ENCLOSURE 2

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

September 18, 1986

Docket Nos. 50-275 and 50-323

MEMORANDUM FOR:	H. Denton*	R. W. Houston	F. Rosa
	R. Vollmer*	D. Crutchfield	V. Benaroya
	J. Lyons*	E. Rossi	B. Clayton
	H. Thompson*	G. Lainas	L. Rubenstein*
	F. Miraglia*	T. Speis	G. Lear
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	G. Holahan*	J. Milhoan	S. Varga
	T. Novak	R. Ballard	V. Noonan
	F. Schroeder	C. Berlinger	

THRU: Steven A. Varga, Director
Project Directorate #3
Division of PWR Licensing-A

FROM: Hans E. Schierling, Project Manager
Project Directorate #3
Division of PWR Licensing-A

SUBJECT: DAILY HIGHLIGHT - MEETING WITH PACIFIC GAS AND ELECTRIC COMPANY ON SPENT FUEL POOL

Diablo Canyon Nuclear Power Plant

A meeting will be held tomorrow, Friday, September 19, 1986 with Pacific Gas and Electric Company to discuss in further detail the reinstallation of the original racks into the Unit 1 spent fuel pool. The meeting will begin at 9:00 a.m. in Room P-422 and will continue on Saturday, if necessary. H. McGurren (OGC) was advised of the meeting in order to inform the parties of the rerack issue.

for

Hans E. Schierling, Project Manager
Project Directorate #3
Division of PWR Licensing-A

* THESE COPIES MUST BE HANDCARRIED

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ENCLOSURE 3

LIST OF MEETING ITEMS
FROM TELEPHONE CALL ON SEPTEMBER 18, 1986

SEPTEMBER 18, 1986 CONFERENCE CALL
ITEMS FOR MEETING

Information Needed for Meeting

1. Provide a list of FSAR commitments and other corresponding documents (SSERs, PG&E - NRC correspondence, etc.) related to racks in chronological order.

2. Provide a description in chronological order of the types of seismic analysis and/or design basis for the racks (e.g., DE, DDE, and Hosgri).

3. Provide weld codes and welding procedures for welding related to the changes and the installation. Identify specific aspects and provide the documents for staff review.

4. Describe the seismic input used in the current analysis and spectra.

5. What is the basis for the 4 kip uplift load? Is it related to vertical accelerations?

6. Provide weld attributes inspected and acceptance criteria.

7. Describe how as-built configurations were made and documented and how this information was factored into the calculations.

8. Did any of the bearing plate welds overlap the embed plug weld area? If so, what is the effect on the embed or the weldment?

9. Describe those cells that did not pass 50 lb. drag test. What was done to the cell such that it later passed?

10. Did PGandE consider localized buckling potential, overall stability, localized high stresses?

11. Discuss the quanlification of the embed for eccentric loading. Also, consider the case of two anchorage brackets on the same embed.

12. Provide a stress table for all key rack elements. Compare with FSAR criteria and provide ratios between criteria and actual values.

13. What was PGandE's response to NRC's 8/13/73 letters item 9.1

14. What was PGandE's response to NRC's 1/4/74 question 9.4.

ENCLOSURE 4

PG&E FSAR AMENDMENT 3

February 15, 1974

(pages 9.1-1 through 9.1-4)

(Items 1 and 3)

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

In the Matter of PACIFIC GAS AND ELECTRIC COMPANY Units 1 and 2 - Diablo Canyon Site	)	Docket No. 50-275-OL Docket No. 50-323-OL AMENDMENT NO. 3

Pacific Gas and Electric Company hereby submits Amendment No. 3 to its application for an operating license for Units 1 and 2 at its Diablo Canyon Site. This amendment responds in part to the requests for additional information transmitted to Pacific Gas and Electric Company in letters dated December 28, 1973 and January 4, 1974, and includes other miscellaneous changes and corrections to the Final Safety Analysis Report.

Subscribed in San Francisco, California, this 15th day of February, 1974.

Respectfully submitted,

PACIFIC GAS AND ELECTRIC COMPANY

By J. D. WORTHINGTON
J. D. Worthington
Senior Vice President

FREDERICK T. SEARLS
JOHN C. MORRISSEY
PHILIP A. CRANE, JR.
DENNIS C. SULLIVAN

By PHILIP A. CRANE, JR.
Philip A. Crane, Jr.

Subscribed and sworn to before me
this 15th day of February, 1974

THEODORA COOKE (SEAL)
Theodora Cooke, Notary Public in
and for the City and County of
San Francisco, State of California

My Commission expires January 28, 1977

9.0 AUXILIARY SYSTEMS

9.1 FUEL STORAGE AND HANDLING

The fuel storage and handling systems provide safe and effective means of storing, transporting, and handling new and irradiated nuclear fuel. These systems mainly are located in the fuel handling areas of the Auxiliary Building, adjacent to the east walls of the containment structures. Separate facilities are provided for each unit. The Auxiliary Building is a Design Class I structure and is described in Chapter 3.

9.1.1 NEW FUEL STORAGE

New fuel will be stored in racks in vaults in the Auxiliary Building, located as shown in Figure 1.2-4 for Unit 1 and in Figure 1.2-10 for Unit 2. The racks are designed to store, protect and prevent criticality of new fuel assemblies until used within the reactor.

Design Bases

New fuel assemblies and RCC assemblies for each unit are stored in separate areas located to facilitate the unloading of new fuel assemblies and RCC assemblies from trucks. The storage vaults are designed to hold new fuel assemblies in specially constructed racks and are utilized primarily for the storage of the one-third replacement cores. The assemblies which make up the remainder of the first core are stored in the spent fuel pools which are available for this use until the first refueling.

The design bases for the new fuel storage racks are as follows: (1) Two racks provided for each unit will hold approximately one-third of a reactor core. (2) Racks are designed so that the fuel will remain subcritical (k_{eff} of less than 0.90) with the vault flooded with unborated water. (3) The racks are capable of maintaining horizontal center to center spacing of the fuel elements under ~~maximum~~ seismic shock (Double Design Earthquake), and of supporting the element vertically under maximum seismic shock.

System Design

There are two racks for each unit. Each rack holds thirty-five assemblies. A rack is approximately nine feet six inches wide, thirteen feet long and thirteen feet six inches high (excluding centering cones). It is built from type 304 stainless steel.

The assemblies are in seven rows, five deep, and are spaced to have a center to center distance of twenty-two inches plus or minus one thirty-second of an inch. They are of 304 stainless steel and have a cone shaped top entrance to facilitate loading of fuel elements. They are shaped in a nine inch square (cross section) hollow beam configuration, standing upright. They have a one inch thick "plastic" bearing plate at the base.

The new fuel storage racks are Design Class II, but are designed to Design Class I criteria in accordance with Table 3.2-4. Accordingly, the racks and the anchorage of racks to the floor are designed for the DDE loading condition with
3 the racks filled with fuel assemblies. The seismic loads are determined from the time history, model superposition analysis of the Auxiliary Building.

The racks are designed to withstand a vertical (uplift) force of 4000 lb. in the unlikely event that an assembly would bind in the rack while being lifted by the Spent Fuel Bridge Crane.

The racks are located in the fuel handling area of the Auxiliary Building at elevation 125. Assembly access is from elevation 140. One third of a core can be stored for each unit. Before the first fueling, the other two-thirds will be stored in the spent fuel racks.

Safety Evaluation

The storage racks are designed in accordance with the American Institute of Steel Construction, specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings.

Center-to center assembly spacing is held to one thirty-second of an inch to assure a k_{eff} of less than 0.90, even when the vault is flooded with unborated water. After the racks are installed, a dummy fuel element is inserted in each location and critical measurements taken to assure proper arrangement and support. A metal cap covers the top of the rack. The holes in the cap line up with the guidance cones. If a fuel assembly is accidentally dropped, it will only be able to drop into a holder and could not drop into the space between fuel assemblies. An accident analysis will be found in Chapter 15.

9.1.2 SPENT FUEL STORAGE

The spent fuel storage pool, shown in Figure 9.1-2, is the storage space for irradiated spent fuel from the reactor. This figure shows the spent fuel storage racks arrangement. This pool is not required for any plant safety-related function. Two pools are provided, one for each unit.

Design Bases

The spent fuel pools are designed to accommodate fuel assemblies in a subcritical array such that a $k_{eff} \leq 0.9$ is maintained. They are constructed of reinforced concrete as part of the Auxiliary Building structure. The design is described in Subsection 3.8.1. The entire structure and the spent fuel racks have been designed in accordance with Design Class I seismic requirements. Criteria set by Safety Guide 13 have been followed. Gaseous radioactivity about the spent fuel storage pool is maintained below the 10 CFR 20 limits. The spent fuel racks are designed to prevent insertion of a spent fuel assembly in other than a prescribed location.

System Design

The spent fuel storage pool is a reinforced concrete structure with seam-welded stainless steel plate liner. The pool volume is approximately 59,100 cubic feet. Borated water is used to fill the pool at a concentration of approximately 2,000 ppm boron.

Racks for a total of 374 spent fuel assemblies can eventually be
accommodated; initially, racks for 270 will be installed. This allows for
the concurrent storage of a full core of irradiated fuel assemblies, and
the normal quantity of spent fuel assemblies from the reactor during a
refueling operation. The spent fuel assemblies are stored in stainless
steel storage racks in parallel rows having a center-to-center distance of
3 21 inches in both horizontal directions. Rod cluster control assemblies
and burnable poison rods requiring removal from the reactor are stored in
the spent fuel assemblies.

The racks and the anchorage of racks to the floor are designed for the DDE
loading condition with the racks filled with fuel assemblies. The seismic
3 loads are determined from the time history, modal superposition analysis of
the Auxiliary Building.

The racks are designed to withstand a vertical (uplift) force of 4000 lbs. in the unlikely event that an assembly would bind in the rack while being lifted by the Spent Fuel Bridge Crane.

Adjacent to the spent fuel storage pool is the stainless steel lined fuel transfer canal which is connected to the refueling cavity (inside the containment). A leaktight door is provided between the pool and the fuel transfer canal.

All components (handling tools, new fuel elevator, etc.) in contact with the spent fuel pool water are constructed of stainless steel. Since all materials which are used in the construction of the spent fuel pool or are in contact with the pool water are stainless steel, material compatability is insured.

The borated water level in the pool is maintained to provide at least 10 ft of water above the tope of the active portion of a spent fuel assembly. This water barrier serves as a radiation shield, limiting the gamma dose rate at the pool surface.

ENCLOSURE 5

NRC LETTER TO PG&E
August 13, 1973
(Item 13)