Docket No.: 50-312

FEB 1976

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Sacramento Municipal Utility District
ATTN: Mr. E. K. Davis
General Manager
6201 S Street
P. O. Box 15830
Sacramento, California 95813

Gentlemen:

We are reviewing your proposed Rancho Seco spent fuel storage enlargement submitted by letter dated December 19, 1975, and have concluded that the additional information requested in the enclosure is necessary to continue our review. It is requested that you provide this information within 30 days of receipt of this letter. Please send us 40 copies including three signed and notarized originals.

Sincerely,

Original signed by

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosure:
Request for Additional
Information

cc w/enclosure: See next page

8003810662 p

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Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-526-166

cc: David S. Kaplan, Secretary and
General Counsel
6201 S Street
Post Office Box 15830
Sacramento, California 95813

Business and Municipal Department
Sacramento City-County Library
828 I Street
Sacramento, California 95814

REQUEST FOR INFORMATION FEB 9 1978

Rancho Seco Unit 1
Docket 50-312
Fuel Pool Modification

1. When is the next refueling date and what is the proposed schedule for subsequent refueling?

2. How many fuel assemblies will be replaced during each refueling?

3. What is the total construction cost associated with the proposed modification of the spent fuel pool (SFP)?

4. What are the alternatives to increasing the storage capacity of the SFP? The alternatives considered should include, but not necessarily be limited to, the following options:

   a. Shipment to a fuel reprocessing facility. Provide status, if any, of any contractual agreements.

   b. Shipment to another reactor site.

   c. Termination of operation of the reactor.

   These options should include a cost comparison in terms of dollars per kilogram of uranium stored and the cost for providing replacement power within or outside of the licensees' generating system.

5. Provide data on the quantity of stainless steel used in the new racks.

6. Provide the following information related to the water purification system:

   a. What is the volume of water in the SFP?

   b. How many demineralizers are used and what length of time is required to clean up the total volume of water in the pool?

   c. What is the expected increase in quantity of solid wastes from demineralizers and filters resulting from the expansion?

7. Provide a discussion of the models and calculations used to estimate doses to personnel from radionuclide concentrations in the spent fuel pool including the following:

a. The expected maximum radionuclide concentration (μCi/cc of fuel pool water source terms including ^{134}Cs, ^{137}Cs, ^{58}Co and ^{60}Co.

b. The dose rate above the spent fuel pool resulting from these source terms.

c. The total dose rate above the pool from (b) plus the contribution from the stored spent fuel pool elements in the expanded pool.

d. The annual man-rem dose equivalent based on all operations performed by personnel in the pool area.

8. Provide a discussion of the models and calculations used to estimate releases of radioactive materials to the environment from the modified spent fuel pool.

9. Discuss the potential for fuel-handling and fuel-cask accidents, such as movement of transfer cranes over the storage area, that would be affected by the expansion.

10. Discuss the storage or disposal of the original fuel racks.

11. Please provide details as to the location of the failed fuel storage locations in the pool. If they are not part of the array, discuss the reactivity effect of their presence. If they are part of this array, provide assurance that they contain at least as much neutron absorber as the regular storage location.

12. Provide sufficient detail as to location and arrangement of temporary storage modules in the transfer canal to support the assertion that they are safe as regards criticality. In particular provide assurance that the transfer path is far enough from these locations to provide negligible Neutron coupling between transferred and stored assemblies.

13. Assuming the loss of all cooling systems, resulting in a bulk temperature of 212°F at the surface of the pool:

a. calculate the outlet conditions of the coolant from the hottest subchannel of the hottest bundle. This should include coolant temperature and pressure and, if applicable, steam quality and void fraction;

b. show that the cladding will not swell or rupture due to the cladding temperature and the internal pressure from fission gas present in the fuel rod at end of life; and

c. show that the void fraction of the water is zero inside and between the fuel bundles over their entire length, or else that keff is at a safe level when boiling occurs inside and between the stainless steel storage tubes.

14. Re-evaluate the consequences of dropping of the fuel cask, taking into account the closer spacing for the proposed spent fuel locations. This evaluation should include the possibility of the fuel cask tipping or rolling into the spent fuel. Also provide diagrams showing the location of the spent fuel racks in the pool and area of impact in the event the cask tips or rolls into the pool.

15. Provide a list of all seismic and non-seismic systems which can be used as make-up in the event the spent fuel pool cooling systems fails and it cannot be repaired within the time limits specified in your proposal of December 19, 1975.

16. Diagrams or sketches of the new spent fuel storage racks have not been provided Provide such diagrams which indicate the general arrangements of the lateral bracing, and the locations and details of vertical and horizontal supports.

17. Provide a diagram which schematically represents the dynamic model used in the seismic analysis. Indicate the support points, gaps, locations of translational and rotational springs, if utilized, and the method employed to account for the dynamic effects of the pool water.

18. On page 7, a discussion of the lateral clearance of 1/8" for thermal expansion is presented. State the pool temperature at which contact with the wall is anticipated, and the contact pressure during normal operation. Specify whether or not these connections are relied upon to transmit shear. Provide a description of the frictional resistance of such connections and the effect of this resistance on the seismic analysis.

19. Regulatory Guide 1.61 is referenced for determining the damping values of the welded steel storage racks. However, this guide does not discuss structures immersed in a fluid. If damping values are incorrectly assessed, a shift in the response frequency may occur, which could lead to an unconservative evaluation of the system response. Discuss this possibility and demonstrate that such a shift in system response would not adversely affect the fuel storage racks.