SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT □ P. O. Box 15830, Sacramento CA 95852-1830, (916) 452-3211
AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

JEW 86-957

December 5, 1986

DIRECTOR OF NUCLEAR REACTOR REGULATION
ATTENTION: FRANK J. MIRAGLIA, DIRECTOR
PWR-B DIVISION
U S NUCLEAR REGULATORY COMMISSION
WASHINGTON DC 20555

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RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION - RANCHO SECO SRTP REVIEW

The Sacramento Municipal Utility District hereby submits in the attachment its response to the letter from J. F. Stolz (NRC) to J. E. Ward (SMUD) dated November 6, 1986 requesting additional information with respect to the list of selected systems as part of the review of the Rancho Seco SRTP (System Review and Test Program).

If there are any questions concerning this report, please contact Mr. Ron W. Colombo at the Rancho Seco Nuclear Generating Station.

JOHN E. WARD
DEPUTY GENERAL MANAGER,
NUCLEAR

Attachment

cc: Region V (2)

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# ATTACHMENT

# RESPONSES TO NRC QUESTIONS

## RESPONSES TO NRC QUESTIONS

1. It is our understanding that once a system is designated as "selected" for inclusion in the SRTP, it cannot be removed or otherwise be deleted from the test program. Is this correct?

A. There are no provisions in the System Review and Test Program for downgrading a system from "selected" to "additional" status. Once a system has been designated as "selected," it will maintain that classification through the completion of the program.

2. Are the hydrogen purge system and hydrogen analyzer, which are referenced in the USAR Accident Analysis (pgs. 14.3-14 and 14.3-15), included in the SRTP under some other system?

A. The Hydrogen Purge System and the Hydrogen Purge Analyzer are included in the System Investigation Report for the Waste Gas System which is an "additional" system. The Hydrogen Purge System and Analyzer are periodically functionally tested by verifying the performance of the Hydrogen Purge blowers, flow control valves and by verifying the flow path. All automatic system valves are stroked quarterly. The Hydrogen Analyzer is calibrated every 18 months. In addition, the District has installed dedicated penetrations for a Hydrogen Recombiner in accordance with 10CFR50.44. Motor operated valves on these penetrations are stroked quarterly. This testing is sufficient to demonstrate the simple functions of the system. We believe that the Hydrogen Purge System and Analyzer need not be considered as a part of a "selected" system review.

3. Does the borated water system include the boric acid pumps which are referenced in USAR Chapter 14 (pgs. 14.1-49 and 14.1-34)?

A. The Boric Acid Addition Pumps are included in the System Investigation Report for the Borated Water System which is designated as an "additional" system. The pumps are proved functional during normal operations as a part of routine load maneuvers, and in addition are tested quarterly. The concentration of boric acid in the Concentrated Boric Acid Storage Tank is tested twice weekly and after each makeup to verify the equivalent of 10,000 gallons of 7,100 ppm boron.

We believe, therefore, that the Boric Acid Addition Pumps need not be considered as a part of a "selected" system review.

4. The listing of selected systems stated that only the high pressure injection portion of the makeup system is considered safety related. Does this include the dilution valve interlock setpoints referenced on USAR (pgs. 14.1-12 and 14.1-13)?

A. The dilution valve and its interlocks are considered a part of the Purification and Letdown System which is being reviewed as a "selected" system in the SRTP. The function of the interlock to terminate a moderator dilution accident as referenced in Chapter 14 of the USAR will be tested as a part of this system.

5. USAR Section 14.2.2.2.4 (pg. 14.2-17) discusses the charcoal bed in the plant vent. Is this bed included as a portion of the ventilation systems included as safety related systems?

A. The charcoal bed filter discussed in the USAR Chapter 14 analysis of a fuel handling accident is considered a part of the Auxiliary Building and Spent Fuel Building filter system. This equipment is reviewed as a part of the System Investigation Report on Balance of Plant Heating Ventilating and Air Conditioning which is considered an "additional" system. Testing on the Auxiliary Building and Spent Fuel Building Filter System is discussed further in the response to question 6.o below.

6. The following components or systems are included in the Rancho Seco Technical Specifications. Does the Sacramento Municipal Utility District plan any testing for these components or systems as part of the SRTP?

A. SMUD plans various levels of additional testing on the listed systems and components as identified below.

a. Reactor Building Polar Crane and Auxiliary Hoist

The objective of the Technical Specification Limiting Condition for Operation on the Reactor Building Polar Crane and Auxiliary Hoist is to identify operational restrictions on the use of the equipment. The Reactor Building Polar Crane and Auxiliary Hoist have no functional requirements important to safe plant operation included in Technical Specifications. The equipment is used to move heavy loads within the Reactor Building, and its operation, inspection and load testing have been reviewed in accordance with NUREG-0612. No further testing is considered necessary as a part of the SRTP.

b. Snubbers

Snubbers, while important to accident mitigation, are routinely tested in accordance with Technical Specifications. Amendment No. 77 to the Technical Specifications established a comprehensive testing program consistent with standardized technical specification requirements.

Visual inspections are completed on the overall condition of the snubber including visual inspections of:

A. The hydraulic fluid level

B. The snubber and strut for damage, loose parts and accumulation of foreign material

C. The end connections on the snubber and strut

D. The exposed portion of the snubber piston rod

E. The seals, reservoir, and any external hydraulic piping

Snubber inspection frequency is determined by the frequency of inoperable snubbers in accordance with T.S. 4.14.

Snubber functional testing is completed which verifies:

A. The snubber piston moves freely, full stroke, in both extension and retraction

B. The snubber locks up in both extension and retraction at a velocity within the specified limit

C. The post lock up bleed rate is within the specific limit

Snubber functional testing frequency is determined by the frequency of inoperable snubbers in accordance with T.S. 4.14.

A total of 23% of the safety related hydraulic snubbers were rebuilt in the 1985 outage and 83% of the safety related hydraulic snubbers have been rebuilt during the restart program. This has exceeded the required hydraulic snubber seal replacement frequency of T.S. 4.14.

This program is considered adequate and further testing under the SRTP is unnecessary.

c. Fire Detection System

d. Fire Supression System

The Fire Protection System has been upgraded to selected system status and will be tested in accordance with the SRTP objectives. The Fire Protection System includes the Fire Detection and Supression equipment mentioned in Technical Specifications with the exception of the $CO_2$ System which was covered as an additional system in the SRTP.

The testing that will be performed on the $CO_2$ System will include routine checks of $CO_2$ storage tank level and pressure, flow path alignment verification, automatic pilot valve and ventilation damper operation and a nozzle flow test for each nozzle. This testing appropriately demonstrates the functional aspects of the $CO_2$ System and satisfies Technical Specification requirements. These tests will be performed during the current outage. No further testing is considered necessary as a part of the SRTP.

e. Radioactive Liquid Waste

p. Radioactive Waste Effluent Monitoring Systems

q. Radiological Environmental Monitoring System

r. Radioactive Waste Sampling and Analysis Systems

These four items have been combined for ease of discussion. For each of these Technical Specification references, the equipment functional requirements relate to the operability of radiation monitoring equipment. Technical Specifications also place operational restrictions such as maximum inventories, types and frequencies of samples and required analyses. These operational restrictions are outside the scope of the SRTP. The functional requirements of the radiation monitoring equipment, however, are reviewed for testing in the System Status Report for the Radiation Monitoring System which has been upgraded to "selected" status and will be tested in accordance with SRTP objectives.

f. New and Spent Fuel Storage and Facilities

The Technical Specification reference to New and Spent Fuel Storage facilities is in Section 5, Design Features, and is a description of the physical and operational aspects of the facilities. No functional requirements are implied, which is appropriate since the facilities serve no active role in any analysed accident. Consequently, no functional testing under the SRTP is planned.

g. Core Flood Tanks

The Core Flood System is basically a passive system requiring a minimum of testing to demonstrate proper operation. It has been reviewed as an "additional" system for the SRTP. This system does play an important role in the mitigation of a large break Loss-of-Coolant Accident, however. A review of testing was performed resulting in the following evaluation.

Routine testing of the Core Flood System includes periodic calibration of Core Flood Tank pressure and level instrumentation and a functional check of the discharge check valves. To date, the functional check of the discharge check valves consisted of a partial stroke during RCS cooldown/depressurization. A new

procedure is being prepared for a full stroke test to be conducted when the vessel head is removed. With the operational verification that the Core Flood Tank discharge valves are opened during heatup, this testing appropriately demonstrates the functional aspects of the Core Flood System and satisfies Technical Specification requirements. This testing will be performed during this outage except for the discharge check valve functional test which will be completed the next time the reactor vessel head is removed. No additional testing under the SRTP is planned.

h. Reactor Building Emergency Cooling System

The Reactor Building Emergency Cooling System is being reviewed as a part of the Balance of Plant Heating Ventilating and Air Conditioning which is an "additional" system. Problems associated with the system are being addressed in a System Investigation Report. Although the system is not complex, it plays an important role in cooling and depressurizing the Reactor Building following a Loss-of-Coolant accident. A review of system testing was performed resulting in the following evaluation.

Testing of the Reactor Building Emergency Cooling System that will be performed prior to restart, includes verification of proper initiation from both manual and automatic SFAS actuation, verification of proper Control Room panel indications and determination of the system operating flow rates for each cooler. Charcoal samples from the two trains with charcoal filters will be analyzed offsite for adsorption efficiency. Proper cooling water flows will be tested under the Nuclear Service Cooling Water System. During the restart program, the adequacy of the heat removal capability of the system will be demonstrated via testing or analysis.

This testing adequately demonstrates the simple functional requirements of this system, satisfies Technical Specifications and will be conducted during this outage. Additional testing under the SRTP is considered unnecessary.

i. Reactor Building Spray System

The Reactor Building Spray System is being reviewed as an "additional" system in the SRTP. Because this system plays an active role in accident mitigation, a review of required system testing has been performed to assure that the system safety function is appropriately demonstrated. This review indicates that existing testing is sufficient. Routine testing of the system includes the following:

. System actuation is demonstrated from a manual SFAS initiation with the pump recirculating water to the BWST and also from an integrated automatic actuation of SFAS

- Control Room panel indications and controls are verified
- Pump performance is verified
- Spray flow instruments are calibrated
- The discharge isolation valves are stroke tested, timed and verified to open automatically on SFAS signal
- A flow path through the spray headers and nozzles is verified

This testing adequately demonstrates Reactor Building Spray System functions and satisfies Technical Specification requirements. With the exception of the spray header and nozzle flow verification which was performed in 1985, the routine testing will be performed during this outage. Testing beyond this established program is considered unnecessary.

j. Condensate Storage Tank System

The Condensate Storage Tank is included in the Auxiliary Feedwater System review as a "selected" system. The System Status Report for that system will identify required testing in accordance with SRTP objectives.

k. Pressure Boundary Isolation Valves

The Pressure Boundary Isolation Valves referenced in Table 3.3-1 of Technical Specifications are included in the "selected" systems of Decay Heat Removal (DHS-015, DHS-016) and Reactor Coolant Systems (RCS-001, RCS-002). The testing of those valves will be addressed in their respective System Status Reports in accordance with the objectives of the SRTP.

l. Control Rod Drive System

The Control Rod Drive System is being reviewed as an "additional" system in the SRTP, and any problem associated with the system will be addressed in the System Investigation Report. Although the only function this system must perform for accident mitigation is to respond to a reactor trip signal, the system testing was reviewed. The control rod insertion time testing, control rod program verification, and control rod position indication checks demonstrate the functions of the system important to safe plant operation. This routine testing with the exception of the program verification, will be performed prior to restart. Additional testing under the SRTP is considered unnecessary.

m. Containment Isolation Valves

Many Containment Isolation valves are considered part of one of the "selected" systems and will be tested in accordance with SRTP objectives. The following valves, however, are not included as part of a selected system (note that this list includes those valves recommended for inclusion in Technical Specification Table 3.6-1 as part of Proposed Amendment 111):

| VALVE NUMBER | DESCRIPTION |
|---|---|
| SFV-53612 | RB ATM. & PURGE SAMPLE, AB SIDE |
| SFV-53613 | RB ATM. & RAD SAMPLE, AB SIDE |
| SFV-60003 | RC SYS. DRAIN ISOL., AB SIDE |
| SFV-66308 | RB NORMAL SUMP DRAIN, AB SIDE |
| SFV-92520 | PRZR. NITROGEN ISOL., AB SIDE |
| SFV-53503 | RB PURGE INLET, AB SIDE |
| SFV-53604 | RB PURGE OUTLET, AB SIDE |
| SFV-53610 | RB PRESS. EQUALIZER, AB SIDE |
| SFV-60002 | RC SYSTEM VENT ISOL., AB SIDE |
| SFV-60004 | RC SYSTEM DRAIN ISOL., AB SIDE |
| SFV-66309 | RB NORMAL SUMP DRAIN, AB SIDE |
| HV-20611 | OTSG'S BLOWDOWN ISOL., AB SIDE |
| HV-20593 | OTSG-A SAMPLE ISOL., AB SIDE |
| HV-20594 | OTSG-B SAMPLE ISOL., AB SIDE |
| SFV-53504 | RB PURGE INLET, RB SIDE |
| SFV-53603 | RB PRESS. EQUALIZER, RB SIDE |
| SFV-53605 | RB PURGE OUTLET, RB SIDE |
| SFV-60001 | RC SYS. VENT ISOL, RB SIDE |
| *SFV-46906 | CRD COOLING WATER SUPPLY, AB SIDE |
| *SFV-46907 | CRD COOLING WATER RETURN, RB SIDE |
| *SFV-46908 | CRD COOLING WATER RETURN, AB SIDE |
| *HV-20609 | OTSG-A BLOWDOWN ISOL., RB SIDE |
| *HV-20610 | OTSG-B BLOWDOWN ISOL., RB SIDE |
| SFV-53615 | RB HYDROGEN PURGE |
| SFV-53616 | RB HYDROGEN PURGE |
| HV-53617 | RB HYDROGEN PURGE |
| HV-53618 | RB HYDROGEN PURGE |
| HV-53620 | HYDROGEN RECOMBINERS |
| HV-53621 | HYDROGEN RECOMBINERS |
| HV-53622 | HYDROGEN RECOMBINERS |
| HV-53623 | HYDROGEN RECOMBINERS |
| HV-70040 | HYDROGEN MONITOR CONTAINMENT OUTLET ISOLATION |
| HV-70041 | HYDROGEN MONITOR CONTAINMENT INLET ISOLATION |
| HV-70042 | HYDROGEN MONITOR CONTAINMENT INLET ISOLATION |
| HV-70043 | HYDROGEN MONITOR CONTAINMENT OUTLET ISOLATION |
| HV-70044 | HYDROGEN MONITOR CONTAINMENT OUTLET ISOLATION |
| HV-70045 | HYDROGEN MONITOR CONTAINMENT INLET ISOLATION |
| HV-70046 | HYDROGEN MONITOR CONTAINMENT INTLET ISOLATION |
| HV-70047 | HYDROGEN MONITOR CONTAINMENT OUTLET ISOLATION |

* Manual initiation signal (no auto. initiation)

The testing of the Containment Isolation function of these valves is performed routinely. Verification of proper SFAS actuation where applicable, Control Room indication, stroke time testing, and valve leakage by local leak rate testing per Technical Specification 4.4.1, appropriately demonstrate this function. This routine testing will be performed on these valves during this outage. No further testing under the SRTP is considered necessary.

n. Diesel Fuel Oil System

The diesel fuel oil supply to the Emergency Diesel Generators are included in the System Status Report for that system. As a "selected" system, testing of the diesels and the fuel oil supply will be addressed in accordance with SRTP objectives.

o. Auxiliary Building and Spent Fuel Building Filter System

The Auxiliary Building and Spent Fuel Building Filter System is being reviewed as an "additional" system as a part of the Balance of Plant Heating Ventilating and Air Conditioning System Investigation Report. This system supports the mitigation of a fuel handling accident by containing and filtering the Spent Fuel Building air. Testing which will be completed prior to restart, includes demonstration of system operation by manual initiation and determination of system flow rate and distribution. The charcoal bed (referenced in question 5) and HEPA filters are subjected to differential pressure testing, filter efficiency testing and adsorbancy testing in accordance with ANSI N.510. This testing program adequately demonstrates system functions and will be conducted during the current outage. No additional testing under the SRTP is considered necessary.

s. Nuclear Service Electrical Building Emergency HVAC System

This system has been upgraded to "selected" system status and will be tested in accordance with the objectives of the SRTP.

t. Nuclear Instrumentation System

The Nuclear Instrumentation System is being reviewed as an "additional" system in the SRTP. This equipment performs the very simple function of monitoring reactor power level and providing this input to the Reactor Protection System. This function is adequately demonstrated by the routine calibration of the instrumentation required by Technical Specifications. Additional testing under the SRTP is not considered necessary.

u. Plant Computer System

The Plant Computer System is being reviewed as an "additional" system in the SRTP. While the Plant Computer does support the monitoring of core power distribution, it does not perform any function with respect to accident mitigation. To support its power distribution monitoring functions the Plant Computer is routinely tested in an integrated fashion with simulated inputs to develop simulated power distributions. This testing adequately demonstrates this function as does normal operation. Additional testing under the SRTP is considered unnecessary.