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SUBJECT: Forwards changes to FSAR Chapters 9 & 14 re fire protection
 & emergency lighting to be included in next FSAR amend.
 Safety evaluations completed for implementation of changes,
 per 10CFR50.59.

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NOTES: Standardized plant. M. Davis, NRR: 1Cy. 05000530

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EXTERNAL:	BNL (AMDTs ONLY)	1 1	DMB/DSS (AMDTs)	1 1
	LPDR 03	1 1	NRC PDR 02	1 1
	NSIC 05	1 1	PNL GRUEL, R.	1 1
NOTES:		1 1		



Arizona Nuclear Power Project

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December 19, 1986
ANPP-39453-JGH/JKR/98.05

Director of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Project Director
PWR Project Directorate #7
Division of Pressurized Water Reactor Licensing - B
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 3
Docket No. STN 530
Changes to the FSAR Concerning Fire
Protection and Emergency Lighting
File: 86-D-005-419.05; 86-G-056-026

Dear Mr. Knighton:

Attached for your review on PVNGS Unit 3 are FSAR changes to Chapters 9 and 14. These changes involve; (1) clarifying the test description or the emergency lighting system; (2) changing emergency lighting in some zones in the fire hazards analysis; (3) adding clarification to the penetration seal testing requirements; (4) changing ionization smoke detectors to photoelectric smoke detectors in some areas of the fire hazards analysis; (5) replacing smoke detectors with heat detectors in the Main Steam Support Structure.

These changes are justified because; (1) this clarification was requested by the NRC. The eight hour batteries will be tested to eight hours and the one and one half hour batteries will be tested to one and one half hours; (2) these changes were part of Amendment 15, but left out for a more extensive review. (See letter to G. W. Knighton, NRC, from E. E. Van Brunt, Jr., (ANPP-33306), dated August 30, 1985); (3) the seals are to be installed in the same manner as tested and in configurations equivalent to the tested configuration; (4) this change will improve the performance of the fire protection; (5) this change will improve the performance of the fire detectors in that area.

For PVNGS Units 1 and 2, safety evaluations have been completed for implementation of these changes in accordance with the requirements of 10 CFR 50.59. The safety reviews and evaluations have determined that there are no unreviewed safety questions involved with the changes. These changes will be included in the next FSAR amendment.

If you have any questions, please contact Mr. W. F. Quinn of my staff.

Very truly yours,

J. G. Haynes
Vice President
Nuclear Production

JGH/JRK/rw
Attachment

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Mr. George W. Knighton
Subject: Changes to the FSAR Concerning
Fire Protection and Emergency Lighting
ANPP- 39453
Page 2

cc: O. M. De Michele
E. E. Van Brunt, Jr.
E. A. Licitra
R. P. Zimmerman
A. C. Gehr



APPENDIX 14B

- 4.3 The lighting level in the control room (horseshoe area) shall be 6 fc and sections of the control room panel area required for safe shutdown shall be 3 fc. | 2
- 4.4 The emergency lighting systems are capable of providing illumination in the event of loss of ac power, and shall operate as described in sub-section 9.5.3. | 15
- 4.5 All self-contained and non-self-contained emergency lighting units necessary for the operation of safe shutdown equipment, including access and egress routes thereto, shall provide illumination for a minimum continuous period of 8 hours following loss of the ac power source. ~~Other emergency lighting units shall provide illumination for a minimum of 1-1/2 hours for personnel evacuation.~~ | 2

4.6 All self-contained and non-self-contained emergency lighting units not necessary for the operation of safe shutdown equipment ^{including} access and egress routes thereto, shall provide illumination for a minimum continuous period of 1 1/2 hours following the loss of the ac power source.

PVNGS FSAR

FIRE HAZARDS ANALYSIS

- 13
- K. Emergency Lighting
Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.
- L. Emergency Communications
Sound powered phone jack(s) is provided.

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8/20
4/10

FIRE HAZARDS ANALYSIS

G. Fire Detection

Actuation of the ultra-violet or thermal detector systems activates the automatic preaction sprinkler system.

H. Fire Suppression

1. Primary

Automatic pre-action water sprinkler system.

2. Secondary

One portable CO₂ fire extinguisher. One manual hose reel is located in the adjacent Control Building at elevation 100'0".

I. Ventilation

Flow through air filtration unit to outside by way of silencer room (engine operating).

J. Drainage

Seven 4-inch drains

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.

L. Emergency Communications

None

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FIRE HAZARDS ANALYSIS

G. Fire Detection

Ionization smoke detector system(s) is provided for early warning.

H. Fire Suppression

1. Primary

One portable CO₂ fire extinguisher

2. Secondary

One manual hose reel is located in the adjacent Control Building at elevation 100'0".

I. Ventilation

Flow through diesel generator room and silencer room to the outside (generator running). (Refer to Appendix 9A response to Question 9A.86).

J. Drainage

One 4-inch drain

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided

L. Emergency Communications

Sound powered phone jack(s) is provided.

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FIRE HAZARDS ANALYSIS

G. Fire Detection

Ultra-violet smoke detector system(s) is provided for early warning.

H. Fire Suppression

1. Primary

One manual hose reel is located in the adjacent Control Building at elevation 120'0".

2. Secondary

One portable CO₂ fire extinguisher is located in the adjacent Control Building at elevation 120'0".

I. Ventilation

Flow through diesel generator room and silencer room to outside. (Refer to Appendix 9A response to Question 9A.86).

J. Drainage

One 4-inch drain

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.

L. Emergency Communications

Sound powered phone jack(s) is provided.

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G. Fire Detection

Ultra-violet smoke detector system(s) is provided for early warning.

H. Fire suppression

1. Primary

One manual hose reel is located in the adjacent Control Building at elevation 120'0".

2. Secondary

One portable CO₂ fire extinguisher is located in the adjacent Control Building at elevation 120'0".

I. Ventilation

Flow through diesel generator room and silencer room to outside. (Refer to Appendix 9A response to Question 9A.86).

J. Drainage

One 4-inch drain

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.

L. Emergency Communications

Sound powered phone jack(s) is provided.

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FIRE HAZARDS ANALYSIS

- 33 pounds of cable insulation

15

- 3. Total Combustible Loading 24,300 Btu/ft²
- 4. Equivalent Fire Severity 18 minutes

G. Fire Detection

Line type thermal detection system covering cable trays is provided for early warning.

H. Fire Suppression

1. Primary

Four manual hose reels, one each at elevations 80'0", 100'0", 120'0", and 140'0".

2. Secondary

Three portable CO₂ fire extinguishers, one each at elevations 80'0", 100'0", and 140'0".

I. Ventilation

13

Recirculation from containment normal cooling fan and recirculation from reactor cavity cooling fan during normal plant operation. The refueling purge and power access purge systems are manually turned on to provide full flow to the outside air. These systems are turned on prior to entry into containment.

J. Drainage

Ten 4-inch drains

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.

L. Emergency Communications

Sound powered phone jack(s) is provided.

FIRE HAZARDS ANALYSIS

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.

L. Emergency Communications

Sound powered phone jack(s) is provided.

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PVNGS FSAR

FIRE HAZARDS ANALYSIS

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.

L. Emergency Communications

Sound powered phone jack(s) is provided.

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PVNGS FSAR

FIRE HAZARDS ANALYSIS

2. Transient Combustible Load Quantity/Type

- 50 pounds of ordinary combustible
- 20 pounds of oil and grease

3. Total Combustible Loading 2,800 Btu/ft²

4. Equivalent Fire Severity 2 minutes

G. Fire Detection

Ionization smoke detector system(s) is provided for early warning

H. Fire Suppression

1. Primary

Two manual hose reels are located in adjacent Zone 37A.

2. Secondary

Two portable ABC powder fire extinguishers are located in adjacent Zone 37A.

I. Ventilation

Flow through air filtration unit to outside

J. Drainage

One 4-inch drain

K. Emergency Lighting

Egress lighting with ^{1 1/2} hour battery unit(s) is provided.

L. Emergency Communications

Sound powered phone jack(s) is provided.

FIRE HAZARDS ANALYSIS

3. Total Combustible Loading 4,500 Btu/ft²
4. Equivalent Fire Severity 3 minutes

G. Fire Detection

Ionization smoke detector system(s) is provided for early warning.

H. Fire Suppression

1. Primary

Two manual hose reels are located in adjacent Zone 37B.

2. Secondary

Two portable ABC powder fire extinguishers are located in adjacent Zone 37B.

I. Ventilation

Flow through air filtration unit to outside

J. Drainage

One 4-inch drain

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.

L. Emergency Communications

Sound powered phone jack(s) is provided.

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PVNGS FSAR

FIRE HAZARDS ANALYSIS (

2. Transient Combustible Load Quantity/Type

- 50 pounds of ordinary combustible
- 80 pounds of oil and grease

3. Total Combustible Loading 4,500 Btu/ft²

4. Equivalent Fire Severity 3 minutes

G. Fire Detection

Ionization smoke detector system(s) is provided for early warning.

H. Fire Suppression

1. Primary

One manual hose reel is located in adjacent Zone 37A. One manual hose reel is located in adjacent Zone 37B.

2. Secondary

One portable ABC powder fire extinguisher is located in adjacent Zone 37A. One portable ABC powder fire extinguisher is located in adjacent Zone 37B.

I. Ventilation

Flow through air filtration unit to outside

J. Drainage

Two 4-inch drains

K. Emergency Lighting

Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.

L. Emergency Communications

None

FIRE HAZARDS ANALYSIS

F. Combustible Loading

1. In-Situ Combustible Load Quantity/Type
 - 203 pounds of oil and grease
2. Transient Combustible Load Quantity/Type
 - 50 pounds of ordinary combustible
 - 80 pounds of oil and grease
3. Total Combustible Loading 4,500 Btu/ft²
4. Equivalent Fire Severity 3 minutes

G. Fire Detection

Ionization smoke detector system(s) is provided for early warning

H. Fire Suppression

1. Primary

Two manual hose reels are located in adjacent Zone 37B.
2. Secondary

Three portable ABC powder fire extinguishers are located in adjacent Zone 37B.

I. Ventilation

0.44 cfm/ft² flow through air filtration unit to outside

J. Drainage

Two 4-inch drains

K. Emergency Lighting

Egress lighting with ^{1 1/2 e} 8-hour battery unit(s) is provided.

L. Emergency Communications

None

FIRE HAZARDS ANALYSIS

3. Total Combustible Loading 5,100 Btu/ft²
4. Equivalent Fire Severity 4 minutes
- G. Fire Detection
None
- H. Fire Suppression
1. Primary
Two manual hose reels are located in adjacent Zone 42D.
2. Secondary
Two portable CO₂ fire extinguishers are located in adjacent Zone 42D.
- I. Ventilation
Flow to outside
- J. Drainage
Two 4-inch drains
- K. Emergency Lighting
Egress lighting with ^{1 1/2} 8-hour battery unit(s) is provided.
- L. Emergency Communications
None

FIRE HAZARDS ANALYSIS

3. Total Combustible Loading 15,000 Btu/ft²
4. Equivalent Fire Severity 11 minutes

G. Fire Detection

Actuation of ionization smoke detector system(s) activates the automatic preaction water sprinkler system. The detector system(s) can provide early warning capability. (Refer to Appendix 9A response to Question 9A.116).

H. Fire Suppression

1. Primary

Automatic preaction water sprinkler system

2. Secondary

One manual hose reel and one portable CO₂ fire extinguisher are located in adjacent Zone 42C.

I. Ventilation

Flow through air filtration unit to outside

J. Drainage

Three 4-inch drains

K. Emergency Lighting

Egress lighting with ^{1 1/2} 1 1/2-hour battery unit(s) is provided.

L. Emergency Communications

Sound powered phone jack(s) is provided.

used in three-hour walls and 1-1/2-hour dampers are used in two-hour and one-hour walls. The fire dampers purchased for PVNGS are all of identical material and constructed to 3-hour standards. (Refer to the response to Question 9A.108).

Class A doors are used in three-hour fire walls, Class B doors are used in two-hour fire walls and Class C doors are used one-hour fire walls. (Refer to the response to Question 9A.106).

c. Fire barrier penetration seals

Testing and acceptance criteria are as specified in ASTM Standard E-119 and IEEE 634 (1978). Seals are installed in the same manner as tested. Quality assurance, quality control and other measures are made to insure that the actual installation conforms to the specified requirements. The cable trays are supported by tray supports located close to the wall penetration to increase the reliability and integrity of the raceway system in case of fire. Consequently the penetration seals will not be affected due to unsupported load. (Refer to the response to Question 9A.110).

d. Metal deck roof

All roof slabs in safety related areas are of structural concrete. Structural thickness exceeds the three-hour fire separation requirements.

QUESTION 9A.69 (FPER Question 7)

(9B.3)

Page III-15^(a), Item D.1.(i): Verify that the floor drains are of adequate size to handle any run-off from any water

- a. Page references are no longer applicable due to FPER reformatting for FSAR Amendment 13.

and in configurations equivalent to the tested configuration. Equivalency to the tested configuration is determined by engineering evaluation.

Table 9.5-1

FIRE PROTECTION FOR AREAS AND EQUIPMENT^(a) (Sheet 7 of 9)

Areas or Equipment	Primary Fire Protection	Backup Fire Protection	Detection Device for Primary Fire Protection	Safety-Related Area	Accessibility Restrictions		
					Heat	Radiation	Toxic Combustion Products
<u>Radwaste Building (Cont)</u>							
• M.C.C. and L.C. at Elev. 140 Ft	WHS	PX	I	No	P	O	P
• Cable Shaft at Elev. 140 Ft	WHS	PX	I	No	P	O	P
<u>Diesel Generator Building</u>							
• Diesel Gen., Tr. A	PA	OH,PX	UV,S,HAD	Yes	P	O	P
• Fuel Oil Day Tank Vault, Tr. A	PA	OH,PX	S,HAD	Yes	P	O	P
• Diesel Gen., Tr. B	PA	OH,PX	UV,S,HAD	Yes	P	O	P
• Fuel Oil Day Tank Vault, Tr. B	PA	OH,PX	S,HAD	Yes	P	O	P
• Control Rm., Tr. A	PX	WHS	I	Yes	P	O	P
• Control Rm., Tr. B	PX	WHS	I	Yes	P	O	P
• Air Filter, Tr. A	WHS	PX	UV	Yes	P	O	P
• Air Filter, Tr. B	WHS	PX	UV	Yes	P	O	P
<u>Fuel Building</u>							
• Railroad Bay and Char-coal Filtration Units	W	WHS,PX	S,I	Yes	P	O	P
• Spent Fuel Pool H.X. and Pump Area, Elev. 100 Ft	WHS	PX	I	Yes	P	O	P
• New Fuel Storage Area Elev. 120 Ft	WHS	PX	I	Yes	P	O	P
<u>Containment Building</u>							
• No. 1 Steam Generator Cavity	WHS	PX	I, PE	Yes	P	O	P
• No. 2 Steam Generator Cavity	WHS	PX	I, PE	Yes	P	O	P

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OTHER AUXILIARY SYSTEMS

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Table 9.5-1

FIRE PROTECTION FOR AREAS AND EQUIPMENT^(a) (Sheet 8 of 9)

Areas or Equipment	Primary Fire Protection	Backup Fire Protection	Detection Device for Primary Fire Protection	Safety-Related Area	Accessibility Restrictions		
					Heat	Radiation	Toxic Combustion Products
<u>Containment Building (Cont)</u>							
• Cable Trays, Elev. 100 Ft	WHS	PX	L, I	Yes	P	O	P
• Cable Trays, Elev. 120 Ft	WHS	PX	L, I	Yes	P	O	P
• CEDM Area	PX	PX	I, HAD	Yes	P	O	P
• Cable Trays, Elev. 140 Ft	WHS	PX	L, I	Yes	P	O	P
• Air Cooling Unit, Tr. A	WHS	PX	XPE	Yes	P	O	P
• Air Cooling Unit, Tr. B	WHS	PX	XPE	Yes	P	O	P
<u>Main Steam Support Structure</u>							
• Motor Driven Pump Rm.	PX	PX	V	Yes	P	O	P
• Valve Area, 100 Ft-to-160 Ft	PA	PX, WHS	I, S	Yes	P	O	P
• Oil Piping and Reservoir for Turbine-Driven Auxiliary Feedwater Pump	PA	WHS, PX	I, S	Yes	P	O	P

OTHER AUXILIARY SYSTEMS

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Table 9.5-1
FIRE PROTECTION FOR AREAS AND EQUIPMENT^(a) (Sheet 9 of 9)

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LEGEND

System:

OH - Outside hydrants
W - Wet pipe sprinkler system
WS - Deluge water spray system
PA - Automatic preaction sprinkler system
CD - Fixed CO₂ system
CDH - CO₂ hose reels
H - Halon 1301 system
WHS - Water hose station
PX - Portable extinguishers

Detection:

V - Visual
S - Sprinkler head (melting of fusible link)
HAD - Heat actuating device (fixed temp/rate of rise)
I - Ionization detector (invisible smoke)
L - Line-type heat detector
UV - Ultraviolet detector (flame or spark)

Accessibility:

PE - PHOTOELECTRIC SMOKE DETECTOR
O - No special protective device required
P - Protective device required

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OTHER AUXILIARY SYSTEMS

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OTHER AUXILIARY SYSTEMS

penetrated wall ratings are provided. All cable tray, conduit, HVAC duct, and piping penetrations through fire barriers are sealed using seal designs of equal or greater rating than the rating of the penetrated barriers. Penetration seals meet the acceptance criteria of ASTM E-119 and have been approved by ANI.

13 | Where door openings penetrate rated barriers, the openings are protected by Underwriters Laboratories (UL) or Factory Mutual (FM) rated door assemblies providing fire protection equal to or greater than the rating of the penetrated barrier except as noted in the Appendix 9A response to Question 9A.106.

N. Fire and Smoke Monitoring, Detection, and Alarm System

13 | Fire and smoke monitoring, detection, and alarm is accomplished by ionization (I), photoelectric (PE), and ultraviolet (UV) detectors, and by heat responsive or heat actuated devices (HAD) in areas in which the potential of fire exists. These devices are installed in specific areas so indicated in table 9.5-1.

3 | Selection, placement, and spacing of fire monitoring, detection, and alarm devices are based on consideration of design, configuration, and employment of the area together with draft conditions due to natural or mechanical ventilation.

The fire and smoke monitoring, detection, and alarm system includes a supervisory circuit which indicates the failure of individual circuits and detectors. Both monitoring and supervisory alarm signals register locally and in the control room. In the control room, incoming FPS alarms activate audible and visual annunciators individually or in groups.

K. Dry Chemical Systems

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The 350-pound dry chemical extinguisher is wheeled to the vicinity of Class A (ordinary combustible materials), Class B (flammable liquids, gases, and greases), or C (energized electrical equipment) fires. After it is wheeled to the appropriate fire area, the dry chemical extinguisher is operated manually by plant personnel.

L. Portable Fire Extinguishers

Appropriate portable extinguishers can be carried to the vicinity of Class A, B, or C fires and can be manually operated by plant personnel for the control of small fires.

M. Fire Barriers

Fire barriers are generally passive fixtures and require no operation. Exceptions are HVAC dampers which pass through fire-rated walls and floors. Normally, the HVAC fire dampers are open, and their closure occurs only when fire detection systems are actuated.

N. Fire and Smoke Monitoring, Detection, and Alarm Devices

Fire and smoke monitoring, detection, and alarm devices are activated by several different stages of a fire.

Ionization detectors alarm at the presence of invisible combustion gases during the incipient stage of fire.

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Flame detectors respond directly to the ultraviolet radiation emanating from a flickering flame sustained for at least 3 seconds in areas where fire developed rapidly with a minimum or absent incipient stage.

Thermal detectors react to the attainment of a high

Photoelectric detectors operate on a light principle where smoke entering a light beam either obscures the beam's path or reflects light into a photocell.

FIRE HAZARDS ANALYSIS

3. Transient Combustible Load
4. Equivalent Fire Severity 133 minutes

NOTE

Refer to Appendix 9A response to Question 9A.126 for a description of the reactor coolant pump lube oil collection system and compliance with 10CFR50, Appendix R, Section III.O.

- G. Fire Detection *and photoelectric detectors*
Ionization/smoke detection system and line-type thermal
detectors installed in the cable trays are provided
for early warning.

H. Fire Suppression

1. Primary

One manual hose reel is located in adjacent Zone 67A at elevation 80'0". One manual hose reel is located in adjacent Zone 67B at elevation 80'0".

2. Secondary

One portable CO₂ fire extinguisher is located in adjacent Zone 67A at elevation 80'0". One portable CO₂ fire extinguisher is located in adjacent Zone 67B at elevation 80'0".

I. Ventilation

Recirculation from containment normal cooling fan and recirculation from reactor cavity cooling fan during normal plant operation. The refueling purge and power access purge systems are manually turned on to provide full flow to the outside air. These systems are turned on prior to entry into containment.

FIRE HAZARDS ANALYSIS

- 13,600 pounds of oil and grease
 - 670 pounds of hydraulic fluid
2. In-Situ Combustible Load 175,000 Btu/ft²
 3. Transient Combustible Load
 4. Equivalent Fire Severity 131 minutes

NOTE

Refer to Appendix 9A response to Question 9A.126 for a description of the reactor coolant lube oil collection system and compliance with 10CFR50, Appendix R, Section III.O.

- 13
- G. Fire Detection
and photoelectric detectors are
Ionization/smoke detection system(s) is provided for
early warning.

H. Fire Suppression

1. Primary

One manual hose reel is located in adjacent Zone 66A at elevation 80'0". One manual hose reel is located in adjacent Zone 66B at elevation 80'0".

2. Secondary

One portable CO₂ fire extinguisher is located in adjacent Zone 66A at elevation 80'0". One portable CO₂ fire extinguisher is located in adjacent Zone 66B at elevation 80'0".

I. Ventilation

Recirculation from containment normal cooling fan and recirculation from reactor cavity cooling fan during

FIRE HAZARDS ANALYSIS

C. Safety Related Equipment and Components

None

D. Non-Safety Related Equipment and Components

- Preaccess normal air filtration unit
- Conduit

E. Radioactive Material

Potentially contaminated charcoal media

F. Combustible Loading

1. Quantity/Type

- 4 pounds of cable insulation (Hypalon)
- 30 pounds of cable insulation (other)
- 3,000 pounds of charcoal

2. In-Situ Combustible Load 135,000 Btu/ft²

3. Transient Combustible Load

4. Equivalent Fire Severity 101 minutes

G. Fire Detection

Photoelectric

~~Ionization~~/smoke detection system(s) is provided for early warning.

H. Fire Suppression

1. Primary

Local manually controlled water spray system

2. Secondary

One manual hose reel is located in adjacent Zone 67B. One portable CO₂ fire extinguisher is located in adjacent Zone 67A.

FIRE HAZARDS ANALYSIS

C. Safety Related Equipment and Components

None

D. Non-Safety Related Equipment and Components

- Preaccess normal air filtration unit
- Conduit

E. Radioactive Material

Potentially contaminated charcoal media

F. Combustible Loading

1. Quantity/Type

- 20 pounds of cable insulation (Hypalon)
- 80 pounds of cable insulation (other)
- 3,000 pounds of charcoal

2. In-Situ Combustible Load 137,000 Btu/ft²

3. Transient Combustible Load

4. Equivalent Fire Severity 103 minutes

G. Fire Detection

Photoelectric
~~Ionization~~/smoke detection system(s) is provided for
early warning.

H. Fire Suppression

1. Primary

Local manually controlled water spray system

2. Secondary

One manual hose reel is located in adjacent
Zone 66A. One portable CO₂ fire extinguisher
is located in each of adjacent Zones 66A
and 66B.

Table 9.5-1
FIRE PROTECTION FOR AREAS AND EQUIPMENT^(a) (Sheet 8 of 9)

Areas or Equipment	Primary Fire Protection	Backup Fire Protection	Detection Device for Primary Fire Protection	Safety-Related Area	Accessibility Restrictions		
					Heat	Radiation	Toxic Combustion Products
<u>Containment Building (Cont)</u>							
• Cable Trays, Elev. 100 Ft	WHS	PX	L, I	Yes	P	O	P
• Cable Trays, Elev. 120 Ft	WHS	PX	L, I	Yes	P	O	P
• CEDM Area	PX	PX	I, HAD	Yes	P	O	P
• Cable Trays, Elev. 140 Ft	WHS	PX	L, I	Yes	P	O	P
• Air Cooling Unit, Tr. A	WHS	PX	I	Yes	P	O	P
• Air Cooling Unit, Tr. B	WHS	PX	I	Yes	P	O	P
<u>Main Steam Support Structure</u>							
• Motor Driven Pump Rm.	PX	PX	V	Yes	P	O	P
• Valve Area, 100 Ft-to-160 Ft	PA	PX, WHS	S, HAD	Yes	P	O	P
• Oil Piping and Reservoir for Turbine-Driven Auxiliary Feedwater Pump	PA	WHS, PX	I, S	Yes	P	O	P

OTHER AUXILIARY SYSTEMS

PVNGS FSAR

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FIRE HAZARDS ANALYSIS

- Train A conduit^(a)
- Train B conduit^(a)
- D. Non-Safety Related Equipment and Components
 - Cable trays and conduit
- E. Radioactive Material
None
- F. Combustible Loading
 - 1. Quantity/Type
 - 2,900 pounds of hydraulic oil (Fyrquel)
 - 340 pounds of cable insulation (Hypalon)
 - 1,700 pounds of cable insulation (other)
 - 80 pounds of miscellaneous materials
 - 2. In-Situ Combustible Load 125,000 Btu/ft²
 - 3. Transient Combustible Load
 - 4. Equivalent Fire Severity 93.6 minutes
- G. Fire Detection
~~Thermal heat actuated devices are~~
~~ionization smoke detection system(s)~~ is provided for actuating the deluge valve of the preaction sprinkler system and to provide early warning.
- H. Fire Suppression
 - 1. Primary
Automatic preaction sprinkler system
 - 2. Secondary
One portable CO₂ fire extinguisher at 100'0".
One manual hose reel is located in the adjacent Turbine Building.

a. Safe Shutdown Related

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FIRE HAZARDS ANALYSIS

- Train A conduit(a)
- Train B conduit(a)
- D. Non-Safety Related Equipment and Components
 - Cable trays and conduit
- E. Radioactive Material
None
- F. Combustible Loading
 - 1. Quantity/Type
 - 2,900 pounds of hydraulic oil (Fyrquel)
 - 340 pounds of cable insulation (Hypalon)
 - 1,700 pounds of cable insulation (other)
 - 80 pounds of miscellaneous materials
 - 2. In-Situ Combustible Load 125,000 Btu/ft²
 - 3. Transient Combustible Load
 - 4. Equivalent Fire Severity 93.6 minutes
- G. Fire Detection
~~Thermal Heat activated devices are~~
~~ionization smoke detection system(s)-is~~ provided for actuating the deluge valve of the preaction sprinkler system and to provide early warning.
- H. Fire Suppression
 - 1. Primary
Automatic preaction sprinkler system
 - 2. Secondary
One portable CO₂ fire extinguisher is located in adjacent Zone 74A at elevation 100'0". One manual hose reel is located in the adjacent Turbine Building.

a. Safe Shutdown Related

