SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT □ 6201 S Street, Box 15830, Sacramento, California 95813; (916) 452-3211

November 26, 1980

Director of Nuclear Reactor Regulation
Attention: Mr. Robert W. Reid, Chief
Operating Reactors, Branch 4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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

Dear Mr. Reid:

In response to Mr. Padovan's request for a brief description of our proposed new buildings at Rancho Seco, we are providing the following information. Since the accident at Three Mile Island, the Sacramento Municipal Utility District has developed plans to improve the safety of Rancho Seco Unit No. 1. These plans generally coincide with the requirements specified in NUREG-0737, "Clarification of TMI Action Plan Requirements". To provide space for the additional equipment required to conform to these requirements, we have determined that three additional buildings will be constructed within the controlled area of the Rancho Seco Unit No. 1 site.

A Training and Records Building will be erected over the period of approximately July, 1981 to December, 1982. This building will be a five-story, 50,000 square-foot, Class II steel frame structure. This building will be used for additional training, records storage, chemical and radioactivity sample analysis, and office space.

A Diesel Generator Building will be constructed over the period of approximately March to July, 1982. This building will be a one-story, 3,000 square-foot, Class I concrete reinforced structure. The building will house two diesel generator units of approximately 3,500 KW each. This addition is required to expand the on-site emergency backup power system.

The third building is a Nuclear Service Electrical Building with construction scheduled to start in December of this year. This building will be a three-story, 13,000 square-foot, Class I concrete reinforced structure. This building is required for our planned TMI modifications and work will continue on a high priority basis. The building will house the electrical distribution system and support hardware for the TMI modifications. This

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equipment includes the 5 KV switchgear, 480 V load center and motor control center, batteries and chargers, inverters, relay panels, isolation panels, auxiliary feedwater system control panels, and computers for various display functions. We have determined that the construction of this building does not involve an unreviewed safety question, but would like to provide you with the following information since it will house Class I equipment.

The Nuclear Service Electrical Building is defined as a quality and seismic Class I structure. The design shall conform to the applicable codes and specifications listed below. Where conflict occurs between existing codes or where other requirements are specified, the more restrictive design code shall govern.

Regulatory Guides

1.60, Design Response Spectra for Seismic Design of Nuclear Power Plants

1.61, Damping Values for Seismic Design of Nuclear Power Plants

1.76, Design Basis Tornado for Nuclear Power Plants

General Design Criteria

The following documents are used as criteria for the design.

Bechtel Power Corporation Topical Reports.

- BC-TOP-3A Tornado and Extreme Wind Design Criteria for Nuclear Power Plants
- BC-TOP-4A Seismic Analysis of Structures and Equipment for Nuclear Power Plants
- BC-TOP-9A Design of Structures for Missile Impact

Codes and Standards

The following codes and standards are applicable design.

American Concrete Institute, Building Code Requirements for Reinforced Concrete (ACI 318-77).

American Concrete Institute, Standard 349-76 and 1979 Supplement to Code Requirements for Nuclear Safety Related Concrete Structures.

American Institute for Steel Construction (AISC) Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, adopted February 12, 1969 and Supplements No. 1, 2, and 3.

American Institute of Steel Construction (AISC), Specification for Structural Joints Using ASTM A 325 or A 490 Bolts Approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation, February 4, 1976.

American Welding Society (AWS), Structural Welding Code (AWS D1.1-72, Rev. 1-1973).

Industry Standards

Nationally recognized industry standards, such as those published by American Society for Testing Materials (ASTM), are used whenever possible to describe material properties, testing procedures, fabrication, and construction methods.

Load and Load Combinations

A) Reinforced concrete structures shall be designed for ductile behavior in accordance with ACI 349-76 and 1979 supplement. Design of concrete structures shall satisfy the most severe of the loading combinations as stipulated by ACI 349-76 and 1979 supplement. Section 9.3.

B) Structural Steel - steel structures will satisfy the following load combinations without exceeding the specified stresses:

1. S: $D+L+E_o$

2. S: $D+L+W$

3. 1.4S: $D+L+E_{ss}$

4. 1.4S: $D+L+W_t$

Notes:

D = dead loads or their related internal moments and forces

L = applicable live loads or their related internal moments and forces

E_o = loads generated by the operating basis earthquake (OBE)

E_{ss} = loads generated by the safe shutdown earthquake (SSE)

W_t = loads generated by the design tornado specified for the plant. They include combined loads due to the tornado wind pressure, due to tornado-created differential pressures, and due to tornado-generated missiles.

S = the required strength based on elastic design methods and the allowable stresses defined in the part I of the AISC "Specification for the Design Fabrication and Erection of Structural Steel for Buildings", February 12, 1969.

Construction Materials

Concrete:

Compressive strength (28 days) - f'_c = 4000 psi

Reinforcing Steel:

ASTM A615-72 Grade 60, f_y = 60,000 psi

Structural Steel:

ASTM A36-70a f_y = 36,000 psi

High Strength Bolts:

ASTM A325-71a (Bearing Type), 3/4 Ø " minimum

Seismic Analysis

The building design is based on maximum ground accelerations for the OBE and SSE conditions of 0.13g and 0.25g respectively.

We wish to reiterate the fact that we are not seeking NRC approval of this design, but instead, are providing this information for your records and for use by Region V of the Office of Inspection and Enforcement.

Sincerely,

Wm. C. Walbridge
General Manager

cc: Mr. R. H. Engelken, Director
Region V, Office of Inspection
and Enforcement
U. S. Nuclear Regulatory Commission
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