



SACRAMENTO MUNICIPAL UTILITY DISTRICT ☐ 6201 S Street, P.O. Box 15830, Sacramento, CA 95813; (916) 452-3211  
RJR-85-246 AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

May 24, 1985

Director of Nuclear Reactor Regulation  
Attention: Hugh L. Thompson Jr., Director  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington DC 20555

Docket 50-312  
Rancho Seco Nuclear Generating Station, Unit No. 1

REQUEST FOR EXEMPTION TO SOME REQUIREMENTS OF 10CFR50, APPENDIX R  
SUPPLEMENTAL

Please find, enclosed, three additional requests for exemptions to 10CFR50, Appendix R which have been identified during the ongoing Appendix R reevaluation effort. This submittal supplements the District's submittals of February 28, 1985 (RJR 85-097) and April 4, 1985 (RJR 85-140).

AUXILIARY BUILDING ROOF AREA (FIRE AREA 74)

The first request (exemption 10) involves an exemption to Section III.G.3 requirements for fire detection and automatic suppression for the auxiliary building roof area. This exemption was referenced in the District's April 5, 1985 revised response to Generic Letter 81-12 (RJR 85-179). In this response, this exemption was described as an exemption to III.G.2, however, after further evaluation, the District has determined that the exemption is required to III.G.3.

The analysis provided in the District's revised response to Generic Letter 81-12 described fire areas RT1 and 2 as alternate shutdown areas since a fire in these areas could disable the redundant control room HVAC units and result in evacuation of the control room. This alternate shutdown analysis is unchanged with the exception that a fire in fire area 74 (Auxiliary Building Roof) could also disable the redundant control room HVAC units and result in evacuation of the Control Room.

NUCLEAR SERVICE YARD AREA (FIRE AREA 69)

The second request (exemption 11) involves an exemption to Section III.G.2 for the redundant Nuclear Service Water Pumps located in fire area 69. This exemption request is a new request which had not been previously identified.

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AUXILIARY BUILDING ROOF AREA (FIRE AREA 74)

The third request (exemption 12) involves an exemption to III.G.2 for the redundant Nuclear Service Cooling Water Surge Tank Level Switches located in Fire Area 74. This exemption request is a new request which had not been previously identified.

CONTROL COMPUTER ROOM (FIRE AREA 1) AND CONTROL/COMPUTER ROOM CORRIDOR (FIRE AREA RT1)

The District's revised response to Generic Letter 81-12 stated that exemption requests would be submitted for lack of detection and/or automatic suppression in fire area 1 (Control/Computer Room) and fire area RT1 (Control/Computer Room Corridors). Further evaluation has determined that these exemptions are not required as follows:

1. Fire Area 1 - The staff's denial of a previously requested exemption (January 10, 1983) for this area stated that, "with the alternate shutdown capability installed, a suppression system is not required in the area."
2. Fire Area RT1 - The District is installing fire detection in the corridor area and a suppression system already exists. The detection system is currently being installed but will not be operable until July 31, 1985. Commencing with startup from the current refueling outage and until the detection system is operable, appropriate compensatory measures in accordance with existing Technical Specifications will be maintained.

FIRE AREA RB1 AUXILIARY BUILDING

The District's February 28, 1985 exemption request for fire area RB1 (exemption request 7) stated that "...Two fire breaks are located in the corridor (045), of fire area RB1, a minimum of 20 feet apart...". The District had originally considered the installation of these fire breaks as an alternative method to separate the redundant circuits. Based on discussion with the staff on February 6, 1985, it was determined that adding additional sprinkler heads in the corridor provides greater protection. Based on this discussion, the details involving the two fire breaks were deleted from the exemption request area description and fire protection systems section. However, as a result of an oversight the discussion involving the two fire breaks was not deleted from the fire hazards analysis section. Thus, the District is modifying its exemption request to clarify this discussion.

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Since this submittal is a supplement to the District's submittals of February 28, 1985 and April 4, 1985 an application fee is not required. If you have any questions concerning this submittal please contact Larry Young at the Rancho Seco Generating Station.

A handwritten signature in dark ink, appearing to read 'R.J. Rodriguez', is written over the typed name.

R.J. Rodriguez  
Assistant General Manager, Nuclear

## EXEMPTION REQUEST 10

F.A. 74

### AUXILIARY BUILDING ROOF FIRE DETECTION AND AUTOMATIC SUPPRESSION

#### EXEMPTION REQUEST

Per the provisions of 10CFR50.12, the District requests an exemption from the specific requirements of 10CFR50, Appendix R, Section III.G.3 which requires fire detection and automatic suppression for the auxiliary building roof area (fire area 74).

#### DESCRIPTION OF EXEMPTION

Both trains of essential control room HVAC are located in the same fire area. Since both trains of essential control room HVAC share a common duct, separation as required by Appendix R, Section III.G.2 is impractical. If a fire on the auxiliary building roof damaged both trains of the control room HVAC, the loss of HVAC could require the evacuation of the control room. Alternate shutdown is being provided for the control room area since a fire in the control room could also require evacuation of the control room. Thus, the auxiliary building roof area is considered an area requiring alternate shutdown and requires fire detection and automatic suppression per 10CFR50, Appendix R, Section III.G.3. No area fire detection or automatic suppression is provided in this area.

#### SAFE SHUTDOWN REQUIREMENTS

At least one train of the essential control room HVAC is required to ensure habitability of the control room. Since alternate shutdown is being provided for the control room area, loss of the essential control room HVAC will only require that the alternate shutdown capability for a fire in the control room be utilized for a fire on the auxiliary building roof. Thus the loss of both trains of essential control room HVAC could require use of control room alternate shutdown capability.

#### FIRE AREA DESCRIPTION

Fire area 74 consists of an unenclosed outside area on the auxiliary building roof with a floor area of 14,467 square feet (See Attached figure 1). The roof construction is 6 1/2" and 12" concrete with a light weight concrete cover of variable thickness. The roof slab is covered by two layers of 1-5/8" rigid insulation topped off with a fiberglass roll roofing. Wooden nailing strips which form part of the roofing system below the fiber glass roll roofing are fire retardant pressure treated. The roof covering and method of



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installation results in a class "A" roof covering which will not support combustion.

Access to the roof area is through the Number 2 stairwell exit enclosure with a 1 1/2 hour rated door provided with a security lock and door position switch. There are numerous HVAC duct penetrations through the roof with no fire dampers.

The combustible inventory on the roof area consists of 15 gallons of lubricating oil in the compressor casings of the refrigeration condensing units (7.5 gallons/compressor) and 2024 pounds of charcoal in the filtration units (1012 lbs/unit). Since the charcoal is totally enclosed in filter canisters which are contained within the steel filter unit housings, the derated equivalent is only 101.5 pounds per filter units. This results in a fire loading of 330 BTU/square foot corresponding to a 1 minute fire. Since the roof is not an enclosed room, the maximum fire severity would occur as a transient condition. The peak temperature will be localized at the location of the combustible material since the heat dissipates into the atmosphere immediately in the absence of an enclosed space.

#### FIRE PROTECTION SYSTEMS

There are no area detection or suppression systems in the fire area. Local heat detectors are provided in the charcoal filter housing. Portable CO2 extinguishers and a fire hose station are located in the turbine level corridor (FA RT1).

#### FIRE HAZARDS ANALYSIS

The total fire loading in fire area 74 consists of 15 gallons of lubricating oil and 2024 pounds of charcoal (derated to 203 lbs). This results in an average fire loading of 330 BTU/square feet which corresponds to a one minute fire. Electrical cables are routed in conduit and do not contribute to the combustible inventory. The combustible inventory is enclosed in a seismic category 1 structure. This area is not used for routine traffic or storage of combustible materials and hence transient combustibles are not of concern.

Since the combustible inventory is enclosed within seismic category 1 structures and is not exposed to an external ignition source, the probability of a fire occurring is extremely remote. Based on the nature of the combustibles and the outdoor unenclosed area, if a fire occurred it would be of short duration with heat and combustion products rapidly dissipating to the atmosphere. Since the area is outside and subject to rain, no damage is expected to result from normal fire suppression activities.

#### CONCLUSION

The District concludes that although not in strict compliance with Appendix R, Section III.G.3 the control room HVAC units are adequately protected from a fire that could disable both trains. Modification by the installation of fire detection and automatic suppression would not significantly enhance the fire protection features provided by the existing configuration. Thus, the District requests an exemption to 10CFR50, Appendix R, Section III.G.3 for the existing configuration.

## EXEMPTION REQUEST 11

### FA 69 NUCLEAR SERVICE WATER PUMPS FIRE DETECTION AND AUTOMATIC SUPPRESSION

#### EXEMPTION REQUEST

Per the provisions of 10CFR50.12, the District requests an exemption for Rancho Seco from the specific requirements of Appendix R, Section III.G.2, requiring one of the following forms of protection for the redundant Nuclear Service water pumps.

1. Separation by a 3-hour rated fire barrier.
2. Separation by at least 20 feet of horizontal distance without intervening combustibles with fire detection and automatic suppression.
3. Enclosure of cables and equipment and associated non-safety circuits of one-redundant train in a 1-hour rated fire barrier with fire detection and automatic suppression.

#### DESCRIPTION OF EXEMPTION

The redundant Nuclear Service Water Pumps are located in the same fire area. The pumps are separated by approximately 55 feet with no intervening combustibles. Power circuits to the pumps are routed underground, in separate conduits, duct banks, and manholes except in the immediate vicinity of the pumps. Although the redundant trains are separated by approximately 55 feet without intervening combustibles, no fire detection or automatic suppression is provided.

#### SAFE SHUTDOWN REQUIREMENT

At least one train of Nuclear Service Water is required to be operable in order to achieve and maintain hot and cold shutdown conditions.

#### FIRE AREA DESCRIPTION

Fire area 69 is an outside, fenced-in area which contains the Nuclear Service yard equipment. This 20,500 square foot area is surrounded on three sides by an unrated, 8-foot high, cinder block wall supporting a chain link fence. The remaining portion of the perimeter consists of the adjoining reactor and auxiliary building walls.

Located in the eastern portion of this area are the Nuclear Service Water Pumps. The pumps are separated by approximately 55 feet without intervening combustibles. Additionally, the 40 foot diameter Borated Water storage tank (T-250) is located between the pumps. (See Figure 2, attached)



#### FIRE PROTECTION SYSTEMS

Manual fire fighting equipment is located within the fire area.

#### FIRE HAZARDS ANALYSIS

The total fire loading in Fire Area 69 consists of approximately 20 gallons of oil and approximately 467 pounds of cable insulation. This results in an average fire loading of 2930 BTU/square foot, which if totally consumed would correspond to a fire severity of 2 minutes on the ASTM E-119 standard time-temperature curve.

The cables for each pump are routed underground in separate conduits, duct banks and manholes. Additionally, the pumps are separated by the Borated Water Storage Tank which would act as a radiant heat shield.

Based on the lack of combustibles in the immediate area of the pumps as well as a lack of ignition source, the probability of a fire occurring is extremely remote. Since the pumps are separated by approximately 55 feet and the Borated Water Storage Tank, a single fire involving one pump would not damage the redundant pump. Since the area is outside and unenclosed, any products of combustion and heat produced by a fire would immediately dissipate to the atmosphere. Since the area is located outside and subject to rain, no damage is expected to result from normal fire suppression activities.

#### CONCLUSION

The District concludes that, although not in strict compliance with Appendix R, Section III.G.2, the Nuclear Service Water Pumps are adequately protected against a fire disabling both trains. Modification of the system by relocation, installation of a rated barrier or addition of detection and suppression would not significantly enhance the fire protection features provided by the existing configuration. Thus the District requests an exemption to 10CFR50, Appendix R, Section III.G.2 for the existing configuration.

EXEMPTION REQUEST 12  
FA 74  
NUCLEAR SERVICE COOLING WATER SURGE TANKS  
FIRE DETECTION AND AUTOMATIC SUPPRESSION

EXEMPTION REQUEST

Per the provision of 10CFR50.12, the District requests an exemption for Rancho Seco from the specific requirements of Appendix R, section III.G.2 which requires one of the following forms of protection for the redundant Nuclear Service Water Surge Tank Level Switches and circuits located on the auxiliary building roof.

1. Separation by a 3-hour rated barrier.
2. Separation by at least 20 feet of horizontal distance without intervening combustibles with detection and automatic suppression.
3. Separation by a 1-hour rated barrier with detection and automatic suppression.

DESCRIPTION OF EXEMPTION

The Nuclear Service Water Surge Tanks are located on the auxiliary building roof. The associated level switches and circuits are separated by approximately 40 feet of horizontal separation with no intervening combustibles. Although separated by greater than 20 feet without intervening combustibles, no area fire detection or automatic suppression is provided.

SAFE SHUTDOWN REQUIREMENT

At least one train of the Nuclear Service Cooling Water is required to remain functional to achieve and maintain hot and cold shutdown conditions. A fire induced short in the surge tank level switch circuit could trip the associated pump. Thus at least one train of Nuclear Service Water Surge Tank level instrumentation is required.

Fire Area Description

Fire area 74 consists of an unenclosed outside area on the auxiliary building roof with a floor area of 14,467 square feet (See attached Figure 1). The roof construction is 6 1/2" and 12" concrete with a light weight concrete cover of variable thickness.

The roof slab is covered by two layers of 1-5/8" rigid insulation topped off with a fiberglass roll roofing. Wooden nailing strips which form a part of the roofing system below the fiberglass roll roofing are fire retardant pressure treated. The roof covering and method of

installation result in a class "A" roof covering which will not support combustion.

Access to the roof area is through the Number 2 stairwell exit enclosure with a 1 1/2 hour rated door provided with a security lock and door position switch. There are numerous HVAC duct penetrations through the roof with no fire dampers.

The tanks are located on the south central portion of the open roof area of the auxiliary building (FA-74). They are separated on the east, south, and west sides by a metal louvered screen wall. Access from the north is prevented by a combination of louvered screen walls and the essential control room HVAC. The resulting enclosure is approximately 70 x 30 feet with the only access through a short section of the west screen.

#### FIRE PROTECTION SYSTEMS

There are no area detection or suppression systems in the fire area. Local heat detectors are provided in the charcoal filter housings. Portable CO2 extinguishers and a fire hose station are located in the turbine level corridor (FA RT1).

#### FIRE HAZARDS ANALYSIS

The total fire loading in fire area 74 consists of 15 gallons of lubricating oil and 2024 pounds of charcoal (derated to 203 lbs). This results in an average fire loading of 330 BTU/square feet which corresponds to a one minute fire. Electrical cables are routed in conduit and do not contribute to the combustible inventory. The combustible inventory is enclosed in a seismic category 1 structure. This area is not used for routine traffic or storage of combustible materials and hence transient combustibles are not of concern.

Since the combustible inventory is enclosed within seismic category 1 structures and is not exposed to an external ignition source, the probability of a fire occurring is extremely remote. Based on the nature of the combustibles and the outdoor unenclosed area, if a fire occurred it would be of short duration with heat and combustion products rapidly dissipating to the atmosphere. Since the area is outside and subject to rain, no damage is expected to result from normal fire suppression activities.

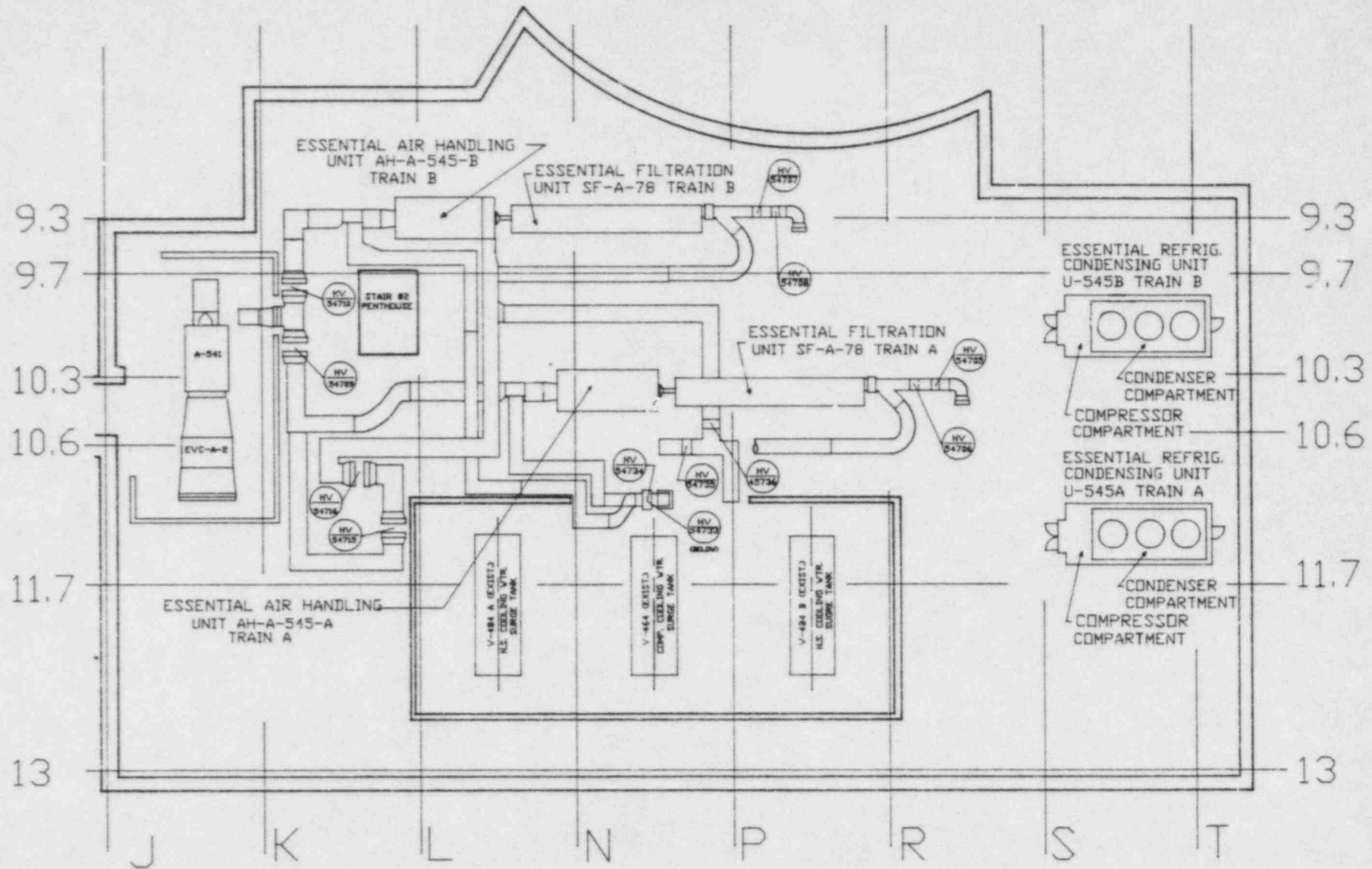
#### CONCLUSION

The District concludes that, although not in strict compliance with Appendix R, Section III.G.2, modification by relocation, protection by a three hour rated barrier, or addition of detectors and automatic suppression will not

significantly enhance the level of fire protection provided by the existing configuration. Therefore, the District requests an exemption to 10CFR50, Appendix R, Section III.G.2 to the extent it requires detection and automatic suppression protection the redundant Nuclear Service Cooling Water Surge Tank level for switches and circuits.



# FIGURE 1



# FIGURE 2

