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Carol A. Edwards
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March 1995

Location of Field Notebooks CS 22-3 thru 7

**REVIEW OF THE DIABLO CANYON, CALIFORNIA LONG TERM
SEISMIC PROGRAM FOR STAFF OF THE U.S. NUCLEAR
REGULATORY COMMISSION. 1985-1991.**

<u>File folder or item number</u>	<u>Description</u>
NO-08188	<p>37 document boxes and binders with:</p> <ol style="list-style-type: none"> 1. U.S. Nuclear Regulatory Commission. Office of Nuclear Reactor Regulation. <u>Safety Evaluation Report</u> related to the operation of Diablo Canyon Nuclear Power Plant, Units 1 and 2. Docket Nos. 50-375 and 50-323. Pacific Gas and Electric. NUREG-0675. Supplement No. 34. June 1991. 2. Diablo Canyon Long Term Seismic Program. Pacific Gas and Electric Company. Diablo Canyon Power Plant. Docket Nos. 50-275 and 50-323. <u>Addendum to the 1988 Final Report of the Diablo Canyon Long Term Seismic Program.</u> February 1991. 3. <u>Final Report of the Diablo Canyon Long Term Seismic Program.</u> July 1988. Pacific Gas and Electric Company. Docket Nos. 50-275 and 50-323. Two parts - text, and case of maps. "USGS Copy 5" 4. NRC Correspondence. 1985-1987. 5. NRC Correspondence. 1988. 6. NRC Correspondence. 1989. 7. NRC Correspondence. 1990/91. 8. California. Senate Committee on Energy and Public Utilities. 12-02-91. Correspondence, plus text of "Testimony by Robert D. Brown... regarding California's Nuclear Power Plants: Their Safety, Environmental Impacts and Economic Costs. Sacramento, California. 2 December 1991." 9. NRC reports and correspondence - Diablo Canyon LTSP Review. Includes monthly project reports. 1986-1990. 10. Clippings related to safety issues at Diablo Canyon power plant. 1989-1992. 11. Long Term Seismic Program. Report on NRC/PGandE Geology/Seismology/Geophysics Workshop Held on October 21 and 22, 1986. San Francisco, California. Pacific Gas and electric company. Diablo Canyon Power Plant. Docket Nos. 50-275 and 50-323. 12. PG&E/DCPP/LTSP. List of questions prepared following November 1988 audit; Identity of proprietary data (response to question 43); signout sheet for PG&E responses and proprietary data. 13. Response to Question 3. 14. Response to Questions 17 and 20. 15. Response to Questions 40, 41, and 42. 16. Response to Questions 43, 43a-43h. 17. Response to Question 43. A attachment Q43-1. 18. Response to Question 43. Attachment Q43-2. 19-23. Response to Question 43i. Volumes 1-5. 24. Response to Question 43j. 25. Response to Questions 43k-43p.

26. Response to Question 43q.
27. Response to Questions 43n, 43z(Part 2) and 46.
28. Response to Questions 43r-43w.
29. Response to Questions 43x-43z, and 43aa.
30. Response to Questions 44-47.
31. Response to Questions GSG [Geology/Seismology/Geophysics] 1, 6, 11, and 15.
32. Response to Questions GSG 2, 3, 4, 5, 7, 8, 9, 10, 12, and 14.
33. Response to Questions SSC [Seismic Source Characterization] 1, 2, 3, and 4.
34. Response to Questions SSC 5 and 6.
35. Response to Question GSG 16.
36. Response to GSG Questions LP2 through LP8 and LP10 through LP13. [LP = Loma Prieta]
37. Structural Trend Map of the Eastern Offshore Santa Maria basin. Sheets D1-D10 (10 sheets).
38. Long Term Seismic Program. Geophysical Survey Lines, High-Resolution Surveys, Eastern Santa Maria basin. Sheets D1-D9 (9 sheets).
39. Near Surface Faults, Thickness of Post-Late Wisconsin Sediments and Seafloor Geomorphic Features of the Eastern Offshore Santa Maria Basin. Sheets D1-D9 (9 sheets).
40. Gravity Anomaly Map, Offshore Santa Maria Basin and Adjacent Onshore areas, Southern Area, (2 sheets) and, Residual Magnetic Intensity Map, Offshore Santa Maria Basin and adjacent onshore areas (3 sheets).
41. Correspondence (1991) regarding: proposed meeting of Advisory Committee on Reactor Safeguards' subcommittee on Extreme External Phenomena to discuss the Diablo Canyon Long-Term Seismic Program; meeting of June 18, 1991 to discuss use of results of LTSP in Future Modifications at Diablo Canyon; issuance of Supplement No. 34 to NUREG-0675; issuance of PG&E Addendum to LTSP Final Report; issuance of two consultant reports; plus additional material on consultants' reports.
42. Two reports relating to the NRC staff review of the Diablo Canyon LTSP: "Empirical Prediction of Near-Source Soil and soft-Rock Ground Motion for the Diablo Canyon Power Plant Site, San Luis Obispo County, California" and "Characterization and Mapping of Earthquake Shaking for Seismic zonation" -- both 1991. Also, a few items of correspondence.
43. Summary of Five workshop Meetings Held in 1990 in Denver, Colorado to Discuss Ground Motion Aspects of the Diablo Canyon LTSP. (TAC Nos. 55305 and 68049).
44. Summary of March 15, 1991 Public Meeting [in Rockville, MD] to Discuss Diablo Canyon LTSP (TAC Nos. 55305 and 68049).
45. Correspondence (1989, 1990) relating to requests for additional information.
46. Correspondence related to August 8-10, 1989 meeting to discuss Diablo Canyon LTSP, Geology/Seismology/Geophysics/Tectonics; paper copies of viewgraphs by Kevin J. Coppersmith and Robert R. Young, presented at meeting.
47. Presentation Materials Used in the Long Term Seismic Program Meetings in San Francisco, California during the week of June 12, 1989. Mainly copies of

viewgraphs.

48. Materials Relating to NRC Staff Review of Diablo Canyon LTSP (TAC Nos. 55305 and 68049), 1988-1989. Correspondence, reports.
49. Correspondence, 1987-1988, related to meetings/workshops on LTSP, and to LTSP offshore geophysical data audit. Also, report summarizing two reviews of PG&E trenches along Los Osos Fault in San Luis Obispo area (1987).
50. Documents relating to meeting of October 21-24, 1986 on LTSP. The meeting focused on geology, seismology, geophysics, and ground motion. Includes correspondence, copies of viewgraphs.
51. Summary of Field Trip of LTSP of August 15-16, 1986.
52. Summary of Meeting on May 28-29, 1986 on LTSP - Geology, Seismology and Geophysics.
53. Site/Plant Visit and Meeting with Licensee on LTSP, April 14-16, 1986. Copies of viewgraphs used in presentations; topics included geology, seismology, geophysics, ground motion, and soil-structure interaction. Also, NRC Staff comments, dated June 12, 1986.
54. ACRS Subcommittee meeting. November 20, 1986. Notes and handouts relating to Diablo Canyon LTSP.
55. Initial and draft description of the offshore refraction/reflection study planned for Fall 1986 for the Long Term Seismic Program. August 22, 1986.
56. Diablo Canyon - LTSP. Field Trip, San Luis Obispo, August 15-16, 1986.
57. Meeting Summary - LTSP. First semi-annual LTSP meeting, March 11-12, 1986. Includes copies of presentation viewgraphs used by PG&E and its consultants.
58. Meeting summary - LTSP. Meeting of Tuesday, March 11, 1986. Handouts.
59. Diablo Canyon - LTSP. Geology Workshop, San Francisco. October 21-22, 1986. Geology/seismology/geophysics. Notes, handouts.
60. Diablo Canyon - LTSP Management. 1987-1988. Correspondence.
61. ACRS Meeting on Long Term Seismic Program on November 20, 1986. Federal Register notice.
62. Diablo Canyon. Memorandum of Understanding for NRR Evaluation of LTSP, dated February 25, 1986; Federal Register (20 January 1986) notice of PG&E Application for Amendments; annotated bibliography of geologic and related reports for Diablo Canyon Nuclear Power Plant (taken from larger document), no date; notice of Dec. 10-12, 1986 meeting with PG&E.
63. Diablo Canyon ACRS Subcommittee Meeting, July 10, 1985. NRR Presentation; memo of June 11, 1985 transmitting PG&E's responses to NRC staff comments on LTSP Plan; memo dated May 17, 1985 transmitting comments by 3 ACRS consultants regarding Diablo Canyon seismic re-evaluation program; memo dated May 9, 1985 transmitting NRC staff comments and questions on PG&E's LTSP Plan, 1985 for Diablo Canyon.
64. NRC Meeting with Pacific Gas & Electric Company - Seismic Reevaluation Program for Diablo Canyon, December 11, 1984. Meeting addressed Element 4 of program - probabilistic risk assessment; most of materials are copies of viewgraphs.
65. NRC Meeting with Pacific Gas & Electric Company Seismic Reevaluation

- Program for Diablo Canyon, Nov. 15-16, 1984. Meeting addressed Elements 2 and 3 of program - earthquake magnitude, and ground motion. Most of materials are copies of viewgraphs.
66. NRC Meeting with PG&E - Seismic Reevaluation Program for Diablo Canyon. Oct. 4, 1984. Meeting addressed the overall PG&E program, and the first element, geology and tectonics. Materials include copies of viewgraphs, plus other information.
 67. Letter to NRC from ACRS dated June 20, 1984, reporting results of ACRS meeting of June 14-16, 1984, which reviewed certain technical issues.
 68. Copy of report, "Reanalysis of Strong-Motion Recordings: Empirical Prediction of Near-Source Ground Motion for the Diablo Canyon Power Plant Site..." by Kenneth W. Campbell (same as U.S. Geological Survey Open-file Report 88-484); later report by Campbell which supersedes earlier one, "Empirical Prediction of Near-Source coil and soft-rock Ground Motion for the Diablo Canyon Power Plant Site..." (1990); notices of meetings; request for additional information.
 69. Summary of March 1-3, 1989 public meeting to discuss seismic ground motion; copy of report by Kenneth W. Campbell, "Preliminary report on Empirical Analyses of Vertical Strong Ground Motion for the Diablo Canyon Site, California" (January 1988); request for additional information; notice of meeting.
 70. Request for additional information; meeting notice. 1989.
 71. Summary of November 2, 1988 meeting to discuss numerical modeling of ground motions for the Diablo Canyon LTSP. Includes paper copies of viewgraphs, bibliography, other information.
 72. "Preliminary Report on Empirical Studies of Horizontal Strong Ground Motion for the Diablo Canyon Site, California" by Kenneth W. Campbell (October 1988); notice of meeting (1988).
 73. Two letters regarding ground motion studies; NRC staff and consultant comments resulting from July 15-16, 1987 Ground Motion Workshop.
 74. Summary of July 15-16, 1987 Ground Motion Workshop.
 75. PG&E. LTSP. Numerical Ground Motion Modeling Program. DRAFT. "Enclosure D."
 76. Appendix to Calibration of Numerical Ground Motion Modeling Procedures. July 1, 1987. Enclosure C; meeting notice.
 77. Draft. Progress report. June 24, 1987. Empirical Ground Motions Investigations... Enclosure E.
 78. Draft Report. Calibration of Numerical Ground Motion Modeling Procedures. April 16, 1987. Enclosure B.
 79. Materials for October 23-24, 1986 Ground Motions Workshop; notice of December 16, 1986 meeting.
 80. Materials for April 14-16, 1986 Diablo Canyon LTSP - Plant Tour and Site Visit by NRC staff and consultants.
 81. LTSP Ground Motions Work Plan. Dated 3/11/86 - materials from Ground Motion Workshop, April 14-16, 1986, San Luis Obispo, California. Enclosure 7.
 82. LTSP Ground Motions Work Plan. GM and PRA Meeting, March 11, 1986.

Washington, D.C. Handout 5.

83. LTSP - Comments from NRC advisory panel members of ground motion modeling, for LTSP, based on December 12, 1985 meeting. San Francisco; other materials relating to this meeting.

84. LTSP - Development of Scope of Work for Phase III (Results of Phase II Scoping Study), January 1986.

85. Long Term Seismic Program. Program Plan. January 1985.

86. Diablo Canyon Long term Seismic Program. Methods and Procedures for the Phase IIIA Seismic Fragilities of Structures and Components at the Diablo Canyon Power Plant. May 1987. PG&E.

87. Diablo Canyon LTSP. Report on NRC/PG&E Ground Motions Workshop Held on October 23 and 24, 1986, San Francisco, CA. May 1987.

88. "The Inadequacies of PG&E's Seismic Hazard Evaluation for the Diablo Canyon Nuclear Power Plant", by Max Wyss. 21 October 1988.

89. California. Public Utilities Commission. Public Staff Division. Testimony on: Diablo Canyon Rate case. An Evaluation of PG&E's Seismological Studies for the Diablo Canyon Nuclear Power Plant Site. prepared Testimony of Craig Nicholson. Santa Barbara, CA. September 1988.

90. California. Public Utilities Commission. Division of Ratepayer Advocates. Diablo Canyon Rate Case. Vol. 67. Supplemental/Rebuttal testimony on Deficiencies in Geoseismic Studies. Deficiencies in PG&E's Geoseismic Studies. (Volume 1 of 3). Prepared testimony of James Crouch, Crouch, Bachman & Associates, Inc. September 1988.

91. Same as #90, but volume 2 of 3.

92. Same as #90, but volume 3 of 3.

93. California. Public Utilities Commission. Division of Ratepayer Advocates. Diablo Canyon Rate Case. Vol. 70. Supplemental/Rebuttal Testimony on Deficiencies in Geoseismic Studies. Deficiencies in Geoseismic Studies; Evaluation of the Absence of Regional Onshore Geologic Studies by PG&E for the Diablo Canyon Nuclear Power Plant. prepared Testimony of Henry w. Coulter, Holly C. Wagner, Gerald E. Weber. September 1988.

94. California. Public Utilities Commission. Division of Ratepayer Advocates. Diablo Canyon Rate Case. Vol. 71. Supplemental/Rebuttal Testimony on Deficiencies in Geoseismic Studies. An Evaluation of PG&E's Seismological Studies for the Diablo Canyon Nuclear Power Plant. Prepared Testimony of Craig Nicholson. September 1988.

95. California. Public Utilities Commission. Division of Ratepayer Advocates. Diablo Canyon Rate Case. Vol. 72. Supplemental/Rebuttal Testimony on Deficiencies in Geoseismic Studies. Evaluation of Seismic Design of Diablo Canyon Nuclear Power Plant. Prepared Testimony of Dr. Mihran (Mike) S. Agabian, September 1988.

96. California. Public Utilities Commission. Division of Ratepayer Advocates. Diablo Canyon Rate Case. Vol. 92. Supplemental/Rebuttal Testimony on Design Errors and Design Verification. The Design Verification Program: Why It Was Required and Why It Expanded. Prepared Testimony of Victor Gilinsky. September 1988.

97. Rancho Seco Nuclear Generating Station. Response to NRC Questions on Geologic and Seismologic Conditions, by Bechtel. Prepared for Sacramento Municipal Utility District. September 1987.
98. Northern San Andreas. 1985-19886. Notes by Robert D. Brown, Jr., relating to the Northern San Andreas Fault System. Locations in these areas-- Laytonville, Garberville, King Range, Point Delgado, Whale Gulch, Pt. Lobos State Reserve, Drakes Bay-Point Reyes area, and in these 7.5' or 15' quadrangles: Cambria, Cypress Mountain, Monterey, Morro Bay South, Piedras Blancas, Pismo Beach, Point Sur, Port San Luis, San Simeon,, Templeton, York Mountain.
99. Diablo Canyon Long Term Seismic Program. Working notes of Robert D. Brown, Jr. 1 of 2.
100. Diablo Canyon Long Term Seismic Program. Working notes of Robert D. Brown, Jr. 2 of 2.
101. Aerial photographs of the Cayucos, Cypress Mountain, Lime Mountain, Tierra Redondo Mountain 7.5' quadrangles.
102. Aerial photographs of the Bryson, Burnett, Burro Mountain, Cambria, Pico Creek, Piedras Blancas, San Simeon, and Villa Creek 7.5' quadrangles.
103. Aerial photographs of the Atascadero, Paso Robles, San Luis Obispo, and Templeton 7.5' quadrangles.
104. Aerial photographs of the Arroyo Grande, Creston, Estrella, Lopez Mountain, Oceano, and Santa Margarita 7.5' quadrangles.
105. Aerial photographs of the Nipomo, Santa Margarita Lake, Santa Maria, Shandon, and Tar Springs Ridge 7.5' quadrangles.
106. Aerial photographs of the Adelaida, Morro Bay North, Morro Bay South, Port San Luis, and York Mountain 7.5' quadrangles.

MA-01711. Map folder with 29 maps, for these quadrangles:
 15' map: Point Sur 7.5' maps: Adelaida, Alder Peak, Arroyo Grande NE, Atascadero, Bear Canyon, Bradley, Bryson, Burnett Peak, Burro Mountain (2 copies), Cambria, Cape San Martin, Casmalia, Cayucos, Cone Peak, Creston, Cypress Mountain, Estrella, Guadalupe, Hames Valley, Jolon, Lime Mountain.
 1:100,000 maps: Cambria, Monterey, Point Estero, Point Sur, San Luis Obispo (Vibroseis lines shown), Santa Maria.

MA-01712. Map folder with 29 maps, for these 7.5' quadrangles: Lopez Mountain, Lopez Point, Monterey, Morro Bay North, Morro Bay South, Nipomo, Oceano, Orcutt, Paso Robles, Pebblestone Shut-In, Pico Creek, Piedras Blancas, Pismo Beach, Point Sal, Port San Luis, San Luis Obispo, San Simeon, Santa Maria, Santa Margarita, Santa Margarita Lake, Shandon, Shedd Canyon, Tar Spring Ridge, Templeton, Tierra Redondo Mountain, Villa Creek, Wilson Corner, York Mountain.

WASHINGTON STATE COAL RECONNAISSANCE, CLE ELUM AND VICINITY. 1958.

NO-10363 Field Notebook and planimetric map Ellensburg Ranger District, Wenatchee,

National Forest, Washington.

**USGS REVIEW OF SEISMIC SAFETY HAZARDS, AUBURN DAMSITE,
AMERICAN RIVER, CALIFORNIA. 1978.**

- NO-10364 Document boxes and folders with:
- Folder 1. U.S. Bureau of Reclamation Auburn Dam: Project Geology Report vol. 1-3.
 - Folder 2. U.S. Bureau of Reclamation Auburn Dam: Supplement to the Project Geology Report vol. 1-6.
 - Folder 3. Woodward-Clyde Consultants report Earthquake Evaluation Studies of the Auburn Dam Area vol. 1-8.
 - Folder 4. U.S. Department of the Interior Auburn Dam Supplement 2 to Final Environmental Statement, Seismicity and Dam Safety.
 - Folder 5. Box of Auburn vicinity maps, USGS Technical Review, articles and reports.
 - Folder 6. Box of project related correspondence and reports.

**GEOLOGIC STUDIES IN THE NW SACRAMENTO VALLEY, AND
SNOW MOUNTAIN WIDERNESS STUDY AREA, LODOGA,
STONYFORD AND LAKE PILLSBURY QUADRANGLES GLENN,
COLUSA AND LAKE COUNTIES, CALIFORNIA. 1958-1977.**

- NO-10365 Field Notebook Lodoga Quadrangle 1958.
- NO-10366 Field Notebook Lodoga Quadrangle 1959.
- NO-10367 Field Notebook Stoneyford Quadrangle 1960-1961.
- NO-10368 Field Notebook Stoneyford Quadrangle 1962.
- NO-10369 Field Notebook Stoneyford Quadrangle 1963.
- NO-10370 Field Notebook Snow Mountain Wilderness 1977.
- NO-10371 2 boxes aerial photographs of project area.
- NO-10372 Chemical analysis, geology, paleontology, subsurface reports, Petrography and field maps for project area.
- NO-10373 Field Notebook Elk Creek Quadrangle 1969.
- MA-02641 Topographic maps for the following quadrangles: Elk Creek and fruto, also maps

of West Central margin Sacramento Valley, Elk Creek-Fruto area and map for MF 279.

Published as: U.S. Geological Survey. Professional Paper 400-B. 1960 and Professional Paper 475-D. 1964 and Bulletin 1495. 1981. and Professional Paper 1300. 1984. and OM 210. 1961.

SAN ANDREAS FAULT SYSTEM, CALIFORNIA. 1966-1996.

- NO-10374 Field Notebook, maps, plots, notes and reports.
- NO-10375 NASA infrared and radar evaluations, Field Notebooks.
- MA-02636 Topographic maps for the following quadrangles: Cholame Valley, Cholame Hills, Parkfield and Stockdale Mountain.
- MA-02637 Topographic maps for the following quadrangles: Shandon, Parkfield, San Miguel, Priest Valley, San Ardo, Hernandez Valley, Greenfield, San Benito and Gonzales.
- MA-02638 Topographic maps for the following quadrangles: Point Delgada, Mallo Pass Creek, Point Arena, Point Arena NE, Gualala, Ornbaun SW, Stewarts Point, Annapolis, Plantation, Fort Ross, Arched Rock, Bodega Head, Tomales, Point Reyes NE, Inverness and Bolinas.
- MA-02639 Topographic maps for the following quadrangles: Ornbaun SW, Pt Arena NE, Annapolis, Plantation, Point Arena, Mallo Pass Creek, Fort Ross, Arched Rock, Woodside, Gaulala, Double Point, Stewarts Point, Sears Point, Petaluma River, Glen Ellen, Cotati and Santa Rosa.

Published as: U.S. Geological Survey. Professional Paper 579. 1967.

Published as: U.S. Geological Survey. Professional Paper 1515. 1990.

GEOLOGY, PETROLEUM DEVELOPMENT AND SEISMICITY OF THE SANTA BARBARA CHANNEL REGION, CALIFORNIA. 1969-1970.

- NO-10376 Report and fossil identification and notes.

Published as: U.S. Geological Survey. Professional Paper 679. 1969.

TEXAS GULF COAST URANIUM PROJECT. 1958.

- No-10377 Correspondence, fossil identifications and review comments.

**DASHT-I-BAYAZ EARTHQUAKE INVESTIGATION, KHORASSAN
PROVINCE, IRAN. 1968.**

NO-10378 Reports in English and Arabic, Field Notebook, correspondence and aerial
photographs.

**RODGERS CREEK AND GREEN VALLEY FAULT MAPS, CALIFORNIA.
1970-1977.**

NO-10379 Field Notebook and photographs of Marin, Solano, Napa and Sonoma Counties.

MA-02640 Topographic maps for the following quadrangles: Mt George, Benicia, Port
Chicago, Fairfield South and Cordelia plus 2 maps Cordelia Properties.

Published as: U.S. Geological Survey. MF 743. 1976.