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	PWR-A RSB	1	1			
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	NRR/ORAS	1	0	REG FILE 04	1	1
	RGN5	1	1			
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PACIFIC GAS AND ELECTRIC COMPANY

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JAMES D. SHIFFER
VICE PRESIDENT
NUCLEAR POWER GENERATION

June 6, 1986

PGandE Letter No.: DCL-86-159

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Long Term Seismic Program - Quarterly Progress Report No. 3

Dear Mr. Denton:

In compliance with License Condition 2.C.(7) of Facility Operating License DPR-80, enclosed is the Long Term Seismic Program Quarterly Progress Report No. 3 for work performed from February 1, 1986 through April 30, 1986. Copies of the progress report are also being forwarded to NRC Staff consultants and to the ACRS Staff.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

Enclosure

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ENCLOSURE

DIABLO CANYON POWER PLANT

LONG TERM SEISMIC PROGRAM

QUARTERLY PROGRESS REPORT NO. 3

PACIFIC GAS AND ELECTRIC COMPANY

JUNE 1986

A001

TABLE OF CONTENTS

1. INTRODUCTION

This is the third quarterly progress report for the Diablo Canyon Long Term Seismic Program (LTSP). This report describes activities performed during the period from February 1, 1986, through April 30, 1986. PGandE and its consultants met with the NRC Staff in Bethesda, Maryland on March 11 and 12, 1986 to review the Phase II scoping analyses. The NRC Staff and its advisory panels on numerical modeling of ground motions and soil/structure interaction (SSI) visited the Diablo Canyon Plant Site on April 14 and 15, 1986. This visit consisted of a tour of the plant site and a one-day meeting on earthquake ground motions. Following this plant site visit, the NRC Staff and its advisory panel on SSI held a half-day meeting in San Francisco to review the SSI analyses.

During this reporting period, work was started on Phase III tasks in all of the six program elements. This report summarizes the progress in each of these elements.

2. GEOLOGY/SEISMOLOGY/GEOPHYSICS

2.1 GEOLOGY AND GEOPHYSICS

2.1.1 Review of Geologic Data

The review of published geologic information for the San Simeon, the San Luis Obispo - Pismo Beach, and the onshore Santa Maria Basin Region areas is continuing. During the reporting period, existing aerial photographic coverage of these areas was reviewed. A review of background information was initiated for the areas of the West Huasna, Nacimiento, and Rinconada faults.

2.1.2 Acquisition of Geophysical Data

Review of reprocessing techniques for selected lines of the 1980 GSI deep seismic lines is in progress and should be complete in late June 1986. Preliminary recommendations have been prepared for purchase of additional offshore deep seismic lines and high resolution, shallow seismic lines. It is anticipated that these recommendations will be finalized during the next quarter.

The Seisdata Services, Inc. program of obtaining new deep seismic data has been delayed because of problems in obtaining permits from landowners. These problems have now been resolved and field work is scheduled to resume in May 1986 and be completed this summer.

2.1.3 Preparation of Base Maps

Work in this area is complete.

2.1.4 Interpretation of Geophysical Data

Interpretation of marine geophysical data continued during this reporting period. This work concentrated on the trend of the Hosgri fault from central

Estero Bay to the general area of Point Arguello. A preliminary fault trend map was completed for this part of the Hosgri.

Preliminary interpretation of MMS shallow, high resolution data was completed. Additional work is required to examine 3.5 kHz data now being acquired from MMS.

The status of the geophysical program was reviewed at a PGandE workshop during February 1986.

2.1.5 Field Studies

During the reporting period, detailed planning was performed for field work in the San Simeon area. This field work is scheduled to begin in June 1986.

2.2 CENTRAL COAST SEISMIC NETWORK

The instrumentation procurement specification was completed and detailed proposals were received from a number of suppliers. Technical and administrative evaluations of the proposals are expected to be completed during May, and a contract awarded to the selected bidder. PGandE Telecommunications and Engineering Computer Sciences Departments have been participating in the proposal reviews to assure full usage of PGandE's resources in these areas for the ongoing operation of the selected seismic instrumentation.

Site selection was completed for 10 of the 18 station sites. This selection process includes performing a seismic noise test, inspecting the site vicinity for factors affecting site suitability, and obtaining preliminary agreement with the landowner (and tenant, as appropriate) for use of the site.

Calibration of the Central Coast Seismic Network is being planned to enhance the quality and utility of the recorded data. This calibration plan includes onshore and offshore seismic sources and onshore and offshore recording systems to supplement the network stations themselves. The planned calibration activities are being coordinated with the U.S. Geological Survey. During the next several months, calibration planning will be carried out in detail in order to coordinate with other geophysical activities in the LTSP and to accommodate the operational schedule of the network.

3. GROUND MOTIONS

During this reporting period, progress in the ground motions area consisted of (1) further refinement of the ground motions work plan, and (2) development of a suite of realistic acceleration time-histories for use in the fragility and SSI analyses.

The ground motions work plan as developed from the Phase II Scoping Study was presented in meetings with the NRC Staff on March 11 and 12, 1986, and with the NRC advisory panels on ground motions and SSI on April 14 and 15, 1986.

Comments and suggestions on the work plan received at both meetings were considered in the work plan. Five key dates for providing ground motion output data for fragility, SSI, and seismic hazard analyses were identified: they are May, June, and September 1986, and February and July 1987. A schedule for performing individual tasks using both the empirical approach and numerical modeling was established to meet these deadlines. In developing this schedule, appropriate consideration was given to maintaining close ties with other activities of the LTSP, especially in the areas of geology, geophysics, and seismology.

The ground motions output data needed for the first two key dates, May and June 1986, primarily involve a suite of realistic time-histories that would represent ground motions at a rock site within 10 kilometers from the source of an earthquake of magnitude M_L greater than 6.5. Two methods are used to generate these time histories. The first method is to select from actual accelerograms of moderate-to-large magnitude time-histories. Some of these time-histories are directly usable. Others are corrected for site condition, distance, and magnitude according to empirical spectral scaling laws. The second method is to simulate acceleration time-histories for large earthquakes by treating a set of actual time-histories of a well-studied small earthquake as Green's function after proper corrections for radiation pattern, attenuation, and site response, and then summing them over the presumed fault surface of the large earthquake. Both the scaled and simulated time-histories are checked for several characteristics to determine whether they are realistic. Preliminary results of this work were reviewed. It is expected that the requirements for ground motion data by May and June 1986 will be met.

4. SEISMIC HAZARDS ANALYSIS

Progress in the seismic hazards analysis area during the reporting period consisted of the development of an appropriate representation for the Phase III seismic hazards curves. A preliminary recommendation that the Phase III hazard curves be formulated in terms of response spectral values rather than peak acceleration was completed, and alternative means of accomplishing this are being assessed.

5. SOIL/STRUCTURE INTERACTION

During the third quarterly reporting period, work on four priority tasks was completed with the appropriate documentation:

- Assemblage and review of site rock data
- Literature research on spatial coherency of free-field ground motions
- Implementation and testing of CLASSI and SASSI computer programs
- Review of dynamic models of power block structures

Work on Phase III has started. The major activities are in the areas of verification of the computer programs CLASSI and SASSI and the development of

3-D dynamic models for the power block structures. In addition to the test problems completed in Phase II, a total of eight additional test problems are planned for the verification of SASSI, and a total of six additional problems are planned for the verification of CLASSI. During this period, six out of eight test problems for SASSI and three out of six test problems for CLASSI were analyzed. The development of a 3-D dynamic model for the containment structure is underway. Models for the auxiliary and turbine buildings will be developed after the containment model is developed and tested.

6. FRAGILITIES

During this reporting period, documentation of the Phase II evaluations was completed. A linear building model for the auxiliary building is being developed to generate median in-structure response spectra at various floor levels, with their associated dispersions, by using a set of realistic time-histories appropriate to the site conditions. Preparatory work is also being done for other studies relating to Phase III, including justification of cutoffs of the lower tails of fragility curves and additional studies to eliminate conservatisms in the fragilities of the identified dominant contributors.

7. PROBABILISTIC RISK ASSESSMENT

Phase II of the Diablo Canyon Probabilistic Risk Assessment (DCPRA) was completed.

A joint Pickard, Lowe and Garrick (PLG) and PGandE team presented the results of Phase II to the NRC Staff during the second day of the March 11-12, 1986 meeting. The results of Phase II were characterized as preliminary and will most likely change, since the main purpose of Phase II was the scoping of Phase III.

The Phase III DCPRA work started during the later part of April 1986. In accordance with the Program Plan, the list of activities includes the tasks for identification of initiating events, data analysis, event sequence analysis, systems analysis, and seismic analysis of the impact of relay chatter. The work continues to be performed by a joint PLG/PGandE team with a heavy emphasis on technology transfer from PLG to PGandE and plant technical information transfer from PGandE to PLG.

The PRA group has identified a list of components for fragility analysis in Phase III. This list was provided to the fragility analysts to help direct their work.