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October 5, 1983

Michael J. Strumwasser, Esq.
Special Counsel to the Attorney General
3580 Wilshire Blvd., Suite 800
Los Angeles, California 90010

Pacific Gas and Electric Company
(Diablo Canyon Nuclear Plant, Units 1 and 2) Docket Nos. 50-275 OL, 50-323 OL

Dear Mr. Strumwasser:

On September 23, 1983, we forwarded to you a letter designating three witnesses who will appear on behalf of the IDVP at the upcoming hearings. We provide below the remaining information responsive to Interrogatory 57 in Governor Deukmejian's Third Set of Interrogatories to the IDVP with respect to those individuals.

PROFESSOR J. M. BIGGS

Subpart (c): A copy of Professor Biggs' resume is attached.

Subpart (d): A list of publications is included with the resume.

Subpart (e): See the IDVP's response to interrogatory 57(e) in its September 21, 1983 Answers.

Subparts (f) and (g): None.

PROFESSOR M. J. HOLLEY, JR.

Subpart (c): A copy of Professor Holley's resume was provided at his deposition.

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Subpart (d):

1. Author of chapter in volume Seismic Design for Nuclear Power Plants, Provision of Required Seismic Resistance ed. by R. J. Hanson: published by MIT Press (1970).

2. Bannerjee, A. K. and Holley, M. J. Jr., "Research Requirements for Improved Design of Reinforced Concrete Containment Structures," published in Nuclear Engineering and Design, Vol. 50, No. 1 (October 1978).

3. White, R. W. and Holley, M. J. Jr., "Experimental Studies of Membrane Shear Transfer," published in Journal of Structural Division, ASCE (August 1972).

Subpart (e): See the IDVP's response to interrogatory 57(e) in its September 21, 1983 answers.

Subpart (f): Portland General Electric Company (Trojan Nuclear Plant) Docket No. 50-344, 50-344 S.P.

Subpart (g):

(i) October 25, 1978; October 30-31, 1978; April 2, 1980; April 17, 1980.
(ii) Yes
(iii) Yes
(iv) No

RONALD WRAY

Subpart (c): A copy of Mr. Wray's resume is attached.

Subpart (d):

1. Mr. Wray published with Dr. Ming Chen, an article on the subject of dynamic response determination in uncoupled systems for the Structural Mechanics in Reactor Technology (SMIRT) Conference in Brussels, Belgium, in 1975. Mr. Wray does not recall the precise title of this publication.

Subpart (e): See the IDVP's response to interrogatory 57(e) in its September 21, 1983 Answers.

Subparts (f) and (g): None.

All documents owed to the Governor in response to his Third Set of Interrogatories to the IDVP will be sent under separate cover. In the IDVP's original answers to these interrogatories, the IDVP stated that it had transcripts of Mr. Reedy's testimony in the Commanche Peak proceeding. Mr. Reedy is presently on vacation until the end of October, and in his absence the IDVP has not been able to locate these transcripts. However, they are available from the NRC's public document room.

Sincerely,

David B. Raskin

David B. Raskin

DBR:cjr

cc: Service List

CURRICULUM VITAE

John M Biggs

Education

Massachusetts Institute of Technology

Bachelor of Science in Civil Engineering	1941
Master of Science in Civil Engineering	1947

Professional Employment

Stress Analyst - Curtiss-Wright Corp.	1941-42
Instructor of Civil Engineering - Robert College, Istanbul, Turkey	1942-45
Structural Designer - Fay, Spofford & Thorndike, Consulting Engineers, Boston	1944-49
Massachusetts Institute of Technology	1947-date
Instructor of Civil Engineering	1947-49
Ass't Prof. of Civil Engineering	1949-55
Assoc. Prof. of Civil Engineering	1955-63
Professor of Civil Engineering	1963-date
Emeritus Professor of Civil Engineering	1982-date
Director, Civil Engineering Systems Laboratory	1964-67
Acting Head, Structures Division	1967-68
Head, Structures Group	1976-82
Partner, Hansen, Holley and Biggs, Consulting Engineers, Cambridge, Massachusetts	1955-80
Director, Hansen, Holley and Biggs, Inc., Cambridge, Massachusetts.	1975-date

Professional Societies, etc.

Registered Professional Engineer, Commonwealth of Massachusetts	
Member, American Society of Civil Engineers	
Chairman, Structural Division	1970-71
Executive Committee, Structural Division	1968-72
Chairman, Committee on Wind Forces	1955-60
Member, Committee on Electronic Computation	1957-60
Member, Committee on Plasticity Related to Design	1956-59
Member, Committee on the Limitations of Bridge Deflection	1956-61
Member, Administrative Committee on Loads and Stresses	1955-60
Member, Committee on Lifeline Earthquake Engineering	1973-74
Member, Boston Society of Civil Engineers	
Chairman, Structural Section	1957-58
Director	1959-61
Vice-President	1964-67
President	1966-67

Member, Column Research Council	1958-72
Member, Mayor's Committee on the Revision of the Boston Building Code	
Subcommittee on Steel Design	1956-63
Subcommittee on Loads	1958-60
Member Advisory Committee, Massachusetts State Building Code	1974-date
Member, Advisory Panel on Bridges, AASHO Road Test	
Member, Committee on Bridges, Highway Research Board, National Academy of Sciences	1961-65
Member, Committee on Design Loads for Buildings American Standards Association	1962-66

Recent Publications

"Introduction to Structural Dynamics," McGraw-Hill Book Co., New York, 1964.

"Structural Response to Seismic Input," page 306, Seismic Design for Nuclear Power Plants, M.I.T. Press, Cambridge, Mass., 1970.

"Seismic Analysis of Equipment Mounted on a Massive Structure," page 319, Seismic Design for Nuclear Power Plants, M.I.T. Press, Cambridge, Mass., 1970 (with J. Roesset).

"Computer System for the Analysis and Design of Reinforced Concrete Structures," ACI Journal, April, 1970 (with P.J. Pahl and H.N. Wenke).

"Soil-Structure Interaction in Nuclear Power Plants," 3rd Japanese Symposium on Earthquake Engineering, Tokyo, November, 1970 (with R.V. Whitman).

"Integrated System for RC Building Design," Journal of the Structural Division, ASCE, Vol. 97, January, 1971 (with P.J. Pahl and H.N. Wenke).

"Earthquake Code Evolution and the Effect of Seismic Design on the Cost of Buildings," M.I.T. Department of Civil Engineering, Report No. R72-20, May, 1972 (with S.J. Leslie).

"Seismic Response Spectra for Equipment in Nuclear Power Plants," Proceedings, First International Conference on Structural Mechanics in Reactor Technology, Berlin, July, 1972.

"Parametric Analysis of Soil-Structure Interaction for a Reactor Building," Proceedings, First International Conference on Structural Mechanics in Reactor Technology, Berlin, July, 1972 (with J.T. Christian and R.V. Whitman).

"Seismic Response of Buildings Designed by Code for Different Earthquake Intensities," M.I.T. Department of Civil Engineering, Report No. R73-7, January, 1973 (with P.H. Grace).

"Seismic Design Decision Analysis," Journal of the Structural Division, ASCE, Vol. 101, ST5, May, 1975 (with R.V. Whitman, et al.).

"Comparison of Seismic Analysis Procedures for Elastic Multi-Degree Systems," M.I.T. Department of Civil Engineering, Report No. R76-5, January, 1976 (with E.H. Vanmarcke et al.).

"Variability of Inelastic Structural Response Due to Real and Artificial Ground Motions," M.I.T. Department of Civil Engineering, Report R76-6, January, 1976 (with E.H. Vanmarcke, Robert A. Frank, et al.).

"Studies on the Inelastic Dynamic Analysis and Design of Multi-Story Frames," M.I.T. Department of Civil Engineering Report R76-29, July 1976 (with W.H. Luyties and S.A. Anagnostopoulos).

"Inelastic Response Spectrum Design Procedures for Steel Frames," M.I.T. Department of Civil Engineering Report No. R76-40, September 1976 (with Richard W. Haviland).

"On the Safety Provided by Alternate Seismic Design Methods," M.I.T. Civil Engineering Department Report No. R77-22, July 1977 (with D.A. Gasparini).

"Inelastic Dynamic Design of Steel Frames to Resist Seismic Loads," M.I.T Civil Engineering Department Report No. R77-23, July 1977 (with J.H. Robinson, Jr.).

"Use of Inelastic Spectra in Aseismic Design," Journal of the Structural Division, ASCE, Vol. 104, No. ST1, January 1978 (with S.A. Anagnostopoulos and R.W. Haviland).

"Inelastic Response Spectra for Aseismic Building Design," Journal of the Structural Division, ASCE, Vol. 106, No. ST6, June, 1980 (with S.P. Lai).

"Seismic Effectiveness of Tuned Mass Dampers," Journal of the Structural Division, ASCE, Vol. 107, No. ST8, August, 1981 (with A.M. Kaynia and D. Veneziano).

"Seismic Damage in Reinforced Concrete Frames," Journal of the Structural Division, ASCE, Vol. 107, No. ST9, September, 1981 (with H. Banon and H.M. Irvine).

"Flexible Sleeved-Pile Foundations for Aseismic Design," M.I.T. Civil Engineering Department Report No. R82-04, March, 1982.

TELEDYNE
ENGINEERING SERVICES

RONALD WRAY
Manager, Engineering
Analysis

Professional Resume

Education

Northeastern University, B.S. in Civil Engineering, 1956
Rensselaer Polytechnic Institute, M.S. in Engineering Science, 1962

Experience

Teledyne Engineering Services, and Teledyne Materials Research, since 1971: theoretical stress analysis of pressure vessels, piping systems and frame structures utilizing computer program solutions and finite element methods; performed and directed static and dynamic analyses of Nuclear and LNG Piping Systems; conducted design reviews of Nuclear Piping Systems.

Instructor at Franklin Institute of Boston, Evening Division

AVCO Systems Division, 1962-1971: performed detailed stress and buckling analysis of various reentry vehicle shell structures under combined reentry pressure and inertia loads and heating. Designed and analyzed large vacuum and pressurized chambers for a portable sterilization/clean room facility built for NASA/Langley; responsible for the structural design and evaluation of space power systems and planetary probe systems.

Pratt & Whitney Aircraft, Canal Division, 1958-1962: performed and directed detailed analyses and design evaluation of nuclear reactor core components and pressure vessels; conducted thermo-structural analysis of system piping and heat exchangers involving liquid metal coolants under conditions of high temperature operation an severe transients; established design criteria for components exposed to long-life, high-temperature conditions,

U.S. Army Corps of Engineers, 1st Lieutenant, 1956-1958: served as project officer on military construction sites; field experience in reinforced concrete an steel erection.

Membership

ASME, Boiler and Pressure Vessel Code, Chairman, Special Working Group on Dynamic Analysis.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of	)	
	)	
PACIFIC GAS AND ELECTRIC COMPANY	)	Docket Nos. 50-275 OL
	)	50-323 OL
(Diablo Canyon Nuclear Power Plant	)	
Units 1 and 2	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the Independent Design Verification Program's Updated Answers to Governor Deukmejian's Third Set of Interrogatories have been served on the following by deposit in the United States mail, first class, postage pre-paid, this 6th day of October 1983:*

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