.3-0, and zones 18.4A-0, 18.4B-0, redundant service water system cables required for safe shutdown are not separated by a three-hour fire barrier. An exemption is requested to Section III.G of 10 CFR 50, Appendix R, based on the following:
 - a. All four fire areas are limited access areas.
 - b. All four fire areas are equipped with portable fire extinguishers and manual hose stations.
 - c. Fire area 11.2-0 has ionization detectors located over the waste gas compressors, the component cooling pumps, and in the area of safety related cable trays. There

is a low fire loading (13,000 BTU/ft²). The combustibles in the area consist only of cable insulation and a transient load.

- d. Fire area 11.3-0 has a low fire loading (6,700 BUT/ft²). Smoke detectors are installed above the remote shutdown panels and the auxiliary feedwater pumps. An automatic CO₂ puff Fire Suppression system is installed over the auxiliary feedwater pumps. The combustibles in the area consist only of 22 gallons of lube oil, cable insulation, and a transient load.
- e. Fire zone 18.4A-0, Crib House Outer Room, has a low fire loading (7,500 BTU/ft²). Smoke detectors are installed over safety related cable trays. The combustibles in this zone consist only of 378 gallons of lube oil, cable insulation, and a transient load. The separation between cables for pumps 1B and 2B is 67 feet.
- f. For fire zone 18.4B-0, Crib House Inner Room, there are smoke detectors, an automatic water suppression system over the Diesel-Driven fire pumps, portable fire extinguishers, and manual hose stations. The fire loading is low (16,400 BTU/ft²). The combustibles in the zone consist only of 13 gallons of lube oil, 250 gallons of diesel fuel oil, cable insulation, and a transient load.

- 4. Section 3.8.2.1(2). An exemption is requested to Section III.G of 10 CFR 50, Appendix R, based on the following for the five component cooling pumps located in fire area 11.2-0:

ZION 1

- a. Fire area 11.2-0 is a limited access area.
 - b. Area 11.2-0 is equipped with five portable fire extinguishers and four manual hose stations. Portable ventilation equipment is available.
 - c. Area 11.2-0 has ionization detectors located over the waste gas compressors, the component cooling pumps, and in the area of safety-related trays. The low fire loading is only 13,000 BTU/ft². The combustibles in the area consist only of cable insulation and a transient load.
 - d. There is an automatic overlapping CO₂ fire suppression system over the five component cooling pumps.
5. Section 3.9.2.1. An exemption to Section III.G of 10 CFR 50, Appendix R, is requested as the centrifugal charging pump power cables necessary for plant shutdown are not separated by three-hour fire barriers. This exemption is based on the following:
- a. In fire area 11.2-0, the power cables for the charging pump, auxiliary lube oil pumps, and the room unit coolers are separated by 93 feet. The combustibles in the area consist of cable with a fire loading of 13,000 BTU/ft².
 - b. In fire area 11.3-0, the power cables for the centrifugal pumps are separated by at least 22 feet and are around the corner of a concrete wall from each other. The power cable for their auxiliary lube oil pumps and room coolers are separated by at least 25 feet and around the corner of a concrete wall from each other. The combustibles

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in the area consist of 22 gallons of lube oil resulting in a fire loading of only 6,700 BTU/ft². The separation distance together with the configuration of the intervening space provides adequate separation for the redundant pumps and their auxiliaries.

- c. The fire area 11.4-0, the power cables for the centrifugal charging pumps are separated by 35 feet. The combustibles in this area consist of 239.5 gallons of lube oil, 480 lbs. of charcoal, 16.5 lbs. of HEPA filters, and cable having a combined fire loading of only 18,700 BTU/ft².
- d. In fire area 11.5-0, the power cables for the charging pumps are separated by at least 28 feet. The combustibles in this area consist of 500 lbs. of protective clothing, 1,140 lbs. of ductwork insulation 100 lbs. of duct lining, 16 lbs. of blanketing material and cable having a combined fire loading of 8,600 BTU/ft².
- e. General:

All areas are limited access areas.

All areas are equipped with portable fire extinguishers and manual hose stations. Portable ventilation equipment is available to all areas.

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6. Section 3.10.2.1(2). An exemption is requested from Section III.G of 10 CFR 50, Appendix R for the Auxiliary feedwater pump cabling in fire area 11.3-0 in the immediate area of the pumps where redundant cables required for plant shutdown are not separated by three-hour barriers. This exemption request is based on the following:

- a. The area is a limited access area.
- b. Fire area 11.3-0 has a low fire loading (6,700 BTU/ft²). The combustibles consist only of 22 gallons of lube oil, cable insulation and a transient load. In addition, the turbine and motor-driven feedwater pumps, including auxiliary lube oil pumps, are independently protected by an automatic CO₂ suppression system.

List of Requested Exemptions

1. Section 4.1.2.1. Exemption from Section III.G of 10 CFR 50, Appendix R for cabling associated with the auxiliary feedwater flow indication in fire area 11.4-0.

Based on:

- a. Fire area is a limited access area.
 - b. Equipped with four manual hose stations and thirteen portable fire extinguishers.
 - c. Smoke detectors are located in the vicinity of the cable trays. Any significant combustibles are located at least 60 feet from any cable.
2. Section 5.1.2.5(5). Exemption from Section III.G of 10 CFR 50, Appendix R in fire areas 11.2-0, 11.3-0 and 11.4-0, separation of redundant cables exceeding 20 horizontal feet.
 - a. All three fire zones are limited access areas.
 - b. All three fire zones are equipped with portable fire extinguishers and manual hose stations.
 - c. Fire area 11.2-0 has ionization detectors located over the waste gas compressors, the component cooling pumps, and in the area of safety-related cable trays. There is a low fire loading (13,000 BTU/ft²). The combustibles in the zone consist only of cable insulation and a transient load.
 - d. Fire zone 11.3-0 has a low fire loading (6,700 BTU/ft²). The combustibles in the zone consist only of 22 gallons of lube oil, cable insulation, and a transient load.

3. Section 5.7.2.1. In areas 11.2-0, 11.3-0, 18.4A-0, 18.4B-0 the six service water pump power cables run through risers which are not separated by a three hour fire barrier. An exemption to Section III.G of 10 CFR 50, Appendix R is based on the following:
- a. All four fire areas are limited access areas.
 - b. All four fire areas are equipped with portable fire extinguishers and manual hose stations.
 - c. Fire area 11.2-0 has ionization detectors located over the waste gas compressors, the component cooling pumps, and in the area of safety-related cable trays. There is a low fire loading ($13,000 \text{ BTU/ft}^2$). The combustibles in the area consist only of cable insulation and a transient load.
 - d. Fire area 11.3-0 has a low fire loading ($6,700 \text{ BTU/ft}^2$). Smoke detectors are installed above the remote shut-down panels and the auxiliary feedwater pumps. An automatic CO_2 Puff Fire Suppression is installed over the auxiliary feedwater pumps. The combustibles in the area consist only of 22 gallons of lube oil, cable insulation, and a transient load.
 - e. Fire zone 18.4A-0, Crib House Outer Room, has a low fire loading ($7,500 \text{ BTU/ft}^2$). Smoke detectors are installed over safety-related cable trays. The combustibles consist of 378 gallons of lube oil, cable insulation, and a transient load. The separation between cables for pumps 1B and 2B is 67 feet.

- f. For a fire in zone 18.4B-0, Crib House Inner Room, there are smoke detectors, an automatic water suppression system over the diesel driven fire pumps, portable fire extinguishers, and manual hose stations. The fire loading is low (16,000 BTU/ft²). The combustibles in the zone consist of 13 gallons of lube oil, 250 gallons of diesel fuel oil, cable insulation and a transient load.
4. Section 5.8.2.1(2). In fire area 11.2-0, Auxiliary Building, the five component cooling pump power cables run with a minimum separation of twenty three feet between each other without any fire barriers. An exemption to Section III.G of 10 CFR 50, Appendix R is based on the following:
- a. Fire area 11.2-0 is a limited access area.
 - b. Area 11.2-0 is equipped with five portable fire extinguishers and four manual hose stations. Portable ventilation equipment is available.
 - c. Area 11.2-0 has ionization detectors located over the waste gas compressors, the component cooling pumps, and in the area of safety-related trays. The low fire loading is only 13,000 BTU/ft². The combustibles in the area consist only of cable insulation and a transient load.
 - d. There is an automatic overlapping CO₂ fire suppression system over the five component cooling pumps.

5. Section 5.9.2.1(4). In fire areas 11.2-0, 11.3-0 and 11.4-0, redundant cables associated with the centrifugal charging pumps are not separated by three hour fire barriers. An exemption to Section III.G of 10 CFR 50, Appendix R, is requested based on the following:

- a. In fire area 11.2-0, the power cables for the charging pump, auxiliary lube oil pumps, and the room unit coolers exist in risers which are separated by at least 100 feet. The combustibles in the area consist of cable with a fire loading of 13,000 BTU/ft².
- b. In fire area 11.3-0, the power cables for the centrifugal pumps are separated by at least 40 feet and are around the corner of a concrete wall from each other. The power cable for their auxiliary lube oil pumps and room coolers are separated by at least 25 feet and around the corner of a concrete wall from each other. The combustibles in the area consist of 22 gallons of lube oil resulting in a fire loading of only 6,700 BTU/ft². The separation distance together with the configuration of the intervening space provides adequate separation for the redundant pumps and their auxiliaries.
- c. In fire area 11.4-0, the power cables for the centrifugal charging pumps exist in risers which are separated by at least 100 feet. The combustibles in this area consist of 239.5 gallons of lube oil, 480 lbs. of charcoal, 16.5 lbs. of HEPA filters,

and cable having a combined fire loading of only 18,700 BTU/ft².

d. General:

- All areas are limited access areas.
- All areas are equipped with portable fire extinguishers and manual hose stations. Portable ventilation equipment is available to all areas.

6. Section 5.10.2.1(10). In fire zone 3.1-2 and areas 11.2-0, 11.3-0 and 11.4-0, the redundant auxiliary feedwater pumps and associated cabling are not separated by three hour fire barriers. An exemption to Section III.G of 10 CFR 50, Appendix R, is requested based on the following:

- a. All four areas are limited access areas.
- b. Fire zone 3.1-2 is equipped with smoke detectors, two portable extinguishers and two manual hose stations. Automatic Halon and manual CO₂ fire suppression are in this zone.
- c. Fire area 11.4-0 has temperature detectors over the charcoal absorber bank and has a low fire loading (18,700 BTU/ft²). The combustibles consist of 239.5 gallons of oil, 16.5 lbs. of HEPA filters, 2.5 lbs. of prefilters, 480 lbs. of charcoal, cable insulation and a transient load.
- d. Fire area 11.3-0 has a low fire loading (6,700 BTU/ft²). The combustibles consist only of 22 gallons of lube oil, cable insulation and a transient load. In addition, the turbine and

motor-driven feedwater pumps, including auxiliary lube oil pumps, are independently protected by an automatic CO₂ suppression system.

- e. Fire area 11.2-0 has four hose stations and five portable extinguishers. Ionization detectors are installed over the waste gas compressors, over the component cooling pumps, and near safety-related cable trays. The fire load is 13,000 BTU/ft² and combustibles consist of cable insulation and transient load.
7. Section 5.13.2.1(3). In fire areas 11.1-0, 11.2-0 and 11.4-0, redundant residual heat removal auxiliary equipment cabling required for plant shutdown are not separated by three hour fire barriers. An exemption to Section III.G of 10 CFR 50, Appendix R is based on the following:
- a. Fire area 11.1-0, Auxiliary Building elevation 542' has a very low fire loading of 4,000 BTU/ft². The combustibles in this area consist only of cable insulation and a transient load. The rerouted separation distance, together with the configuration of the intervening space, will provide adequate separation for the redundant pumps and their auxiliaries.
 - b. Fire area 11.2-0, Auxiliary Building elevation 560'. The combustibles in the area consist of cable with a fire loading of 13,000 BTU/ft².

- c. Fire area 11.3-0, Auxiliary Building elevation 579'.
The combustibles in the area consist of 22 gallons of lube oil resulting in a fire loading of only 6,700 BTU/ft².
- d. Fire area 11.4-0, Auxiliary Building elevation 592'.
The combustibles in this area consist of 239.5 gallons of lube oil, 480 lbs. of charcoal, 16.5 lbs. of HEPA filters, and cable having a combined fire loading of only 18,700 BTU/ft².
- e. General:
 - All areas are limited access areas.
 - All areas are equipped with portable fire extinguishers and manual hose stations. Portable ventilation equipment is available to all areas.