Chapter 2

SITE CHARACTERISTICS

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NOTE:

[a] This figure corresponds to a controlled engineering drawing that is incorporated by reference into the FSAR Update. See Table 1.6-1 for the correlation between the FSAR Update figure number and the corresponding controlled engineering drawing number.

Chapter 2

SITE CHARACTERISTICS

This chapter describes the Diablo Canyon Power Plant (DCPP) site and vicinity as they existed when the facility was licensed. In the past some changes to site characteristics have been incorporated into this chapter and parts of this chapter reflect this more recent information. Details of the current site area may not be completely consistent with the historic descriptions. Accurate and current site characteristics germane to the licensing bases are contained in the Emergency Plan, Annual Radiological Environmental Operating Report, and the Annual Radioactive Effluent Release Report.

HISTORICAL INFORMATION BELOW IS SHOWN IN ITALICS

This chapter provides information on the geological, seismological, hydrological, and meteorological characteristics of the DCPP site and vicinity. Population distribution, land use, and site activities and controls are also discussed. This information, used in conjunction with the detailed technical discussions provided in other chapters, shows the adequacy of the site for the safe operation of nuclear power units.

2.1 GEOGRAPHY AND DEMOGRAPHY

2.1.1 DESIGN BASES

2.1.1.1 10 CFR Part 100 – Reactor Site Criteria

DCPP is committed to following the guidance set by the standard definition of exclusion area, low population zone (LPZ) and population center distance.

2.1.2 SAFETY EVALUATION

2.1.2.1 10 CFR Part 100 – Reactor Site Criteria

The DCPP commitment to exclusion area, LPZ and population center distance is described in the following sections.

HISTORICAL INFORMATION BELOW IS SHOWN IN ITALICS

2.1.2.1.1 Site Location

The DCPP site is adjacent to the Pacific Ocean in San Luis Obispo County, California, and is approximately 12 miles west-southwest of the city of San Luis Obispo, the county seat. The reactor for Unit 1 is located at latitude 35°12'44" N and longitude 120°51'14" W. The Universal Transverse Mercator (UTM) coordinates for zone 10 are 695,350 meters E and 3,898,450 meters N. The reactor for Unit 2 is located at latitude 35°12'41" N and longitude 120°51'13" W. The UTM coordinates are 695,380 meters E *and 3,898,400 meters N. Figure 2.1-1 locates the site on a map of western San Luis Obispo County.*

2.1.2.1.2 Site Description

The site boundary and the location of principal structures are shown in Figure 2.1-2. A portion of the site is bounded by the Pacific Ocean.

The DCPP site consists of approximately 750 acres of land located near the mouth of Diablo Creek. 165 acres of the DCPP site are located north of Diablo Creek; this acreage is owned by Pacific Gas and Electric Company (PG&E). The remaining 585 acres are located adjacent to and south of Diablo Creek. It was purchased in 1995 by Eureka Energy Company (Eureka), a wholly owned subsidiary of PG&E.

All coastal properties located north of Diablo Creek, extending north to the southerly boundary of Montana de Oro State Park and reaching inland approximately 1.5 mile has been owned by PG&E since 1988. Coastal properties located south of Diablo Creek and also reaching inland approximately 1.5 mile has been owned by Eureka since 1995. Prior to 1995, PG&E leased the property from the owner, Luigi Marre Land and Cattle Company. In 1988, PG&E purchased approximately 4500 acres located north of the DCPP site. This section of land consists of approximately 5 miles of coastline and reaches inland approximately 1.5 mile. Except for the DCPP site, the approximately 4500 acres are encumbered by a grazing lease that expires in the year 2000.

There are no plans for development of the property, most of which is within the area subject to the California Coastal Act of 1976. Any development plans would be subject to approval by a discretionary land use permitting process. In 1988 the San Luis Obispo County Planning Department was given authority by the California Coastal Commission to interpret the Act and incorporate it into the County of San Luis Obispo's General Plan, which included the right to issue coastal land use permits. Because it is a discretionary permitting process, the County of San Luis Obispo has the authority to require development projects to be approved by the California Coastal Commission rather than obtaining final approval by the County of San Luis Obispo, Board of Supervisors.

In addition, portions of the coastal property have been listed in the National Register of Historic Places pursuant to the "National Historic Preservation Act of 1966" as a place of historic significance due to the presence of numerous Native American remains and scientific data potential.

2.1.2.1.3 Exclusion Area Control

PG&E has complete authority to determine all activities within the site boundary and this authority extends to the mean high water line along the ocean. On land, the site boundary, the boundary of the exclusion area (as defined in 10 CFR 100), and the boundary of the unrestricted area (as defined in 10 CFR 20) are shown in Figure 2.1-2.

Minimum distances from potential release points for radioactive materials to the unrestricted area boundary and to the mean high water line are also shown in Figure 2.1-2.

The definition of unrestricted area has been expanded over that in 10 CFR 20.1003. The unrestricted area boundary may coincide with the exclusion (fenced) area boundary, as defined in 10 CFR 100.3, but the unrestricted area does not include areas over water bodies. The concept of unrestricted areas, established at or beyond the site boundary, is utilized in the Technical Specifications limiting conditions for operation to keep levels of radioactive materials in liquid and gaseous effluents as low as is reasonably achievable (ALARA), pursuant to 10 CFR 50.36a.

On land, there are no activities unrelated to plant operation within the exclusion area; it is not traversed by public highway or railroad. Normal access to the site is from the south by private road (PG&E road easement) that is fenced and posted by PG&E.

PG&E has the right, within the DCPP site, to use excavated materials during the construction of the plant (considering that PG&E obtains all permitting required by regulatory agencies prior to excavation). It is unclear legally if the owner retains all mineral rights. Whatever mineral rights an owner may retain, the owner cannot exercise any such rights in a manner that would interfere with PG&E's rights. Any proposed mining operation (including but not limited to excavation, drilling, and blasting) that would be conducted close enough to the plant to threaten the structural integrity of its foundations will be carefully reviewed and PG&E will take whatever steps it deems necessary to ensure that: (a) the health and safety of the public is not jeopardized, and (b) the operation of the plant is not disrupted. Any entry by the lessee onto the land is subject to PG&E's safety rules and regulations, as is the right to restrict the use of buildings and other structures, and to exclude persons therefrom to the extent necessary to comply with nuclear reactor site criteria.

The mineral rights within the 165 acre PG&E portion of the DCPP site are owned by PG&E, but there is no information suggesting that the land contains any commercially valuable minerals other than for use as borrow materials.

The offshore area (below the mean high water line) is not under PG&E's control. Due to the natural rough and precipitous conditions of the offshore area at Diablo Cove and near its southerly boundary, as shown in the aerial photograph, Figure 2.1-3, the area could only be occupied with great difficulty. (Some of these rocks have since been incorporated into the breakwater.) There is no history of public access to these rocks.

The Captain of the Port of Los Angeles-Long Beach, under the authority of 33 U.S.C. Section 1226 and Section 1231, has established a Security Zone in the Pacific Ocean, from surface to bottom, within a 2,000-yard radius of DCPP centered at position 35 12' 23"N, 120 51' 23" W (Datum 83). No person or vessel may enter or remain in this Security Zone without the permission of the Captain of the Port Los Angeles-Long

Beach. This Security Zone will be enforced by representatives of the Captain of the Port of Los Angeles-Long Beach, San Luis Obispo County Sheriff, and DCPP Security.

2.1.2.1.4 Population and Population Distribution

PG&E has reviewed the original population totals and projections within the 50-mile radius of the plant. The following population data are based on the 2000 census and on projections based on estimates prepared by the State of California Department of Finance. The portion of California that lies within 50 miles of the site is relatively sparsely populated, having approximately 424, 013 residents in 2000. A circle with a 50-mile radius includes most of San Luis Obispo County, about one-third of Santa Barbara County, and a minor, sparsely-populated portion of Monterey County. About 55 percent of the area within the 50-mile circle is on land, the balance being on the Pacific Ocean.

The 2000 census population of this region is very close to that projected in the original Final Safety Analysis Report (FSAR), and subsequent projections by the Department of Finance are similarly close to earlier projections. Table 2.1-1 shows population trends of the State of California and of San Luis Obispo and Santa Barbara Counties. Table 2.1-2 shows the growth since 1960 of the principal cities within 50 miles of the site. Table 2.1-3 lists all communities within 50 miles having a population of 1000 or more, gives distance and direction from the site, and gives the 2000 population.

2.1.2.1.4.1 Population Within 10 Miles

In 1980, approximately 16,760 persons resided within 10 miles of the site. The 1990 census counted approximately 22,200 residents within the same 10 miles. The 2000 census counted approximately 23,661 residents within the same 10 miles. As in 1980, the nearest residence is about 1-1/2 miles north-northwest of the site and two persons occupy this dwelling. There are 9 permanently inhabited dwellings, for about 17 residents, within 5 miles of the plant. The population within the 6-mile radius, used in the emergency plan, is estimated to be 100.

Figure 2.1-4 shows the 2000 population distribution within a 10-mile radius wherein the area is divided into 22-1/2° sectors, with part circles of radii of 1, 2, 3, 4, 5, and 10 miles. Figures 2.1-5 and 2.1-6 show projected population distributions for 2010 and 2025, respectively, and are based primarily on population projections published by the California Department of Finance. The distributions are based on the assumption that the land usage will not change in character during the next 25 years, and that population growth within 10 miles will be proportional to growth in San Luis Obispo County as a whole.

2.1.2.1.4.2 Population Between 10 and 50 Miles

Figure 2.1-7 shows the 2000 population distribution between 10 and 50 miles, within the sectors of 22-1/2°, as before, but with part circles of radii of 10, 20, 30, 40, and 50 miles. Figures 2.1-8 and 2.1-9 show projected distributions for 2010 and 2025, respectively, and are based primarily on population projections published by the California Department of Finance and interviews with area government officials. In 2000, some 82 percent of those persons within 50 miles of the site resided in the population centers listed in Table 2.1-3.

2.1.2.1.4.3 Low Population Zone

As previously mentioned, the population within the 6-mile radius used in the emergency plan is estimated to be 100. This number is derived from a survey of residences in this area, and approximates the LPZ as defined in 10 CFR 100. Coincidentally, 6 miles is the distance to the nearest residential community development at Los Osos, north of the site. It is assumed that the population within this mountainous and largely inaccessible zone will stay constant for the foreseeable future. Figure 2.1-15 shows the LPZ.

2.1.2.1.4.4 Transient Population

In addition to the resident population presented in the tables and population distribution charts, there is a seasonal influx of vacation and weekend visitors, especially during the summer months. This influx is heaviest along the coast from Avila Beach to south of Oceano.

During August, the month of heaviest influx, the maximum overnight transient population in motels and state parks in this area is approximately 100,000 persons. However, there are no significant seasonal or diurnal shifts in population or population distribution within the LPZ. Table 2.1-4 lists transient population for recreation areas within 50 miles of the site for the periods of record listed.

Within the LPZ, the maximum recorded number of persons at any single time is estimated to be 5000. This figure is provided by the State Department of Parks and Recreation and corresponds to the maximum daytime use of Montana de Oro State Park. Overnight use is considerably less, an estimated maximum of 400. Evacuation of these numbers of persons from the park in the event of a radiation release could be accomplished as provided for in the emergency plan, with a reasonable probability that no injury would result. For all accident analyses considered in Chapter 15, there is a wide margin of safety between exposures at the outer boundary of the LPZ for a 30-day period following a postulated accident and the allowable doses considered acceptable in 10 CFR 100 for the same location.

2.1.2.1.4.5 Population Center Distance

The population center distance as defined in 10 CFR 100 is approximately 10 miles, the distance to the nearest boundary of San Luis Obispo, situated beyond the San Luis Range, east-northeast of the site, with a 2000 population of 44,174.

2.1.2.1.4.6 Public Facilities and Institutions

Several elementary schools are located within 10 miles of the site, near Los Osos and Avila Beach. These serve the local community and do not draw from outlying areas. California Polytechnic State University is 12 miles north-northeast of the DCPP site and has an enrollment of approximately 16,000. Cuesta College is located 10 miles northeast of the DCPP site and has an enrollment of approximately 7,000.

Montana de Oro State Park is located north of the site. Its area of principal use is along the beach, between 4 and 5 miles north-northwest of the site. The total number of visitor days during a 12-month period over the last five years averages approximately 680,000.

2.1.2.1.5 Boundaries for Establishing Effluent Release Limits

On land, the boundary line of the unrestricted area (as defined in 10 CFR 20) coincides with the site boundary as shown in Figure 2.1-2. The relationship of the exclusion area to the unrestricted area and the site area is also shown in Figure 2.1-2. Control of access to the land area within this boundary is as described for the exclusion area control. As therein described, no special provisions have been made for control of access, during normal operation, to the offshore area below the mean high water line. Occupancy of this area by any member of the public is expected to result in exposures, during normal operation, within the limits established by 10 CFR 20 and will be maintained ALARA.

2.1.2.1.6 Uses of Adjacent Lands and Waters

The San Luis Range, attaining a height of 1800 feet, dominates the region between the site and US Route 101. This upland country is used to a limited extent for grazing beef cattle and, to a very minor extent, dairy cattle. The terrain east of US Route 101, lying in the mostly inaccessible Santa Lucia Mountains, is sparsely populated with little development. A large portion of this area is included within the Los Padres National Forest.

2.1.2.1.6.1 Agriculture

San Luis Obispo County has relatively little level land, except for a few small coastal valleys such as the Santa Maria and San Luis Valleys, and some land along the county's northern border in the Salinas Valley and Carrizo Plain areas. Farming is a significant land use in the county. Principal crops include wine grapes, vegetables, *cattle, nurseries, fruits, nuts, and grain. There are several vineyards and wineries located in the county. The county's leading agricultural product is wine grapes, valued at $123,500,000 in 2003. The total farm acreage in the county is approximately 1,300,000. The county contains a total of 2,128,640 acres.*

2.1.2.1.6.2 Dairying

The nearest dairying activity is 12 miles northeast of the site at California State Polytechnic College and produces 1000 gallons of milk per day. Some replacement heifers and dry cows are sometimes pastured on property adjacent to site.

2.1.2.1.6.3 Fisheries

The DCPP site is located between two fishing harbors that support commercial and sport fishing activities. Port San Luis Harbor is located in Avila Beach, approximately 7 miles downcoast of the DCPP site. Morro Bay Harbor is located in Morro Bay, approximately 14 miles upcoast of the site. In 2003 the combined landings for the sport catch (known as commercial passenger fishing vessel fleet) totaled approximately 110,510 rockfish and 10,683 fish of other species, for a total of 8 fishing vessels. Sport catch are calculated by the number of fish caught.

Commercial landings are calculated by poundage of landings by port. In 2003 at Port San Luis and at Morro Bay Harbor, the landings were estimated to be as follows: 450,423 pounds of rockfish, 1,433,650 pounds of squid; 534,000 pounds of crab; 282,696 pounds of shrimp; and 1,592 pounds of urchins were landed.

There has been a dramatic decrease since 1970 in the abalone fishery, with approximately 621,000 pounds taken in 1966 and 200,000 pounds taken in 1970. Some data suggest that the southern movement of the Southern California sea otter may have had an impact on the red abalone population.

2.1.2.1.6.4 Surface and Groundwater

As discussed in Section 2.4, there are two public water supply groundwater basins within 10 miles of the site. Avila Beach County Water and Sewer District and San Miguelito Mutual Water and Sewer Company provide water to the Avila Beach and Avila Valley area.

2.1.2.1.6.5 Land Usage Within 5 Miles

An annual land use census is required by Regulatory Guide 4.8 (Reference 6). A census is required to be conducted at least once per year during the growing season (between February 15 and December 1 for the Diablo Canyon environs). The census is to identify the nearest milk animal and nearest garden greater than 50 square meters (500 square feet) producing broadleaf vegetation in each of 16 22-1/2° sectors within a distance of 8 kilometers (5 miles) of the plant. In addition, Regulatory Guide 4.8 *requires the identification of the location of the nearest residence in each of the 16 sectors within a distance of 5 miles.*

Land owners were identified from San Luis Obispo County records, and direct contact was made with them or their tenants. The only agricultural activities indicated by County personnel were cattle grazing in much of the area surrounding the site, and a farm in the east-southeast sector (along the site access road) producing legumes and cereal grass (grains).

Personal and telephone contacts with the land owners or tenants also identified a household garden greater than 500 square feet in the east sector in addition to the above mentioned farming. No milk animals were identified on these properties or within the first 5 miles in any sector.

The 1985 land use census results indicate the land use in the vicinity of the plant site has not changed significantly from that identified in Amendment 44 (July 1976) of the FSAR. A summary of the land use census is presented in Table 2.1-5 and Figure 2.1-14. Table 2.1-5 lists the distances measured in miles from the Unit 1 reactor centerline to the nearest animal, residence, and vegetable garden. The locations of gardens or farms greater than 500 square feet are shown in Figure 2.1-14. There is a farm in the southeast sector along the site access road on the coastal plateau; it starts approximately 2 miles from the plant and extends to 4.5 miles from the plant. Figure 2.1-14 also shows the nearest residence is 1.55 miles north-northwest of the plant. Nine permanent residences were identified within 5 miles of the plant.

2.1.3 REFERENCES

1. Regulatory Guide 4.8, Environmental Technical Specifications for Nuclear Power Plants, USNRC, December 1975.

2.2 NEARBY INDUSTRIAL, TRANSPORTATION, AND MILITARY FACILITIES

This section establishes that DCPP is designed to safely withstand the effects of potential accidents at, or as a result of the presence of, other industrial, transportation, mining, and military installations or operations near the site which may have a potentially significant effect on the safe operation of the plant.

2.2.1 DESIGN BASES

2.2.1.1 Nearby Industrial, Transportation, and Military Facilities Safety Function Requirement

(1) Protection of the Intake Structure

The DCPP intake structure is appropriately protected from marine vessel collisions that may pose a significant hazard to the PG&E Design Class I auxiliary saltwater (ASW) system.

2.2.1.2 10 CFR Part 100 - Reactor Site Criteria

PG&E considered the characteristics peculiar to the site, the site location and the use characteristics of the site environs when evaluating the DCPP site.

2.2.1.3 Regulatory Guide 1.78, June 1974 - Assumptions For Evaluating The Habitability Of A Nuclear Power Plant Control Room During A Postulated Hazardous Chemical Release

The DCPP control room is appropriately protected from hazardous chemicals that may be discharged as a result of events and conditions outside the control of the plant.

2.2.2 LOCATIONS AND ROUTES

There are no industrial, transportation, mining, or military facilities within 5 miles of the DCPP site. The DCPP site is adjacent to the Pacific Ocean; however, no people or vessels are permitted to come within 2000 yards of the plant (refer to Section 2.1).

Coastal shipping lanes are approximately 20 miles offshore. Prior to 1998, there were local tankers coming into and out of Estero Bay, which is north of the DCPP site. There is no further tanker traffic in either Port San Luis or Estero Bay. The local tanker terminal at Estero Bay closed in 1994, and Avila Pier ceased operation in 1998. Petroleum products and crude oil are no longer stored at Avila Beach, since the storage tanks there were removed in 1999. However, some petroleum products and crude oil continue to be stored at Estero Bay approximately 10 miles from the DCPP site.

Port San Luis Harbor and the Point San Luis Lighthouse are located approximately 6.5 miles south-southeast of the DCPP site. The Coast Guard operates and maintains a modern light station and navigating equipment adjacent to the lighthouse. Located approximately 6.5 miles east-southeast of the DCPP site is the Cal Poly pier that is owned by California Polytechnic State University and is used for research.

US Highway 101 is the main arterial road serving the coastal region in this portion of California. It passes about 9 miles east of the site, separated from it by the Irish Hills. US Highway 1 passes 10 miles to the north and carries moderate traffic between San Luis Obispo and the coast. The nearest public access is by county roads in Clark Valley (5 miles north) and See Canyon (5 miles east). Access to the site is by Avila Beach Drive (county road) to the entrance of PG&Es private access road (easement).

The Union Pacific Transportation Company provides rail service to the county by a route that roughly parallels US Highway 101. There is no spur track into the site.

The San Luis Obispo County Airport is 12 miles east of the site. There is a smaller airport near Oceano, 15 miles east-southeast of the DCPP site, which accommodates private planes only. The Camp San Luis Obispo airfield, 8 miles northeast of the DCPP site, is not operational.

Aircraft operating out of the San Luis Obispo County Airport are limited to general aviation, freight, and commuter flights weighing generally less than 100,000 pounds.

The approach route for visual landings passes 8 miles from the site, on the far side of the San Luis Range. The approach route for a portion of the traffic passes within approximately 4 miles of the DCPP site at an elevation of 3,000 feet, but is used infrequently.

The largest military and industrial complex is Vandenberg Air Force Base, located about 35 miles south-southeast of the site in Santa Barbara County. Vandenberg Air Force Base employs several thousand military and civilian personnel in the area of Lompoc-Santa Maria.

The closest US Army installation is the Hunter-Liggett Military Reservation located in Monterey County approximately 45 miles north of the site. The California National Guard maintains Camp Roberts, located on the border of Monterey County and San Luis Obispo County, southeast of the Hunter-Liggett Military Reservation and approximately 30 miles north of the DCPP site, and Camp San Luis Obispo, in San Luis Obispo County, located about 14 miles northeast of the DCPP site. In addition, as previously described, a US Coast Guard light station is located in Avila Beach on property commonly known as the Point San Luis Lighthouse property.

2.2.2.1 DESCRIPTIONS

No products are manufactured, stored or transported within 5 miles of DCPP site. Industry in the vicinity of DCPP site is mainly light and of a local nature serving the needs of agriculture in the area. Food processing and refining of crude oil are the area's major industries, although the numbers employed are not large.

2.2.3 SAFETY EVALUATION

2.2.3.1 Nearby Industrial, Transportation, and Military Facilities Safety Function Requirement

(1) Protection of the Intake Structure

Collisions of marine vessels with the intake structure are not a significant hazard to the safe operation of DCPP. The intake structure is protected by massive breakwaters as described in Sections 2.4 and 3.4. Jack R. Benjamin & Associates, Inc., (JBA) (Reference 1), consultants to PG&E, assessed the likelihood of marine vessel collisions with the intake structure thereby endangering operation of the PG&E Design Class I ASW system pumps.

JBA investigated maritime traffic in the vicinity of Diablo Canyon looking for events that could lead to a marine vessel collision with the intake structure. The study considered 13 categories of large vessels, those greater than 100 feet in length and of more than 250 long tons displacement, and a single category including all smaller vessels. Quantitative data were developed for the larger vessel collisions and probability analyses made for both storm dependent and storm independent cases. Development of quantitative data for the smaller vessel collision proved to be not feasible due to the lack of sufficient records of small vessel traffic and accidental groundings. As an alternative approach for smaller vessels, a deterministic structural analysis was made to assess the potential damage to the intake structure for an extreme case collision scenario involving the largest of the smaller vessel category.

The investigations were based on the following conservative assumptions that resulted in computed frequencies of collisions substantially greater than likely to occur:

(1) The entire length of the breakwater is degraded to the mean lower low water (MLLW) level

(2) Any vessel crossing the breakwater boundary always impacts the intake structure

(3) All barges (either large or small vessels) are empty and have only a 3 to 4-foot draft

The storm-independent case probabilistic analysis for large vessels yielded a best estimate frequency of 6.7 x 10^{-6} collisions per year. The storm-dependent probabilistic analysis, the best estimate annual frequency of collision increased only moderately to 1.9 x 10^{-5}. The storm independent case, which realistically assumes vessels arriving randomly and encountering storm conditions only a fraction of the time, was used as the basis for evaluating the frequency of impact.

The results of the deterministic analysis indicated that collisions with the intake structure by small vessels of 250 tons or less would be inconsequential to the PG&E Design Class I function of the ASW pumps.

The study demonstrated that larger marine vessels are not likely to collide with the intake structure and that collisions by smaller vessels would not cause sufficient damage to the intake structure to impair the operation of the ASW system. It is, therefore, concluded that collisions of marine vessels with the intake structure are not a significant hazard to the safe operation of the power plant even if the entire breakwater were to be degraded to the MLLW level. The breakwater in the fully repaired normal condition provides a substantial physical barrier to vessels approaching the intake structure, further reducing the potential hazard from collisions.

2.2.3.2 10 CFR Part 100 - Reactor Site Criteria

PG&E has identified and evaluated the characteristics peculiar to the site, including the site location and the use characteristics of the site environment.

DCPP is located in a remote, sparsely populated, undeveloped site that is an essentially agricultural area. None of the activities described in Sections 2.2.2 and 2.2.2.1 could constitute a hazard to the plant.

Due to very limited industry within San Luis Obispo County, any products or materials manufactured, stored, or transported beyond 5 miles are not likely to be a significant hazard to the plant.

No explosive or combustible materials are stored within 5 miles of the site and no natural gas or other pipelines pass within 5 miles of the DCPP site. The risk of fire is minimal, since adjacent hills are sparsely covered with low lying brush and grasses.

Missiles fired from Vandenberg Air Force base to the Western Pacific Missile Range are not directed north or west. Missile launch sites are some 36 miles due south of DCPP. Polar orbit launches are in a southerly direction.

Local shipping tankers come within 5 to 10 miles of the DCPP site. Coastal shipping lanes are approximately 20 miles offshore. Because shipping does not approach closer than 5 miles of the DCPP site and a limited number of tankers pass through, shipping does not pose a hazard to the DCPP site.

Aircraft operating in the area are small in size and few in number. Take-off and landing patterns do not come near the DCPP site and the probability of aircraft impacting or damaging the plant is very low.

On the DCPP site, as well as surrounding properties, there are no natural-draft cooling towers or other tall structures with a potential for damage to PG&E Design Class I equipment or structures in the event of collapse of such tall structures.

2.2.3.3 Regulatory Guide 1.78, June 1974 - Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release

DCPP has evaluated control room habitability in accordance with the Regulatory Guide 1.78, June 1974 screening criteria for stationary sources. Details of the evaluations are discussed in Sections 6.4 and 9.4.1.

The nearby industrial, transportation, and military facilities are all located at distances greater than 5 miles from the site. Chemicals stored or situated or frequently shipped by rail, water, or road routes at distances greater than 5 miles from the plant need not be considered because, if a release occurs at such a distance, atmospheric dispersion will dilute and disperse the incoming plume to such a degree that either toxic limits will never be reached or there would be sufficient time for the control room operators to take appropriate action. In addition, the probability of a plume remaining within a given sector for a long period of time is quite small.

2.2.4 REFERENCES

1. Charles A. Kircher, et al, Frequency of Vessel Impact With the Diablo Canyon Intake Structure, Jack R. Benjamin & Associates, Inc., Mountain View, CA, 1982.

2.3 METEOROLOGY

Historical summaries of normal and extreme values of meteorological parameters such as wind speed, wind direction, ambient air temperature, and precipitation are presented in this section. The historical data contained in this section were used for initial plant licensing and are not required to be updated. Wind speed and wind direction for tornado and dose analysis are discussed in Sections 3.3.2 and 15.5, respectively. The ambient air temperature for heating, ventilating, and air conditioning (HVAC) analysis is discussed in Section 9.4. Precipitation data for probable maximum flood are discussed in Section 2.4.3.

The onsite meteorological monitoring program is discussed in this section. The program provides meteorological information for use in (1) estimating potential radiation doses to the public resulting from actual, routine or accidental releases of radioactive materials to the atmosphere and (2) coping with radiological emergencies. Note that the dispersion factors calculated by the onsite meteorological monitoring program are produced and used for purposes of immediate radionuclide transport and dispersion assessment, and are therefore separate from those used for design bases radiological analyses as described in Section 15.5.5.

2.3.1 DESIGN BASES

2.3.1.1 General Design Criterion 11, 1967 – Control Room

Meteorological monitoring is provided to support actions to maintain and control the safe operational status of the plant from the control room.

2.3.1.2 General Design Criterion 12, 1967 – Instrumentation and Control Systems

Instrumentation and controls are provided as required to monitor meteorological conditions.

2.3.1.3 Meteorology Safety Function Requirements

(1) Calculation of Atmospheric Dispersion

The calculated relative concentration values are provided for use in (1) estimating potential radiation doses to the public resulting from actual, routine or accidental releases of radioactive materials to the atmosphere and (2) coping with radiological emergencies.

2.3.1.4 Safety Guide 23, February 1972 – Onsite Meteorological Programs

An onsite meteorological monitoring program that is capable of providing meteorological data needed to estimate potential radiation doses to the public as a result of routine or accidental release of radioactive material to the atmosphere and to asses other environmental effects is provided.

2.3.1.5 Regulatory Guide 1.97, Revision 3 – Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident

Control room display instrumentation for use in determining the magnitude of the release of radioactive materials and in continuously assessing such releases during and following an accident is provided.

2.3.1.6 Regulatory Guide 1.111, March 1976 – Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors

Annual average relative concentration values are used during the postulated accident to estimate the long-term atmospheric transport and dispersion of gaseous effluents in routine releases.

2.3.1.7 NUREG-0737 (Item III.A.2), November 1980 – Clarification of TMI Action Plan Requirements

Item III.A.2 - Improving Licensee Emergency Preparedness–Long-Term:

Reasonable assurance is provided that adequate protective measures can and will be taken in the event of a radiological emergency. The requirements of NUREG-0654, Revision 1, November 1980, which provides meteorological criteria to ensure that the methods, systems and equipment for monitoring and assessing the consequences of radiological emergencies are in use, is implemented.

Item III.A.2.2 - Meteorological Data: NUREG-0737, Supplement 1, January 1983 provides the requirements for III.A.2.2 as follows:

Reliable indication of the meteorological variables specified in Regulatory Guide 1.97, Revision 3, for site meteorology is provided.

2.3.1.8 IE Information Notice 84-91, December 1984 – Quality Control Problems of Meteorological Measurements Programs

Meteorological data that are climatically representative, of high quality, and reliable in providing credible dose calculations and recommendations for protective actions in an emergency situation, and for doses calculated to assess the impact of routine releases of radioactive material to the atmosphere are available.

2.3.2 REGIONAL CLIMATOLOGY

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

2.3.2.1 Data Sources

The information used in determining the regional meteorological characteristics of Diablo Canyon Power Plant (DCPP) site consists of climatological summaries, technical studies, and reports by Dye (Reference 2), Edinger (Reference 3), Elford (Reference 4), Holzworth (Reference 6), Martin (Reference 8), Thom References 13 and 14), and a Weather Bureau Technical Paper (Reference 16), all pertinent to the region.

2.3.2.2 General Climate

The climate of the area is typical of the central California coastal region and is characterized by small diurnal and seasonal temperature variations and scanty summer precipitation. The prevailing wind direction is from the northwest, and the annual average wind speed is about 10 mph. In the dry season, which extends from May through September, the Pacific high-pressure area is located off the California coast, and the Pacific storm track is located far to the north. Moderate to strong sea breezes are common during the afternoon hours of this season while, at night, weak offshore drainage winds (land breezes) are prevalent. There is a high frequency of fog and low stratus clouds during the dry season, associated with a strong low-level temperature inversion.

The mean height of the inversion base is approximately 1100 feet. During the wet season, extending from November through March, the Pacific high-pressure area moves southward and weakens in intensity, allowing storms to move into and across the state. More than 80 percent of the annual rainfall occurs during this 5-month period. Middle and high clouds occur mainly with winter storm activity, and strong winds may be associated with the arrival and passage of storm systems. April and October are considered transitional months separating the two seasons.

The coastal mountains that extend in a general northwest-to-southeast direction along the coastline affect the general circulation patterns. The wind direction in many areas is more likely a result of the local terrain than it is of the prevailing circulation. This range of mountains is indented by numerous canyons and valleys, each of which has its own land-sea breeze regime. As the air flows along this barrier, it is dispersed inland by the valleys and canyons that indent the coastal range. Once the air enters these valleys and canyons, it is controlled by the local terrain features.

In areas where there are no breaks in the coastal range, the magnitude of the wind speed is increased and the variation in the wind direction decreases as the air is forced along the barrier. However, because of the irregular terrain profile and increased mechanical turbulence due to the rough terrain, vertical mixing and lateral meandering *under the inversion are enhanced. Therefore, emissions injected into the coastal regime are transported and dispersed by a complex array of land-sea breeze regimes that lead to rapid dispersion in both the vertical and horizontal planes.*

2.3.2.3 *Severe Weather*

The annual mean number of days with severe weather conditions, such as tornadoes and ice storms at west coast sites, is zero. Thunderstorms and hail are also rare phenomena, the average occurrence being less than three days per year, as reported by Dye (Reference 2) and Thom (Reference 13). The maximum recorded precipitation in the San Luis Obispo region is 2.35 inches in 1 hour at the DCPP site, and 5.98 inches in 24 hours at San Luis Obispo. The 24 hour maximum and the 1 hour maximum occurred on March 4, 1978. The 24 hour maximum recorded precipitation resulted from a semistationary low-pressure system located southwest of the central California coast that produced a series of frontal waves. These surges of warm, moist air moved into and across the central portion of the state and produced heavy precipitation. The 1 hour maximum was associated with the passage of a strong cold front.

The maximum recorded annual precipitation at San Luis Obispo was 54.53 inches during 1969. The average annual precipitation at San Luis Obispo is 21.53 inches. There are no fastest mile wind speed records in the general area of Diablo Canyon; surface peak gusts at 46 mph have been reported at Santa Maria, California, and peak gusts of 56 mph have been recorded at the 250 foot level on the tower at DCPP site. The frequency of occurrence of peak gusts of this magnitude is approximately once every 10 years. The 100 year recurrence interval wind speed for the site area is 80 mph, Thom (Reference 14). The number of days having a high air pollution potential averages ten per year, Holzworth (Reference 6).

One of the most severe tropical storms on record along the Southern California coast occurred September 24-25, 1939. It moved northward off the Southern California coast and came inland on the 25th in the Los Angeles area, but dissipated rapidly. This storm was attended by extremely heavy rains and winds of gale force in the Los Angeles area and southward. Precipitation amounts recorded during the storm are shown below; these data show that this storm had little or no effect on the DCPP site:

	Precipitation in Inches			
Location	*September 24*	*September 25*	*September 26*	*Total*
Los Angeles	*1.62*	*3.96*	*0.04*	*5.62*
Oxnard	*0.00*	*1.67*	*0.02*	*1.69*
Ventura	*0.00*	*0.80*	*0.00*	*0.80*
Santa Barbara	*0.09*	*0.16*	*0.01*	*0.26*
Santa Maria	*1.13*	*0.29*	*0.00*	*1.42*
San Luis Obispo	*0.04*	*0.48*	*0.07*	*0.59*

By definition, gale force winds range from 30 to 60 mph, so the intensity of this storm was about equal to the expected wind speed having a recurrence interval of 10 years at the site. The maximum daily precipitation of 4 inches recorded in this storm was well under the expected maximum probable precipitation estimated for DCPP site.

2.3.3 LOCAL METEOROLOGY

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

2.3.3.1 Data from Offsite Sources

Meteorological data from National Weather Service Stations are indicated below and data from other sources near the DCPP site had been gathered and reported previously in prior FSAR Updates as Appendix 2.3J. Since this appendix, as well as other appendices to this chapter (including Appendices 2.3A-K, 2.4A-C, and 2.5A-F) is merely of historical value at this time, they have been removed from this revision of the FSAR Update and are included only by reference collectively as Reference 27. However, all of these appendices are maintained available for review at PG&E offices. In addition, these appendices have also been docketed at the NRC as a part of Revision 0 through Revision 10 of the FSAR Update. Further, since the nearest National Weather Service Station is located approximately 30 airline miles southeast of the DCPP site, and since other offsite sources are separated from the site by rugged terrain, data from other sources are not considered indicative of site conditions. The only representative local data source is the onsite meteorological measurement program, data from which are summarized in Section 2.3.3.2, below, and presented in detail in Appendix 2.3J of Reference 27.

Precipitation and ambient air temperature data at National Weather Service stations surrounding DCPP are shown in Tables 2.3-6 and 2.3-7. Annual and monthly wind data summaries for Santa Maria, California, are shown in Tables 2.3-8 through 2.3-20.

The results of the analysis of the meteorological observations made at the DCPP site are summarized in the following sections and presented in further detail in References 1, 9, 10, and 11, and in Appendix 2.3J of Reference 27.

2.3.3.2 Onsite Normal and Extreme Values of Meteorological Parameters

Summaries of normal and extreme values of meteorological parameters are presented in this section for six stations located on DCPP property. Detailed data are included in the locations described in this section. Additional data from continued long-term operation of one site station (Station E) are presented in Appendix 2.3J of Reference 27.

2.3.3.2.1 Wind Speed and Wind Direction

The wind speed units in References 1, 9, and 10, and in Appendix 2.3J of Reference 27 are in miles per hour and were estimated to the nearest mile per hour. The wind speed values in the tables contained in Reference 9 and Appendix 2.3J of Reference 27 refer to the values included in each category. For example, the category of 4-7 includes all wind speed values for 4, 5, 6, and 7 mph. The wind speed values in the tables contained in References 1 and 10 are the midpoint values of the class intervals.

The seasonal and annual frequency distributions of wind speed and wind direction are shown graphically in Figures 1 through 4, Reference 9. The percentage occurrence (expressed as the percent of the total number of observations in the period) for each of the 16 wind direction sectors is represented by the length of the bars on the wind rose, and the average wind speed for each wind direction sector is plotted at the end of each bar.

The annual frequency distribution of wind speed and wind direction at the six DCPP stations is shown in Figure 1, Reference 9. The patterns at Stations E, A, and B are grossly similar with about 50 percent of the observations comprising northwesterly winds with average speeds of 10 to 15 mph. The percentage of indicated hourly mean wind speeds that are 2 mph or less varies from 21 percent at Station E to 14 percent at Station A. This variation may be attributed, in part, to the higher starting threshold of the sensors at Station E.

As shown in Tables S.2-1 and S.2-2 of Reference 11, there is a 4 percent difference in the percentage of indicated hourly mean wind speeds that are 2 mph or less for the two concurrent sets of measurements at the 25 foot level of Station E for the period April 1970 through March 1972. The measurements presented in Table S.2-1 were obtained from a lightweight cup and vane wind system, while the observations shown in Table S.2-2 are concurrent measurements obtained from a Bendix-Friez aerovane wind system. The wind flows at Stations C and D, both located in Diablo Canyon, reflect the channeling of the wind by the canyon walls; the predominant directions are up-canyon and down-canyon. The wind distribution at Station F tends to be somewhat circular, because of topographical factors, with the highest mean wind speeds identified with easterly flow.

The highest recorded peak gust at Station E is 84 mph, and the maximum recorded hourly mean wind speed is 54 mph, both recorded at the 76-m level of the primary tower.

Figure 2 of Reference 9 shows that during the dry season northwesterly flow is predominant; Figure 3 of Reference 9 shows there is an increase in southeasterly flow during the wet season compared to the annual distribution. Wind frequency distributions for the transitional months, April and October, show all six stations similar to the annual patterns. Because of the small variability from month to month within a particular season, monthly wind distributions have not been prepared.

The strong diurnal variability of the wind patterns at DCPP site is revealed in Figure 5 and in Figures I-1 through I-7 of Reference 9. The following time periods are shown in the figures for the six stations: Day, 1200-1700 PDT; Night, 2300-0500 PDT; Morning 0600-1100 PDT; and Evening, 1800-2200 PDT. During the day, the winds are northwesterly at Stations E, A, and B. The daytime flow at Stations C and D in Diablo Canyon is directed up-canyon. The most frequent daytime wind direction at Station F is from the northwest. During the night and morning periods, northerly and easterly drainage winds are typically present at all stations. The average nighttime wind speeds at Stations E, A, and B are approximately one-half as great as the average daytime speeds. At the other three stations, no large differences in mean wind speed between the daytime and nighttime regimes are apparent.

2.3.3.2.2 Ambient Air Temperature

Average ambient air temperatures for each month of the year, calculated from the hourly temperature measurements at Stations E, B, and F up to the year 1980, are plotted in Figures I-15 through I-17 of Reference 9. The average annual temperature at the plant site is about 55°F. Generally, the warmest mean monthly temperature occurs in October, and the coldest mean monthly temperature occurs in December. The highest and lowest hourly temperatures recorded at the Diablo Canyon site through the year 2000 were 97°F in October 1987 and 33°F in December 1990, respectively.

2.3.3.2.3 Atmospheric Water Vapor and Fog

Measurements of atmospheric water vapor and fog observations are not present throughout the entire meteorological data collection program. However, measurements of these parameters are not essential at DCPP site since regional data are adequate for design purposes and cooling towers are not being used.

2.3.3.2.4 Precipitation

Rainfall measurements made at the DCPP shown herein for two report periods. The first period was from July 1, 1967 through October 31, 1969 and is discussed in Section 7.7 and summarized in Table 7 of Appendix 2.3A in Reference 27. The second period was from May 1973 through April 1981 and is discussed in Section 2.3J.4.2 and summarized in Table 2.3J-3 of Appendix 2.3J of Reference 27. Precipitation occurs typically during the period of late October through the first part of May and most frequently in the presence of southeasterly wind flow in advance of a frontal system. The average annual precipitation in the area is about 16 inches. The highest monthly total during the period of record (1967-1981) was 11.26 inches as shown in Section 7.7 of Appendix 2.3A of Reference 27. The greatest amount of precipitation received in a 24 hour period was 3.28 inches as shown in Section 2.3J.4.2 and Table 2.3J-3 of Appendix 2.3J of Reference 27. These maximums were recorded in January 1969 and March 1978, respectively. The maximum hourly amount recorded at DCPP site during the periods of record is 2.35 inches as shown in Section 2.3J.4.2 of Appendix 2.3J of

Reference 27. The 1978-1979 winter season with 35.22 inches of rainfall was one of the heaviest precipitation seasons of record.

2.3.3.2.5 Wind Direction Persistence

The steadiness of the wind flow at DCPP site has been studied by tabulating the number of consecutive hours the hourly mean wind direction remained within a given 22.5° angular sector. The results, expressed in terms of percentage of all hourly observations, are plotted in Figures I-8 through I-14 of Reference 9, and presented also in Table 2.3J-17 of Appendix 2.3J of Reference 27, for periods ranging from 1 through 24 hours. The mean wind direction at all stations in the analysis of Reference 9 remained within the same 22.5° sector for two consecutive hours or longer in 31 to 42 percent of the observations. The persistence of the wind direction decreases rapidly for a longer time period with only 3 to 4 percent of the observations showing a persistence of 8 hours or longer.

The longest run of persistent wind direction in the total set of measurements occurred at Station B where a northwest wind direction lasted for 51 consecutive hours. The longest period of calm (hourly mean wind speed less than 1 mph) observed at Station E, near the plant location, was 10 hours. As shown in Table 2.3-1, the percentage of the total hourly mean wind speed observations that are less than 1 mph at Station E is 5.9 and 4.9 percent at the 25 foot and 250 foot levels, respectively. The percentage of time that the mean hourly wind speed would be less than 1 mph for 8 consecutive hours or longer is less than 0.5.

As indicated by the persistence analysis, despite the prevalence of the marine inversion and the northwesterly wind flow gradient along the California coast, the long-term accumulation of plant emissions in any particular geographical area downwind is virtually impossible. Pollutants injected into the marine inversion layer of the coastal wind regime are transported and dispersed by a complex array of land-sea breeze regimes that exist all along the coast wherever canyons or valleys indent the coastal range. These conclusions are strongly supported by Edinger's (Reference 3) comprehensive analysis of the influence of terrain and thermal stratification on wind circulations along the California coast, as well as the onsite diffusion studies by Cramer and Record (Reference 1).

2.3.3.2.6 Atmospheric Stability Conditions Defined by Turbulence Measurements

The Pasquill (Reference 17) stability categories (see Table 2.3-141) are frequently used as a convenient practical index for gauging the dispersal capacity of the atmosphere. For example, unstable and near-neutral stability conditions (Pasquill Categories A, B, C, D) are favorable for the dilution of pollutants; on the other hand, poor dilution occurs under stable conditions (Pasquill Categories E, F, G). Following a procedure outlined by Slade (Reference 12) the turbulence measurements obtained from the bidirectional vanes at Station E have been used to classify the wind observations at DCPP site according to the Pasquill stability categories. Table 4 of Reference 9, shows the *relationship between the range in azimuth and vertical wind angle and the Pasquill stability categories. Scaling factors used to convert the angle ranges to standard deviations were determined from the data presented in Table 2 of Reference 9. The annual wind distributions for the 250 foot level at Station E, given by the measurements made during the period from July 1967 through October 1969, are classified according to the range values of azimuth and vertical wind angles associated with the various Pasquill categories, Tables I-2 through I-6 and Tables I-14 through I-18 of Reference 9. The corresponding annual wind distributions for the 25 foot level are similarly classified, using the 250 foot turbulence measurements, in Tables I-8 through I-12, and I-20 through I-24 of Reference 9. As mentioned above, turbulence measurements were available only at the 250-foot level for this period.*

As shown in Table 5 of Reference 9, when the range in azimuth wind angle is used to determine the number of wind observations at Station E in the various Pasquill stability categories, 57 percent of the total observations are in the stable E, F, and G categories. The unstable categories A, B, and C contain 25 percent of the total observations. When the range in vertical wind angle is used to classify the Station E wind data, less than 20 percent of the total observations are in the E, F, and G stable categories. The unstable categories A, B, and C account for about 65 percent of the total observations. These apparent inconsistencies are explained in part by terrain restrictions on the azimuth wind variations at the site.

The results also indicate the routine presence of relatively large vertical turbulence intensities that are caused by the rough terrain at the site. Therefore, it is concluded that the range in vertical wind-angle is a better index of turbulent mixing at DCPP site than the range in azimuth angle. This conclusion is strongly supported by Luna and Church's (Reference 7) comprehensive analysis of the use of measured vertical turbulence values to define stability conditions at sites with rough terrain.

Toward the end of the 2 year meteorological measurement program, July 1967 through October 1969, a question arose as to the applicability of the azimuth and vertical wind fluctuations measured at the 250-foot level in determining the site dispersion characteristics for low-level releases resulting from an accident. Therefore, 1 year (October 1969 through September 1970) of concurrent azimuth and vertical wind-angle measurements were obtained at the 25- and 250-foot levels. A detailed analysis of these data is contained in Reference 10 where Tables S.1-1 through S.1-6, pages 7 through 12, and Tables S.1-13 through S.1-18, pages 19 through 24, contains the annual wind distributions classified according to the azimuth wind-angle for the 25- and 250-foot levels, respectively. The annual distributions classified according to vertical wind angle for the two levels are shown in Tables S.1-7 through S.1-12, pages 13 through 18, and Tables S.1-19 through S.1-24, pages 25 through 30.

When the range in azimuth wind-angle is used to classify these concurrent measurements, the 250 foot azimuth range yields the same percentages as the data collected during the period July 1967 through October 1969 (57 percent for the E, F, and G stable categories, and 25 percent for the unstable categories A, B, and C).

However, when the azimuth range measured at the 25 foot level is used to classify the total number of observations at the 25-foot level in the various Pasquill stability categories, 48 percent of the total observations are in the E, F, and G stable categories; the unstable categories A, B, and C contain 29 percent of the total observations.

When the range in vertical wind-angle is used to classify the 1 year of concurrent measurement, again at the 250 foot level, there is very little change from the data collected during the period of July 1967 through October 1969: 17 percent of the total observations are in the E, F, and G stable categories and 68 percent are in the unstable categories A, B, and C. At the 25-foot level, only 7 percent of the total observations are in the E, F, and G stable categories. The percentage of total observations in the unstable categories A, B, and C is 80 percent, compared to 66 percent calculated from the wind-angle measurements from the 250 foot level during the period of July 1967 through October 1969.

Because of the poor dilution normally associated with the Pasquill F and G stable categories, the annual percentage occurrences of the F and G categories, in combination with onshore winds of 2 mph or less were also determined and are shown in Tables S.1-1 and S.1-7 of Reference 10. Onshore wind directions include winds for southeast through west-northwest, measured clockwise. The results from the 25-foot level indicate that the Pasquill F and G and onshore wind combination defined above occurs slightly less than 4 percent of the time when the azimuth angle-range data are used as indices, and slightly more than 3 percent of the time when the vertical range-angle data are used as indices. These percentages, which were calculated from the wind-angle measurements from the 250-foot level, are approximately one percentage point less than those for the 25 foot level shown in Table 5 of Reference 9.

The seasonal distributions given in Figure 6 of Reference 9 show the highest percentage of stable conditions during the dry season for both the azimuth and vertical wind-angle classifications. Additional analyses and discussion are presented in Appendix 2.3K of Reference 27.

2.3.3.2.7 Atmospheric Stability Conditions Defined by Vertical Temperature Gradient Measurements

The gross relationship between the hourly wind observations at Station E and the thermal stratification can be shown by classifying the wind data into three stability categories defined by the vertical temperature difference measured between the 250- and 25-foot levels on the tower.

The following ranges of the vertical temperature difference between these two levels can be used to define the categories:

Stable	$(T_{250} - T_{25}) = +25.0$ to $+1.6°F$
Near Neutral	$(T_{250} - T_{25}) = +1.5$ to $-1.5°F$
Unstable	$(T_{250} - T_{25}) = -1.6$ to $-25.0°F$

A discussion of the effect of measurement interval on stability estimates of temperature gradients is provided in Appendix 2.3G of Reference 27.

Joint frequency distributions of hourly wind speed and wind direction measurements at the 250-foot level for the three stability categories are contained in Reference 9, Tables I-26 through I-28. Similar frequency distributions of the hourly wind observations at the 25-foot level are shown in Tables I-30 through I-32.

Over 70 percent of all the wind observations are grouped in the near-neutral category at both levels. This large percentage is probably explained by the small vertical temperature gradients in the surface layer of the maritime air that reaches the tower during onshore winds; the proximity of the tower to the shoreline, and the intense turbulent mixing induced by the rough terrain at DCPP site. Approximately 5 percent of the total hourly observations at each level are identified with stable thermal stratification and mean wind speeds of 2 mph or less. The percentage of total hourly observations and onshore winds (southeast through west-northwest measured clockwise), with mean wind speeds of 2 mph or less, is 3.2 for the 250-foot level and 1.4 for the 25-foot level. The corresponding percentages for the Pasquill F and G stability categories, as shown in Table 2 of Reference 10, page 4, are 6 at the 250-foot level and 3.2 at the 25-foot level when the range data for the vertical wind angle are used to define the Pasquill categories.

Wind data (speed and direction) classified into seven stability categories (Pasquill A through G) are shown in Tables 2.3-21 through 2.3-27. The wind data were measured at the 250-foot level and the vertical temperature difference measurements are 250-foot level minus 25-foot level. The wind speed values are in miles per hour and the values in the tables refer to the midpoint of each class interval. The rows are labeled with the wind direction at the midpoint of 22.5° intervals:

Midpoint, mph	*Class Interval, mph*
Calm	*Less than 1*
2.0	*1-3*
5.1	*4-7*
9.6	*8-12*
15.1	*13-18*
21.1	*19-24*
39.6	*> 24*

Wind data (speed and direction) classified into seven stability categories (Pasquill A through G) for the period May 1973 through April 1974 are shown in Tables 2.3-42 through 2.3-48. The wind data were measured at the 25-foot level and the vertical temperature difference measurements are 250-foot level minus 25-foot level. The wind speed values are in miles per hour and the values in the tables refer to the midpoint of each class interval. The rows are labeled with the wind direction at the midpoint of 22.5° intervals:

Midpoint, mph	*Class Interval, mph*
Calm	*Less than 1*
1.8	*0.6 to 3.1*
5.1	*3.1 to 7.1*
9.6	*7.1 to 12.1*
15.1	*12.1 to 18.1*
21.1	*18.1 to 24.1*
39.6	*> 24*

Wind data (speed and direction) classified into seven stability categories (Pasquill A through G) for the period May 1973 through April 1975 are shown in Tables 2.3-49 through 2.3-55 on an annual basis, and in Tables 2.3-56 through 2.3-139, on a monthly basis. The wind data were measured at the 10-meter level, and the vertical temperature gradient measurements were made at 76 meters minus 10 meters.

The wind speed values are in miles per hour and the values in the tables refer to the midpoint of each class interval. The rows are labeled with the wind direction at the midpoint of 22.5° intervals:

Midpoint, mph	*Class Interval, mph*
1.5	*1.0-3*
5.1	*3.1-7*
9.6	*7.1-12*
15.1	*12.1-18*
21.1	*18.1-24*
29.6	*24.1-35*
40.1	*35.1-45*
50.1	*>45*

These 2 years of data, May 1973 through April 1975, are considered representative of long-term conditions at DCPP site, and are in agreement with other data taken at the site, such as that in Reference 9, Table I-7, page 2.3A-87, July 1967 through December 1969 and the data in Appendix 2.3J of Reference 27. The prevailing wind direction is from the northwest and the mean annual wind speed is about 10 mph. Between 70 to 90 percent of the observations are contained in the stability classes D and E, Tables 2.3-42 through 2.3-48, and Tables 2.3-49 through 2.3-55.

During the August 1969 review by the Environmental Science Services Administration (ESSA) for Diablo Canyon Nuclear Unit 2, it was requested that the wind data be processed so that the distribution of wind speeds of 3 mph and less could be examined. Since the wind sensor had a nominal starting speed of 2.2 mph, the following procedures were followed in processing the wind data:

(1) Calm refers to hourly wind speed traces indicating zero wind speed and hourly direction traces that were either squarewave or straight line

(2) The values shown for the 1 and 2 mph categories were determined by equal area averaging

(3) For wind speed entries in the 1 and 2 mph categories that show a calm wind direction, refer to hourly records for which a mean wind direction could not be defined

Additional analyses and discussion are presented in Appendix 2.3J of Reference 27.

2.3.3.2.8 Atmospheric Stability Conditions Defined by Onsite Diffusion Studies

Twenty-seven onsite field tests involving releases of smoke and fluorescent particles were made during various meteorological regimes. The data from these tests were used for verifying the diffusion model computations by comparing predicted ground level concentrations to observed concentrations. The data also served as a guide in the selection of parameters used in the long-term diffusion model. The analysis of the field measurements was performed by the GCA Corporation and is described in Reference 1. Additional analyses and discussion are contained in Appendix 2.3K of Reference 27.

Analysis of the meteorological and diffusion data obtained during the onsite field tests at Diablo Canyon leads to the following conclusions:

(1) For daytime elevated (250 foot) releases into northwesterly flow, only four measured concentrations exceeded the values predicted by the Pasquill-Gifford curve for Category D; these four values exceed the predicted values for Category D by a factor of 2 or less.

(2) For releases into southeasterly flow (generally prefrontal conditions), the Pasquill-Gifford curve for Category B serves as the upper bound for the concentrations measured during the 250-foot releases.

(3) During light and variable winds, the fluorescent particle tracer was found along the coast both north and south of the release point; all measured concentrations for both 250 and 25-foot releases were below the Pasquill-Gifford curve for Category B.

2.3.3.3 Potential Influence of the Plant and Its Facilities on Local Meteorology

Modification of local meteorological parameters is not expected by the presence and operation of DCPP.

2.3.3.4 Topographical Description

The topographical features within a 10-mile radius of the plant site are shown in Figure 2.3-1. The vertical cross sections for the eight 22.5° onshore wind direction sectors (southeast through west-northwest) radiating from the plant are shown in Figure 2.3-2. Modification of the local topography by the plant is considered negligible.

Topographical influences on both short-term and long-term diffusion estimates are quite pronounced in that the ridge lines east of the plant location extend at least to the average height of the marine inversion base.

The implications of this barrier are:

(1) *Any material released that is diverted along the coastline will be diluted and dispersed by the natural valleys and canyons, which indent the coastline.*

(2) *Any material released that is transported over the ridgeline will be distributed through a deep layer because of the enhanced vertical mixing due to topographic features.*

2.3.4 ONSITE METEOROLOGICAL MEASUREMENT PROGRAM

The preoperational meteorological data collection program is described in detail in the references. This meteorological program was designed and has been updated continually to meet the requirements of Safety Guide 23, February 1972 (Reference 21).

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

Onsite Meteorological Measurement Program

Data were collected from a comprehensive station network, shown as points A through F in Figure 2.3-3, over a 28-month period from July 1967 through October 1969. Because of a considerable amount of missing data during the first few months of the operation of the meteorological data network, the data collection period was extended four additional months beyond July 1, 1969, to eliminate any bias in the annual distributions caused by incomplete data. The above meteorological measurements were also supplemented by a 12-month program of concurrent turbulence measurements at heights of 250 and 25 feet from October 1969 through September 1970, and by a 24-month program of concurrent wind measurements at the 25 foot level of Station E using a Bendix-Friez aerovane wind system and a lightweight cup and vane system from April 1970 through March 1972. A complete description of the onsite meteorological measurement program is given in Reference 9.

Figure 2.3-1 shows the plant location and site boundary. Locations of Stations A through F of the meteorological measurement network are as shown in Figure 2.3-3.

Stations A and B are approximately 3000 feet southeast of the plant location at elevations of 125 and 600 feet Mean Sea Level (MSL), respectively. Station C at elevation of 75 feet MSL and Station D at 350 feet MSL are in Diablo Canyon. Stations E and F are at elevations 85 and 920 feet MSL, respectively. The meteorological instruments at each of the six stations consisted of a Climet Model CI-26 cup and vane assembly mounted at a height of 35 feet above the surface. In addition, air temperature measurements were made at Station B at a height of 5 feet above the surface using a Foxboro Capillary System.

At Station E, currently the primary tower site, meteorological sensors were mounted at heights of 250 and 25 feet on a 260-foot tower. The sensors at the 250-foot level comprised a Bendix-Friez Model 120 Aerovane, a Meteorology Research Incorporated bidirectional vane, and a platinum resistance thermometer for measuring the vertical temperature gradient. The sensor installation at the 25-foot level comprised a Bendix-Friez Model 120 Aerovane and a platinum resistance thermometer for measuring ambient air temperature. A second Meteorology Research Incorporated bidirectional vane was installed at the 25-foot level at Station E in October 1969, and a Climet Model CI-26 cup and vane system was installed at the 25-foot level of Station E in April 1970 to obtain supplementary data. A tipping-bucket rain gauge was located near Station E at the surface.

At Station F, approximately 3000 feet directly east of the plant location at an elevation of 920 feet MSL, a Bendix-Friez Model 120 Aerovane and a Meteorology Research Incorporated bidirectional vane were mounted at the top of a 100-foot tower. Ambient air temperature measurements were made at the 5-foot level by means of a Foxboro Capillary Sensor. Accuracy specifications of the instrumentation used prior to the spring of 1973 are:

(1) The Bendix-Friez Model 120 Aerovane has a stated accuracy of ±2° over the complete direction range, an average wind speed error of ±0.5 mph for speeds under 10 mph, and ±1 mph for speeds between 10 and 200 mph

(2) A Climet Model CI-26 wind speed sensor has a stated accuracy of 2 percent or 0.25 mph (whichever is greater) and a wind direction accuracy of ±5°

(3) Meteorology Research Inc. bivanes have stated accuracies of ±3.6° for horizontal and ±2° for vertical direction

(4) The platinum resistance temperature gradient measurement system has an accuracy of ±0.2°F

Additional descriptions of the instruments are contained in Reference 9. The temperature gradient system and the Bendix-Friez wind systems were calibrated annually or more often when required. The lightweight cup and vane wind systems and *the bidirectional wind systems were calibrated every 90 days, or sooner when required. Inspection was performed on a daily basis, and maintenance as necessary.*

All of the meteorological sensor outputs from the network described above were recorded on continuous strip chart recorders at the site. Measurements of wind speed, azimuth wind direction, ambient air temperature, and vertical temperature gradient were reduced as hourly averages; rain gauge measurements were reduced to hourly totals; bidirectional vane measurements of the fluctuations in azimuth and vertical wind angles at Stations E and F were abstracted from the chart records in the form of 10 minute range values for the last 10 minutes of each hour. These range values were converted to 10 minute standard deviations of azimuth and vertical wind angle by the use of simple scaling factors and classified according to stability category following a procedure outlined by Slade (Reference 12).

Subsequent to November 1969, Station E became the primary meteorological measurement site at Diablo Canyon, and measurements were discontinued at Stations B, C, D, and F. Measurements at Station A were continued through August 1974.

During the spring of 1973 the instrumentation was changed. The Climet and Bendix-Friez systems were replaced with Teledyne Geotech Series 50 cup and vane sensors to improve reliability and response characteristics. The resistance thermometer system was changed to 4-wire Rosemont bridges and Teledyne Geotech aspirated shields and a sensor was added at the 150-foot level. The precipitation measurement system was changed to a weighing bucket gauge with a potentiometer. Signals from all of the above devices are processed by Teledyne Geotech Series 40 processors that provide output voltages and currents of 0-5 Vdc and 0-1 milliampere, respectively, to the digital and strip chart recorders. A Cambridge systems/EG&G chilled mirror dew point system was added at this time to provide dew point and backup ambient temperature at the 25 foot level. H. E. Cramer Corporation installed signal conditioning equipment of their own design that produced analog signals from the above equipment and the existing bivane equipment that were equivalent to 5 minute values of:

(1) Means of all parameters, except precipitation

(2) Variance of horizontal and vertical wind directions

(3) Peak wind speeds

The signal conditioning provided by H. E. Cramer also converted the Teledyne Geotech 0-360° wind direction output to a 0-540° wind direction signal to accomplish Items 1 and 2 above. H. E. Cramer also provided a digitizing and recording system that utilized Nonlinear Systems' equipment for digitizing and a Bright Industries 7-track magnetic tape recorder for storage of the 5 minute data.

In 1973, a minicomputer and printer were added to the digital system in the control room. Digital data were taken at the tape recorder input and transmitted to the control *room computer. The computer system was designed to calculate and display downwind concentrations based on real-time data.*

The weighing bucket precipitation gauge was replaced with a tipping bucket gauge in December 1976.

In December 1978, Station E was again upgraded. The equipment was moved to a new equipment shelter at the site and completely rewired. Although the sensors were retained, considerable changes were made to the processors and recording system. A new microprocessor temperature processor was installed to replace the Rosemont Bridge system and improve the accuracy of the temperature difference measurements. The entire H.E. Cramer signal conditioning, digitizing, and recording system was replaced by a Teledyne Geotech Automet V microprocessor-based digital data system. The Automet V also replaced the minicomputer and only the printer remained in the control room. The multipoint Servo recorder was modified to record 25 foot temperature and temperature differences: 150 foot by 25 foot and 250 foot by 25 foot. The Bright Industries 7-track magnetic tape recorder was replaced with a Kennedy Model 9000, 9-track, 1600 bits per inch, phase encoded, buffered tape system.

In June 1980, the system was again upgraded by incorporation of improved wind direction processors using a linear output voltage with no step changes and phase-locked loops to increase immunity to sensor signal distortion. The new processors output a signal that changes linearly from 0 to 5 volts at 180° and back to 0 volts at 360°. A digital signal is used to identify which 180° is being processed. This eliminates errors in the 360° transition as 0° and 360° are both 0 volts rather than 5 volts for 360° in the old system. Digital processing was also changed at this time to use unit vectors for standard deviation and mean direction calculations to eliminate potential ambiguities inherent in the older system. An additional communications link was installed at this time to transmit meteorological data to the technical support center (TSC) computer.

In May of 1981, the Automet system was revised to allow polling from the DCPP Emergency Assessment and Response System (EARS) computer, and a math processor was incorporated to speed up the processing of wind direction vectors.

In October of 1981, a new 60 meter tower was installed as a backup meteorological system. The backup tower has two levels of wind direction, wind speed, and temperature instrumentation. It is located approximately 1.2 km southeast of the primary tower. The instruments are at the 10 meter and 60 meter levels. Wind speed and wind direction processing is identical to the primary system. The temperature processing incorporates new analog processors from Teledyne Geotech with the same type of aspirated platinum resistance thermometers. The backup system is powered by batteries and is capable of 7 days of operation without external power.

The Automet microcomputer for the backup system is located in the TSC and receives data digitally from a remote terminal at the tower location over a 4-wire communications *link. The backup system printer and a 9-track magnetic tape recorder are also located in the TSC. A switching system has been incorporated into the primary meteorological printer in the control room and allows the backup system printout to be substituted for the primary system printout. This switching system reconfigures the backup system automatically when the switch is actuated so that 5-minute updates of the current 15-minute logs derived from backup data are printed on the control room printer. The primary system data are output on the printer in the TSC when the backup system is selected in the control room.*

In the spring of 1982, a visibility measurement system was installed at the base of the primary tower. The system relates local visual range to forward light scattering by the air along a 4 foot horizontal path. This system was removed in February 1985 after a sufficient record of information had been collected.

Onsite Meteorological Measurement Program (Current)

The current onsite meteorological monitoring system consists of two independent subsystems that measure meteorological conditions and process the information into useable data. The measurement subsystems consist of a primary meteorological tower and a backup meteorological tower.

The primary meteorological tower location is shown in Figure 2.3-3 as Station E. There are instruments located at the 10 m, 46 m, and 76 m elevations. The 10 m and 76 m elevations have wind speed, wind direction, and temperature sensors. The 46 m elevation has a temperature sensor. The 10 m level also has a dewpoint sensor. There is a precipitation measurement system at the base of the tower.

The backup meteorological tower is located approximately 1.2 km southeast of the primary tower and is listed as Station A in Figure 2.3-3. There are wind speed, wind direction, and temperature sensors at the 10 m and 60 m elevations.

The processors for the above instruments reside in the meteorological facilities located near the towers. The temperature in these facilities is maintained to support processor operation. These processors provide input to strip chart recorders and the meteorological dataloggers. The dataloggers provide input to their respective meteorological computers.

The primary meteorological computer is located in the primary meteorological facility. The backup meteorological computer is located in the TSC. These two computers communicate with each other and the EARS. The primary meteorological computer also communicates with the Unit 1 Transient Recording System (TRS) server. The backup meteorological computer also communicates with the Unit 2 TRS server. Primary and backup meteorological data are available on the Plant Process Computers (PPCs) via the TRS servers. Thus meteorological data are available in the control room and emergency response facilities in accordance with NUREG-0654, Revision 1, November 1980 (Reference 23).

A detailed discussion of each of the above instruments is provided in the following sections.

2.3.4.1 Wind Measurement System

The wind direction processor supplies voltage and current signals corresponding to -180 to 0 to 180 degrees. A digital signal is provided to identify which 180-degree sector the signal represents.

The wind speed signal is processed to develop a voltage signal for the data acquisition system and a current signal for the strip chart recorder.

2.3.4.2 Temperature Measurement System

The primary tower temperature measurement system employs a microprocessor system in conjunction with platinum resistance temperature detectors (RTDs) to measure temperature at three levels on the meteorological tower.

Analog outputs of the temperature processor are recorded on a 3-channel multipoint recorder and depict:

(1) 10-m temperature in degrees Fahrenheit from 0 to 120

(2) temperature difference 46 m to 10 m from -15 to 21°F

(3) temperature difference 76 m to 10 m from -15 to 21°F

Temperature probes are housed in aspirated radiation shields. Radiation errors are limited to less than 0.2°F at a radiation intensity of 1.56 gram-calories/cm/min. This radiation level represents approximately twice the highest summer radiation level for the DCPP site. Aspirators are individually monitored by motor current sensors and temperatures are invalidated if the motor current is out of a specified range.

The backup tower 10-m processor supplies an intermediate output that is used to sum with the intermediate output of the 60-m processor and provide a temperature difference output from the 60-m processor. Both processors supply a current signal to a multipoint strip chart recorder at the tower location and a voltage signal to the data acquisition system.

Measurement ranges are 0 to 120°F for the 10-m temperature and -15 to 21°F for the 60- to 10-m temperature difference.

2.3.4.3 Dew Point Measurement System

A chilled mirror dew point measuring system is used to monitor the dew point at the primary tower 10-m level. The output voltage signal represents a range of 0 to 100°F. The sensor head is equipped with an aspirator to present a representative atmospheric sample to the mirror.

The voltage signal is further processed to generate a buffered voltage output to the data acquisition system and a current signal to the strip chart recorder.

2.3.4.4 Precipitation Measurement System

Precipitation is measured by a tipping bucket rain gauge that delivers a pulse for each 0.01-inch increment of rainfall. This pulse is digitally accumulated by a processor module. The digital accumulator resets to zero after the 250th pulse and begins a new cycle. The digital accumulator output is processed by a digital-to-analog converter that provides a voltage signal to the data acquisition system and a current signal to the strip chart recorder.

2.3.4.5 Supplemental Measurement System

A supplemental meteorological measurement system is present in the vicinity of the DCPP site. This supplemental measurement system consists of three Doppler SODAR (Sonic Detection and Ranging) and seven tower sites located as indicated in Figure 2.3-4.

The Doppler sounders provide remote sensing of wind speed, wind direction, standard deviation of wind direction variability (sigma theta), vertical velocity, and standard deviation of vertical velocity (sigma w), as well as information on echo characteristics useful in deducing the presence of inversion layers. At each Doppler location, the above parameters are provided as 15-minute average values for each of twenty 30-m thick vertical layers above the instrument site. Layer midpoints extend from 40 m to 610 m above ground level, providing data to heights just exceeding the maximum height of the local terrain. A thorough evaluation of the Doppler technique has been made by the National Oceanic and Atmospheric Administration (NOAA) (Reference 25). The NOAA evaluation of the Doppler produced correlation coefficients on the order of 0.93 and higher for both wind speed and direction in comparison with measurements by sonic anemometers.

The offsite towers provide measurements of wind speed, wind direction, sigma theta, and temperatures as 15 minute averages. All of the supplemental tower measurements are taken at or near the 10-m level using instrumentation designed to meet or exceed ANSI/ANS 2.5-1984 (Reference 24) for meteorological measurements at nuclear plant sites. Tower data are telemetered to the TSC, Alternate Technical Support Center/Operational Support Center (Alternate TSC/OSC), Emergency Operations Facility (EOF), and General Office headquarters on a continuous basis. The data are archived as a permanent record. SODAR data are available on-demand via a dial-up modem interface in the EOF or remotely via computer.

Onsite meteorological data and supplemental wind speed and direction data are processed by the EARS software. The data are provided to the Meteorological Information and Dose Assessment System (MIDAS) software to make estimates and predictions of atmospheric effluent transport and diffusion during and immediately following an accidental airborne radioactivity release from the plant. The software can produce initial transport and diffusion estimates for the plume exposure emergency planning zone (EPZ) within 15 minutes following the classification of an incident. The MIDAS model is designed to use actual 15-minute average meteorological data from onsite and offsite meteorological measurement systems. The output from the model includes the dimensions, position, locations, and arrival time of the plume.

If one or more of the supplemental tower data are unavailable, EARS and MIDAS will fail over to the supplemental tower most representative of the region that is missing data. If transmission of all supplemental data fails, EARS and MIDAS will continue to be functional with onsite meteorological data as the only source.

2.3.4.6 Meteorological Datalogger

A datalogger is installed in both the primary and backup meteorological facilities. The dataloggers receive the outputs of the meteorological sensor signal processors and computer 15-minute averages and maximums. The dataloggers also assign quality values to each of the 15-minute values. On the quarter hour, the dataloggers output their 15-minute data sets to the meteorological computers.

The primary tower datalogger records the following:

(1) 10-m and 76-m wind speeds

(2) 10-m and 76-m wind direction

(3) 10-m temperature

(4) 76 –10-m temperature difference

(5) 46 –10-m temperature difference

(6) precipitation

(7) dewpoint

(8) 10-m, 46-m, and 76-m aspirator currents

The backup tower datalogger records the following:

(1) 10-m and 60-m wind speeds

(2) 10-m and 60-m wind direction

(3) 10-m temperature

(4) 60 –10-m temperature difference

(5) the sum of the aspirator currents

(6) battery monitor voltage

The dataloggers scan their inputs every 2 seconds (450 samples per 15 minutes). The following tests are performed to determine the validity of the meteorological sensor data:

(1) If the wind direction standard deviation (calculated using the Yamartino method) is less than 1, the wind data are considered invalid. (Appendix 2.3F of Reference 27 presents the historical Wind Direction Deviation Computation at Diablo Canyon and its reference has been retained to provide a continuity of understanding.

(2) If the 15-minute average wind speed is greater than 0.75 mph and the difference between the peak wind speed and the average wind speed is less than 0.3, then the wind speed data are considered invalid.

(3) If the wind speed is greater than 100 mph or less than 0 mph, that 2-second sample is invalid. If more than 150 samples are invalid (i.e., less than 10 minutes worth of good data), then the 15-minute wind speed data are invalid.

(4) If more than 150 delta temperature samples are greater than 21 or less than -15, then the 15-minute temperature difference data are invalid.

(5) If more than 150 dew point samples are greater than the 10-m temperature by 2 degrees, then the 15-minute dew point data are invalid.

(6) If more than 150 aspirator samples are out of a specified range, then both the 15-minute aspirator value and the associated temperature value are invalid.

2.3.4.7 Meteorological Computers

The primary meteorological computer resides in the primary meteorological facility and the backup meteorological computer is located in the TSC. The primary computer communicates with the primary datalogger, the Unit 1 TRS, the EARS server, and the backup meteorological tower computer. The backup meteorological computer communicates with the backup datalogger, the Unit 2 TRS, the EARS server, and the primary tower computer. Meteorological data are also available on the Unit 1 and Unit 2 PPCs via their respective TRS.

Each computer receives data from its respective datalogger on a 15-minute basis and sends its data set to the other computer. Each computer then calculates χ/Q, sigma Y, and sigma Z for 10 distances for both the primary and backup data sets. The primary computer sends both data sets to the Unit 1 TRS server and the EARS system. The backup computer sends both data sets to the Unit 2 TRS server and the EARS system.

Along with the 15-minute data set, each computer receives error flags, which are assigned to the appropriate data values, and these error flags are also sent to the PPCs and the EARS system. In this manner, the correct data quality is propagated through the entire system (datalogger, meteorological computer, PPC, and EARS).

The equation used to compute centerline χ/Q values is based on lateral fluctuations of wind direction (σ_A) for horizontal spread, and vertical temperature gradient (ΔT) for vertical spread of the plume for all daytime cases when the 10-meter speeds are not less than 1.5 m/sec. Nighttime cases in the same wind speed class are treated in accordance with the method of Mitchell and Timbre (Reference 19) as outlined in Table 2.3-144. For speeds less than 1.5 m/sec at the 10-meter level, both lateral and vertical spread of the plume are determined by the vertical temperature gradient. Estimates of both lateral and vertical plume dimensions are determined from the procedures described by Sagendorf (Reference 15).

Equations used to determine χ/Q are:

$$\frac{\chi}{Q} = \frac{1}{\bar{u}(\pi \sigma_y \sigma_z + CA)} \qquad (2.3\text{-}1)$$

$$\frac{\chi}{Q} = \frac{1}{\bar{u}(3\pi \sigma_y \sigma_z)} \qquad (2.3\text{-}2)$$

$$\frac{\chi}{Q} = \frac{1}{\pi\bar{u} + \sum_y \sigma_z} \qquad (2.3\text{-}3)$$

where:

$\frac{\chi}{Q}$ is the relative concentration (sec/m^3)

π is 3.14159

$\bar{u}$ is the wind speed at the 10-meter level (m/sec)

$\sigma_y \sigma_z$ are the lateral and vertical cloud dimensions, respectively, as a function of downwind distance. The vertical cloud dimension has an upper limiting value of 1000 m or the product (T_m) (H_m), whichever is less. T_m is a multiplier that is used as a simple substitute for the multiple reflection term and is approximately 0.8 (References 5 and 12)

H_m is the monthly average mixing layer depth for the four time periods of the day which were derived from Holzworth (Reference 6); data are given in Table 2.3-3.

A is the minimum cross-sectional area of the reactor building ($1600\ m^2$)

C is constant (0.5)

$\sum_y$ = $M\sigma_y$ - at distances less than or equal to 800 m;

at distances greater than 800 m -

$$\sum_y = (M-1)(\sigma_y)_{800m} + \sigma_y$$

M is a correction factor for meandering and assumes the following values for speeds less than 2 m/sec:

Stability	$\bar{u} \leq 2$ m/sec M	2 m/sec$<\bar{u}<$6 m/sec M
A,B,C	1	1
D	2	$(\bar{u}/6)^{-0.631}$
E	3	$(\bar{u}/6)^{-1.00}$
F	4	$(\bar{u}/6)^{-1.262}$
G	6	$(\bar{u}/6)^{-1.631}$

If both values at all levels are invalid, temperature differences (ΔT) are used to determine both lateral and vertical stability categories regardless of wind speed. When this occurs, the dispersion equation used contains the plume meandering correction term. The applicable correction term M for the specific stability and wind speed is that derived from Figure 3 of Regulatory Guide 1.145, Revision 1 (Reference 22), page 1.145-9.

During neutral (D) or stable (E, F, G) stability conditions when 10-m wind speed is less than 6 m/sec, horizontal plume meander is considered. This process consists of comparing the values from Equations 1 and 2, and selecting the higher value. This value is then compared with the value from Equation 3 and the lower value of these selected for χ/Q value. During all other meteorological conditions, plume meander is not considered. The appropriate χ/Q value in these cases is the higher value calculated from Equations 1 and 2.

The dispersion model described above is a generic model and was not developed specifically for the DCPP site. Certain factors specific to the DCPP site bear upon the use and interpretation of the modeling output. Analysis and treatment of such site-specific factors are presented in Appendix 2.3H of Reference 27.

2.3.4.8 Power Supply For Meteorological Equipment

Power for the main meteorological instrumentation building is supplied from Unit 1 480-V non-Class 1E bus. This source is supplied through a transfer switch and will automatically switch to Unit 2 480-V non-Class 1E bus if a failure occurs on the Unit 1 bus. The microprocessor and the meteorological sensors are backed up by an 8-hour battery source to prevent any problems during switching and maintain a continuous database.

The backup meteorological instrumentation is supplied with ac power from the underground Unit 2 12-kV startup bus. In case of an ac power failure, batteries supply emergency power for up to 1 week. During battery backup, the temperature system aspirators are not powered, thereby invalidating temperatures.

If the measurement systems are being operated on battery power, ΔT measurement is inactivated due to inability to aspirate the temperature shields. In this case, χ/Q values are based on lateral fluctuations of wind direction (σ_A) for both horizontal and vertical spread of the plume. Nighttime stability categories are adjusted, however, in accordance with the method of Mitchell and Timbre (Reference 19) as outlined in Table 2.3-144.

Should both automated tower systems become inoperative, a portable battery-powered meteorological system is available for deployment and use in providing χ/Q values for input to dose-calculation algorithms as described in the Emergency Plan and outlined in Appendix 2.3I of Reference 27. Translation of χ/Q values to centerline and plume-spread estimates may be accomplished in accordance with procedures in the same Appendix 2.3I of Reference 27. (Appendix 2.3I of Reference 27 is historical in nature; however, reference to it has been retained to provide a continuity of understanding. Current procedures meet the requirements of Regulatory Guide 1.145, Revision 1 (Reference 22)).

2.3.5 SHORT-TERM (ACCIDENT) DIFFUSION ESTIMATES

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

2.3.5.1 Objective

Estimates of dilution factors that apply at distances of 0.8 to 80 kilometers downwind from DCPP are shown in Table 2.3-41 for each wind direction sector. These dilution factors represent the distribution of χ/Q value within each wind direction sector at the various downwind distances.

2.3.5.2 Calculations

The cumulative probability distribution of the dilution factor at the distances noted above were computed using one of the diffusion models shown below for centerline dispersion estimates from a ground level release. These are defined as:

$$\frac{\chi}{Q} = \frac{1}{\overline{u}\left(\pi \sigma_y \sigma_z + CA\right)} \qquad (2.3\text{-}4)$$

$$\frac{\chi}{Q} = \frac{1}{3\pi \overline{u} \sigma_y \sigma_z} \qquad (2.3\text{-}5)$$

$$\frac{\chi}{Q} = \frac{1}{\pi \overline{u} \sum_y \sigma_z} \qquad (2.3\text{-}6)$$

where:

χ	=	*ground level centerline concentration, curies/cubic meter*
Q	=	*source emission rate, curies/second*
σ_y	=	*standard deviation of the lateral concentration distribution, meters*
σ_z	=	*standard deviation of the vertical concentration distribution, meters*
$\overline{u}$	=	*mean wind speed, meters/second*
C	=	*building wake shape factor, 0.5*
A	=	*minimum cross-sectional area of the reactor building, 1600 m^2*
Σ_y	=	*f(σy) = meander correction factor*

A complete description of the models and their selection for use is included in Reference 18.

The year-to-year variation in the frequency of occurrence of conditions producing high χ/Q values is small, so that data from one complete year are representative of the site. In fact, the addition of the second year's data from October 1970 through March 1971 *and April 1972 through September 1972, resulted in a change in percentage frequency for the combined F and G categories of only 0.1 percent. Frequency distributions for joint probabilities using the 2-year length of record are given in Tables 2.3-29 through 2.3-40. The wind speed values are in miles per hour and the values in the tables refer to the midpoint of each of the following class intervals: 0-3, 4-7, 8-12, 13-18, 19-24, and greater than 24. The rows are labeled with the wind direction at the midpoint of each 22.5° interval. The 1-year gap (April 1971 through March 1972) in the period of record, October 1970 through September 1972, resulted from an unauthorized bivane modification.*

Frequency distributions of wind speed and wind direction classified into seven stability classes as defined by the vertical temperature gradient are shown in Tables 2.3-21 through 2.3-28. The column headings are labeled in terms of mean hourly wind speed in miles per hour. The six wind speed categories are as follows: 1-3, 4-7, 8-12, 13-18, 19-24, and 25-55. The rows are labeled with the wind direction at the midpoints of 22.5° intervals. Table 2.3-28 shows the number of observations in each of the seven stability classes (Pasquill A through G) for the period of record July 1, 1967, through October 31, 1969, when the mean hourly wind speed is less than 1 mph. The wind data were measured at the 76 meter level, and the vertical temperature difference measurements are the 76 meter level minus the 10 meter level.

The radius of the low population zone (LPZ) at DCPP has been established to be 6 miles. Cumulative frequency distributions of atmospheric dilution factors at each 22.5° intersection with a 10,000-meter radius (slightly greater than 6 miles) for the period May 1973 through April 1975 are presented in Table 2.3-41, Sheets 7, 8, 9, and 10. Each data set used to compile the frequency distribution is comprised of averages taken over 1 hour, 8 hours, 16 hours, 3 days, or 26 days, using overlapping means updated at 1-hour increments as specified by the NRC.

Because of overlapping means, a 1 hour χ/Q is included in several observation periods: for example, an hourly χ/Q is included in 624 estimates of the 26-day averages. As a result, a single hourly measurement may influence the value of over 5 percent of the observations. Since overlapping means are used in the distributions, the data are not independent and no assumption of normality can be made. These data show χ/Q estimates from the 25th through the 100th percentile levels for each of the averaging periods.

2.3.6 LONG-TERM (ROUTINE) DIFFUSION ESTIMATES

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

2.3.6.1 Objective

Annual relative concentrations (χ/Q) were estimated for distances out to 80 kilometers from onsite meteorological data for the period May 1973 through April 1975. These relative concentrations are presented in Table 2.3-2; they were estimated using the *models described in Reference 18. The same program also produces cumulative frequency distributions for selected averaging periods using overlapping means having hourly updates. For critical offsite locations, measured lateral standard deviations of wind direction, σ_A, and bulk Richardson number, R_i, were used as the stability parameters in the computations. The meteorological input data were measured at the 10 meter level of the meteorological tower at DCPP site. Annual averaged relative concentrations calculated by the above methods are presented in Table 2.3-4.*

2.3.6.2 Calculations

The meteorological instrumentation that was used to obtain the input data for the previously discussed relative concentration calculations at DCPP site is described in Section 2.3.4. Procedures for obtaining annual averaged relative concentrations are described in detail in Reference 15.

2.3.6.3 Meteorological Parameters

The following assumptions were used in developing the meteorological input parameters required in the dispersion model:

(1) There is no wind direction change with height

(2) Wind speed changes with height can be estimated by a power law function where the exponent, P, varies with stability class and is assigned the following values:

Pasquill Stability Class	*Exponent (P)*
A & B	*0.10*
C	*0.15*
D	*0.20*
E	*0.25*
F & G	*0.30*

If more than five hourly observations are missing in any 24-hour period, the estimated 24-hour concentration value is not included in the analyses.

Meteorological data collected at DCPP site are representative of atmospheric conditions along a Pacific coastal area having a complex terrain near the shoreline. Use of these data in estimating downwind relative concentrations results in realistic estimates as shown in the report by Cramer and Record (Reference 1). This field program included ground level concentration measurements out to a distance of about 20 kilometers. All concentration measurements were approximated by near-neutral through unstable stability classifications, even though both vertical and lateral turbulence measurements, σ_E and σ_A in Table 3.1 of Reference 1, indicated several stable regimes.

Even during the nighttime periods when extreme stability may be expected, the relative concentrations in the area were characteristic of unstable lapse rates. Actual average temperature differences over the height of the tower for these trials, given in Table 2.3-142, show a high percentage of test periods with stable lapse rates. Five nighttime trials having light and variable winds were included; three were near ground level (8 meters) and two were elevated (76 meters) releases. Temperature gradient measurements indicated three of these trials having near-neutral and two with stable lapse rates, yet the measured ground level concentrations were at least two orders of magnitude less than the predicted peak concentrations for those stabilities. In fact, the diffusion rates, as shown in Figure 3-3 of Reference 1, based on measured ground level concentrations, were typical of those expected for extreme instability.

Results of this series of diffusion trials conducted at DCPP site have yielded considerable insight into the dispersal capabilities of a coastal site. They indicate that use of direct turbulence measurements and the split sigma approach to independently predict lateral and vertical cloud growth yield realistic estimates of site dilution factors without including any corrections or recirculation.

2.3.7 CONCLUSIONS

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

The principal conclusions reached as the result of the analysis of the data obtained during the onsite meteorological measurement program at DCPP site are listed below:

(1) Northwesterly wind directions with wind speeds averaging 10 to 15 mph can be expected to occur approximately 50 percent of the time.

(2) Wind directions within a 22.5° sector that persist for periods of 8 hours or longer will occur 3 to 4 percent of the time.

(3) Less than 4 percent of the total observations at the 25 foot level at Station E refer to the joint occurrence of mean wind speeds of 2 mph or less, onshore wind directions (southeast through west-northwest measured clockwise), and moderately stable and/or extremely stable thermal stratifications.

(4) Despite the prevalence of the marine inversion and the northwesterly wind flow gradient along the California coast in the dry season, the long-term accumulation of plant emissions, released routinely or accidentally, in any particular geographical area downwind from the plant is virtually impossible. Pollutants injected into the marine inversion layer of the coastal wind regime are transported and dispersed by a complex array of land-sea breeze regimes that exist all along the coast wherever canyons or valleys indent the coastal range. Because of the complexities of the wind circulation in these regimes and their fundamental diurnal nature, the

net result is a very effective and wide daily dispersal of any pollutants that are present in the marine coastal air.

2.3.8 SAFETY EVALUATION

2.3.8.1 General Design Criterion 11, 1967 – Control Room

Wind speed, wind direction, and differential air temperature measurements from the primary and backup meteorological towers are provided to control room personnel to respond to abnormal meteorological conditions in order to maintain safe operational status of the plant. The data are retrieved continually and provided to the PPC. High ambient air temperature is annunciated on the main control board.

2.3.8.2 General Design Criterion 12, 1967 – Instrumentation and Control Systems

Meteorological monitoring instrumentation is provided for DCPP Unit 1 and Unit 2 to provide meteorological conditions as discussed in Section 2.3.4.

2.3.8.3 Meteorology Safety Function Requirements

(1) Calculation of Atmospheric Dispersion

Calculation of atmospheric dispersion as discussed in Section 2.3.4.7 is based on methodology in Sagendorf (Reference 15) and Regulatory Guide 1.145, Revision 1.

2.3.8.4 Safety Guide 23, February 1972 – Onsite Meteorological Programs

As discussed in Section 2.3.4, the preoperational meteorological data collection program was designed and has been updated continually to meet the requirements of Safety Guide 23, February 1972.

2.3.8.5 Regulatory Guide 1.97, Revision 3 – Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident

Wind speed, wind direction, and estimation of atmospheric stability indication in the control room provide information for use in determining the magnitude of the release of radioactive materials and in continuously assessing such releases during and following an accident (refer to Table 7.5-6 for a summary of compliance to Regulatory Guide 1.97, Revision 3).

2.3.8.6 Regulatory Guide 1.111, March 1976 – Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors

The pre-operational values of dilution factor and deposition factor used in the calculation of annual average offsite radiation dose are discussed in Section 11.3.2.4. The values of deposition rate were derived from Figure 7 of Regulatory Guide 1.111, March 1976, for a ground-level release.

2.3.8.7 NUREG-0737 (Item III.A.2), November 1980 – Clarification of TMI Action Plan Requirements

Item III.A.2 - Improving Licensee Emergency Preparedness–Long-Term:

As discussed in Section 2.3.4, the primary and backup meteorological data are available in the control room and emergency response facilities via the TRS servers and EARS, in accordance with NUREG-0654, Revision 1, November 1980.

As discussed in Section 2.3.4, the measurement subsystems consist of a primary meteorological tower and a backup meteorological tower. The primary meteorological computer and the backup meteorological computer communicate with each other, the EARS and also with the TRS server. Primary and backup meteorological data are available on the PPCs via the TRS servers and thus in the control room and emergency response facilities.

Item III.A.2.2 - Meteorological Data: NUREG-0737, Supplement 1, January 1983:

Table 7.5-6 and Section 2.3.8.5 summarize DCPP conformance with Regulatory Guide 1.97, Revision 3. Wind direction, wind speed, and estimation of atmospheric stability are categorized as Type E variables, based on Regulatory Guide 1.97, Revision 3. The PPC is used as the indicating device to display meteorological instrument signals. In addition, Type E, Category 3, recorders are located in the meteorological towers.

2.3.8.8 IE Information Notice 84-91, December 1984 – Quality Control Problems of Meteorological Measurements Programs

In addition to the primary meteorological towers, a supplemental meteorological measurement system is provided in the vicinity of the plant site in order to meet IE Information Notice 84-91. As discussed in Section 2.3.4.5, this supplemental measurement system consists of three Doppler SODAR and seven tower sites located as indicated in Figure 2.3-4. The primary and secondary meteorological towers in conjunction with the supplemental system adequately predict the meteorological conditions at the site boundary (800 meters) and beyond.

2.3.9 REFERENCES

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2.4 HYDROLOGIC ENGINEERING

2.4.1 DESIGN BASES

2.4.1.1 General Design Criterion 2, 1967 – Performance Standards

The PG&E Design Class I structures, systems and components essential to the prevention of accidents, or to mitigate of their consequences, are designed to withstand the additional forces that might be imposed by natural phenomena such as flooding.

2.4.1.2 Regulatory Guide 1.59, Revision 2, August 1977 – Design Basis Floods for Nuclear Power Plants

The PG&E Design Class I structures, systems, and components are designed to withstand and retain the capability to achieve and maintain cold shutdown during the worst probable site-related flood.

2.4.1.3 Regulatory Guide 1.102, Revision 1, September 1976 – Flood Protection for Nuclear Power Plants

The PG&E Design Class I structures, systems, and components are appropriately protected from damage caused by flooding through the use of exterior and incorporated barriers.

2.4.1.4 Regulatory Guide 1.125, Revision 1, October 1978 – Physical Models for Design and Operation of Hydraulic Structures and Systems for Nuclear Power Plants

Hydraulic modeling of the site intake breakwaters, systems, and structures is appropriately designed, tested, and documented to accurately describe the behavior of these plant facilities.

2.4.2 HYDROLOGIC DESCRIPTION

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

2.4.2.1 Site and Facilities

The general topography with outline of the drainage basin at Diablo Canyon Power Plant (DCPP) site is shown in Sheet 1 of 2 of Figure 2.4-1, reproduced from the United States Geological Survey (USGS) Port San Luis and Pismo Beach 7.5 minute topographic quadrangles (contour interval 40 feet, original scale 1:24,000). Figure 2.4-2 shows the Diablo Creek drainage basin to a larger scale. The area encompasses some 5 square miles and is bounded by ridges reaching a maximum elevation of 1819 feet at Saddle Peak. The figure also shows changes to the natural drainage features.

2.4.2.2 Hydrosphere

The hydrologic characteristics of the site are influenced by the Pacific Ocean on the west and by local storm runoff collected from the 5 square mile egg-shaped area drained by Diablo Creek. The maximum and minimum flows in Diablo Creek are highly variable. Average flows tend to be nearer the minimum flow value of 0.44 cfs. Maximum flows reflect short-term conditions associated with storm events. Usually within 1 or 2 days following a storm, flows return to normal. Flows during the wet season (October-April) vary daily and monthly. Dry season flows are sustained by groundwater seepage and are more consistent from day to day, tapering off over time. There is no other creek or river within the site area.

Water for the city of San Luis Obispo is obtained principally from Salinas Reservoir, about 23 miles east-northeast of the site. Whale Rock Reservoir on Old Creek, 17 miles north of the site, and Chorro Reservoir, about 13 miles northeast of the site, are also used. A few small uncovered reservoirs are used in connection with the San Luis Obispo water system and are located about 18 miles northeast of the site. A reservoir in Lopez Canyon is 20 miles east of the site. Smaller towns in the region of San Luis Obispo depend on wells for domestic water.

There are two public water supply groundwater basins within 10 miles of the DCPP site. Avila Beach County Water District serves Avila Beach (including Unocal) with water and sewer needs, and the San Miguelito Mutual Water District and Sewer District serves most of the Avila Valley area. An ocean water desalinization plant has been built and in operation at the site since 1985 (Reference 1).

The property owners to the north and south of the DCPP site capture surface water from small intermittent streams and springs for minimal domestic use. Property owned by PG&E captures water from Crowbar Canyon, 1 mile north of the DCPP site. PG&E's lessee captures water 2 to 4 miles south of the DCPP site from streams and springs between Pecho Canyon and Rattlesnake Canyon.

2.4.3 FLOODS

2.4.3.1 Flood History

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

Since 1968, Pacific Gas and Electric Company (PG&E) has kept a record of flows through a V-notched weir located on Diablo Creek, as shown in Figure 2.4-2.

Two major storms occurred in the area between the time the weir was established and June 1973. One occurred on January 18-25, 1969, and the other on January 16-19, 1973. On each occasion, streamflow washed out the weir so no definitive readings were obtained. Flood hydrograph reconstitution indicated that the

1969 flood could have peaked with a flow of approximately 430 cfs and the 1973 flood could have peaked with a flow of approximately 400 cfs.

A USGS gauging station (Los Berros Creek, No. 11-1416), located 21 miles southeast of the site near Nipomo, has a 15 square mile drainage basin, approximately three times the size of the Diablo Creek basin. The gauge at this station recorded a peak flow of 599 cfs on January 25, 1969. The flow at the same station on January 18, 1973, was about 324 cfs. Regional floods of January and February 1969 are reported by U.S. government publications in References 2, 3, and 4.

Ocean wave history is discussed in Reference 5.

2.4.3.2 Flood Design Considerations

2.4.3.2.1 Site Flooding

Topography and plant site arrangement limit flood design considerations to local floods from Diablo Creek and sea wave action from the Pacific Ocean. As discussed in Section 2.4.4, the canyon confining Diablo Creek remains intact and will pass any conceivable flood without hazard to PG&E Design Class I equipment. Channel blockage from landslides downstream of the plant, sufficient to flood the plant yard, is not possible because of the topographic arrangement of the site.

2.4.3.2.2 Flood Waves

Flooding conditions, for purposes of the following discussion, include the combined effects of a tsunami, wind-generated storm waves, storm surge (“piling up” of water near the shore due to a storm), and tides. The combination of these effects results in a rise and fall of the ocean surface level relative to a defined datum level. The reference datum is the mean lower low water level (MLLW). At DCPP, MLLW is 2.6 feet below the mean sea level (MSL), which is used as a reference datum for plant elevation. Values of water level rise and fall are expressed relative to MLLW. References to plant elevation are expressed relative to MSL.

When considering tsunami effects alone, the rise in water level is termed tsunami runup, and the fall of the water level is termed tsunami drawdown. Effects of both locally-generated (near-shore) tsunami and distantly-generated tsunami are considered. Tsunami runup and drawdown values given for locally-generated tsunami include the effects of subsidence at the plant site that is considered to occur as a result of near-shore earthquakes.

The wave terms are defined as follows:

Still Water Level (SWL)	The water level that includes the effects of tsunami, tide, and storm surge

Combined Wave Runup	The peak water level associated with storm wave action on top of SWL, but not including splash or spray effects associated with wave impacts
Splash Runup	The water level that includes wave runup effects plus splash effects, but not including spray effects
Combined Wave Drawdown	The lowest water level associated with tsunami coincident with low tide and short period storm waves

The rise in water level may result in submersion, associated hydraulic loading and ground erosion effects, and may result in flooding effects, on structures and system components located in the zone of influence.

The following effects are considered in determining the design water levels for DCPP:

Storm Waves: waves induced by the wind and pressure effects of a storm

Storm Surge: the “piling up” of water at the shore due to (a) a long duration storm wind acting on the water surface, (b) local reduction in atmospheric pressure, and (c) wave effects near the shoreline

Tide: the rise and fall of the surface of the ocean caused by the gravitational attraction of the sun and moon on the earth. Tidal range is typically based on the maximum annual higher high tide and the minimum annual lower low tide.

Tsunami: a long-period wave generated by a seismic event

In addition to water level changes resulting from the effects described above, the following effects are also considered:

Breakwater Damage: only partial credit is taken for protection provided by the breakwaters, considering that they could potentially be damaged by near-shore seismic activity or by storm waves

Resonance/Ponding Effects: local amplification of wave activity as a result of resonance effects in the intake basin, or increase in water level in the intake basin as a result of wave overtopping of the breakwaters, or wave ingress through the breakwater opening

Combined runup and drawdown effects on PG&E Design Class I structures and systems are as follows:

- Combined splash runup effects for applicable PG&E Design Class I facilities and their supporting structures are discussed in Section 2.4.7.6

- PG&E Design Class I systems include consideration of the effects of the combined drawdown and are discussed in Section 2.4.7.1.5
- Tsunami loads on the intake structure, including the effects of the combined wave runup are discussed in Section 2.4.7.6

2.4.3.2.3 Structural Evaluation

As discussed in Section 2.4.7.6, testing and analyses demonstrate that equipment and structures important to safety will remain operable in the event of a probable maximum tsunami, storm, and tide occurrence (Reference 21).

2.4.4 PROBABLE MAXIMUM FLOOD (PMF) ON STREAMS AND RIVERS

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

The only stream on the site subject to a PMF study is Diablo Creek. The creek collects runoff from a drainage area of 5.19 square miles up from the ocean side.

The PMF was obtained by deriving an estimated probable maximum precipitation (PMP) with a duration of 24 hours over the subject drainage area. The most severe antecedent condition of ground wetness favorable to high flood runoff was assumed. In view of the low elevation of the site, snowmelt was not considered in the study.

It was assumed that during a PMF all culverts are plugged, and water is impounded to the crest of the lowest depression of the switchyard's fill. The artificial reservoir formed in this assumption is so small that the PMF could not affect the plant.

For a drainage area of 5.19 square miles, the PMF was found to have a peak discharge of 6878 cfs (1325 cfs/sq mi) or a total volume of about 4306 acre-feet for the 24-hour storm.

2.4.4.1 Probable Maximum Precipitation (PMP)

Due to the small drainage area of the site, a PMP with 24 hours duration of rain was selected. Determination of the PMP is based entirely on the methods and procedures outlined in Reference 6. The unrestricted cumulative convergence PMP determined by the above method is found to be 16.6 inches during the month of October. PMP values for other durations as interpolated by the method suggested in Reference 6 are shown in Table 2.4-1.

2.4.4.2 Precipitation Losses

Losses are a complex function of rain intensity and accumulated loss (as an index of ground wetness). Five loss rate variables in this study represent average loss, initial loss, rate of decrease of loss with wetness, relation of loss to rain intensity, and rate of recovery of loss rate between storm periods. The unit hydrograph and loss rate parameters are determined in a sequential successive approximation manner as described in Reference 7. Optimization of the basin parameters was performed with the aid of computer program No. 23-J-L211, "Unit Hydrograph and Loss Rate Optimization," developed by the U.S. Army Corps of Engineers, and modified by PG&E (Reference 8).

To obtain precipitation losses, the storm at DCPP site on January 24-25, 1969, was optimized with the runoff record at the USGS gauging station at Los Berros Creek for the same period. Actual rainfall-runoff optimization on Diablo Creek could have been done if the weir had not washed out during the major storms of 1969 and 1973. Nevertheless, geographic and geologic conditions of Los Berros Creek are similar to those of Diablo Creek; Los Berros is the nearest USGS gauging station in the vicinity of DCPP site. The records are good and unregulated. It is in the same hydrographic drainage area as the plant site and both drainage areas have relatively similar elevations. Geologic map comparison shows similarity of ground conditions. Isohyetal maps of major storms show similar magnitude of rainfall in both areas.

In the rainfall-runoff optimization fit using rainfall at DCPP site, the Los Berros recorded runoff responded well to the rainfall distribution at Diablo Canyon. Other rainfall stations around the gauging station were tried but no better fit could be derived than the above. On the foregoing consideration, the optimized loss rates are judged to be representative of the Diablo Canyon drainage basin.

The antecedent condition for the storm of January 24-25, 1969, was very favorable to heavy runoff. Heavy rains during the period of January 18-22, 1969, brought widespread but generally moderate flooding in the area. According to flood reports from USGS, this rain saturated the soil over much of the area. The time distribution of precipitation during the January 24-25 storm was conducive to rapid and intense runoff, because the heaviest rain occurred near the end of the storm when streams were already carrying large flood flows.

Choice of the January 24-25, 1969, storm gave, therefore, conservative results of loss rates. Precipitation data indicate that January 1969 was the wettest January in many years in the area.

As stated in Section 2.4.2.2, Hydrosphere, the average discharge at Diablo Creek is 0.5 cfs in its 16 years of record. However, base flow considerations were taken from the hydrograph of flood flow at Los Berros. The result of the optimization study is shown in Figure 2.4-4.

2.4.4.3 Runoff Model

Based on the discussion in the preceding section, the hydrologic response characteristics of Diablo Creek were considered as those that were optimized. The time of concentration of the Diablo Creek basin was calculated using the formula of the Bureau of Reclamation, Design of Small Dams, where:

$$T_c = \frac{\left(11.9L^3\right)^{0.385}}{H} \qquad (2.4\text{-}1)$$

where:

T_c = *time of concentration in hours*

L = *length of longest water course in miles*

H = *elevation difference in feet*

Due to the small size of the basins, Variables 2 and 3 in the rainfall-runoff study were taken as the optimized values. The definitions of the variables or parameters in the optimized model are shown in Sheet 3 of Figure 2.4-5. The first three variables represent unit hydrograph parameters.

The mechanics of the mathematical model used in this study are described in the program documentation of the "Unit Hydrograph and Loss Rate Optimization" computer program of the U.S. Army Corps of Engineers.

Based on the mechanics of this program, PG&E developed the computer program listed as Reference 8. The parameters obtained and defined in the optimization, or other values considered, are held constant and considered representative of the basin. No optimization is performed. This model is capable of modeling any basin rainfall amount and time distribution up to and including the PMP. Loss rates are also calculated in a nonlinear function represented by the equation:

$$L = K\,P^E \qquad (2.4\text{-}2)$$

where:

L = loss for each period
K = a function of four variables (average value and initial loss increment, which differ from flood to flood, and recovery rate and exponential recession rate, which are uniform for all floods)
P = rain for each period
E = loss rate variable equal to Variable 7 in the program

2.4.4.4 Probable Maximum Flood Flow

The PMP estimate obtained in Section 2.4.4.1 was distributed according to Reference 6. The loss rate parameters obtained in Section 2.4.4.2 were reduced by 50 percent to represent a much more severe antecedent condition and loss rate recession. The exponent of the loss rate equation (Variable 7) was not changed, but it was considered as an optimized regional value. Using the foregoing values as input, the synthetic PMF hydrograph for Diablo Creek up to the ocean side was derived with the aid of the PG&E computer program, Reference 8. The unit hydrograph constants were those that were derived in the runoff model. The hydrograph of inflow for the PMF is presented as a computer printout in Figure 2.4-5, Sheet 2. The peak flow for the PMF was found to be 6878 cfs (1325 cfs/sq mi) with a runoff factor of 0.92.

The switchyard embankment creates a dam upstream of the plant with a potential reservoir storage capacity of 1100 acre-feet. The possibility exists that this small reservoir is full prior to a PMF as a result of culvert plugging. Therefore, storage attenuation of inflow PMF was not considered.

Section 2.4.11 discusses the capability of roof and yard drainage to handle runoff from local PMP without risk of flooding PG&E Design Class I buildings.

2.4.4.5 Water Level Determinations

Figure 2.4-3 shows that the hydraulic capacity of the canyon is in excess of 10,000 cfs. There is more than 11 feet of freeboard if the road crossing is washed out and more than 7 feet of freeboard if the road crossing remains intact; thus, there is no risk of flood to PG&E Design Class I equipment.

2.4.4.6 Coincident Wind Wave Activity

Wave runup, discussed in Section 2.4.6, coincident with PMF will have little effect on computed water surfaces. The roadway acting as a weir at an elevation of 65 feet above MLLW (refer to Figure 2.4-3) provides higher backwaters than the combined waves discussed in Sections 2.4.6 and 2.4.7.

2.4.5 POTENTIAL DAM FAILURES (SEISMICALLY INDUCED)

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

There are no dams in the watershed and failure of dams outside the watershed could not generate sea waves higher than those discussed in Sections 2.4.6 and 2.4.7. The potential storage of water upstream of the switchyard fill described in Section 2.4.4.4 poses no flood threat since the switchyard fill is more than five times as wide as it is deep and the maximum storage of 1100 acre-feet has a face depth of 120 feet.

2.4.6 PROBABLE MAXIMUM SURGE AND SEICHE FLOODING

2.4.6.1 Probable Maximum Winds and Associated Meteorological Parameters

Hurricanes or line squalls of sufficient magnitude to generate surge flooding (storm-generated, long-period sea waves) have not been recorded on the Pacific coastline. This lack of observed events in 200 years of record lends reasonable assurance that such an event will not occur during the lifetime of the power plant. However, the effects of wind-generated storm waves, storm surge, and tides are conservatively considered in the evaluation of water level and its effects on PG&E Design Class I equipment and structures.

2.4.6.2 Surge and Seiche History

As discussed above, there is no record of surge flooding associated with hurricanes or line squalls. The history of short-period wave trains generated from remote storms in this region is limited. As described below, to compensate for the lack of historical knowledge, conservative flood levels have been developed on the basis of hindcasts and three-dimensional model testing.

2.4.6.3 Surge and Seiche Sources

Since there is no record of hurricanes, cyclonic type wind storms, squall lines, etc., on the Pacific Coast, these phenomena are not a design consideration. However, design for any credible flooding, including tsunami in combination with wave and tide action as discussed in Section 2.4.7, is conservatively considered.

2.4.6.4 Wave Action

Wave action behavior at DCPP was originally developed on the basis of hindcasts based on a statistical evaluation of historical data in combination with previous scale model testing. PG&E conducted an extensive review of the historical data that led to the estimation of the return periods of the critical storms; e.g., the 1905 storm and the 1981 storm. A major Pacific storm in January 1981 resulted in extensive damage to the west breakwater protecting the intake basin, and led to a review of all the design waves and water levels.

As a result of the damage, PG&E undertook a test program to determine critical wave behavior at the intake basin, including wave height, wave direction, wave runup, resulting forces, and the effects of wave splash on the intake structure and the auxiliary saltwater (ASW) system. A three-dimensional physical model of the basin and its surroundings was constructed, representing in a 1:45 scale the sea floor, the intake structure, and the breakwaters in storm-induced damage conditions.

The tests included the effects of: (a) wind-generated storm waves, including storm surge and tides, and (b) the effects of tsunami plus storm waves. The effects of the waves, including the wave heights, are discussed in detail in Section 2.4.7.

Because data related to wind-generated storm waves were very limited, PG&E developed and implemented a test program to generate the required data (Reference 16). The test program developed site-specific design basis flood events (References 16, 20).

Although the maximum still water level of 17 feet, for probable maximum tsunami, high tide, and storm surge, was conservatively used in the scale model tests (References 16 and 20), the still water level of 15.5 feet, as approved by the NRC, may be used (Reference 28).

Waves for the scale model tests were mechanically generated. Wave heights, outside the breakwater, of up to 45 feet, with periods of 12, 16, and 20 seconds were generated. The results for the model testing indicated that the response waves within the intake basin reached a maximum height that did not increase further in response to increases in the offshore wave height. This phenomenon is due to the effects of the natural terrain and the presence of the degraded breakwater. Therefore, the maximum credible wave event is based on the maximum response of the wave height within the basin, in combination with the still water level in the basin, and is used for assessing the maximum inundating effects and wave forces at the intake structure.

A wave data buoy was installed immediately off DCPP in May 1983 to directly obtain data on wave action. The data are recorded on site and telemetered to the Scripps Institute at La Jolla, California, where they are assimilated with data from other Pacific Coast buoys interconnected with the Scripps "Coastal Data Information Program."

2.4.6.5 Resonance/Ponding

As discussed in Section 2.4.6.4, PG&E developed and implemented a test program to simulate the effects of storm waves and tsunamis on the intake basin. The scale model included the detailed relief of the surrounding submerged terrain, the breakwaters, and the intake structure. The action of the waves on the scale model automatically incorporates the resonance and ponding effects of the intake basin.

2.4.6.6 Runup and Drawdown

Estimates of storm and tsunami wave runup and drawdown, and their effects on the plant, are presented in Section 2.4.7.

2.4.6.7 Protective Structures

The only PG&E Design Class I system that has components within the projected sea wave zone is the ASW system. The ASW pump motors are housed in watertight compartments within the intake structure. These compartments are designed for a combination tsunami-storm wave activity to elevation +48 feet MLLW (+45.4 feet MSL). The massive concrete intake structure ensures that the pumps remain in place and operate during extreme wave events. The intake structure is arranged to provide redundant paths for seawater to the pumps, ensuring a dependable supply of seawater.

In addition to the ASW pumps, the buried ASW piping outside of the intake structure, which is not attached to the circulating water tunnels, is vulnerable to the effects of tsunami and storm waves. An evaluation was conducted by Bechtel Corporation for PG&E to determine what protective measures were required to protect this buried ASW piping. This evaluation is described in Reference 40. Based on this evaluation, erosion protection, consisting of gabion mattresses, reinforced concrete pavement above this buried piping, and an armored embankment southeast of the intake structure, were designed and installed to resist the effects of tsunami and storm waves.

The model test program (References 16, 20) and resultant evaluations led to various structural modifications, including the extension of the ASW air vent structures with steel tubular snorkels having openings between elevations 48 and 52 feet MLLW. The snorkels were installed during 1982 and 1983 plant modifications. Analysis of the installed extensions by P. J. Ryan (Reference 18) further demonstrated that ingestion of sufficient water by the snorkels is extremely unlikely to jeopardize the operation of the ASW pumps. Section 2.4.7.6 provides additional details.

2.4.7 PROBABLE MAXIMUM TSUNAMI FLOODING

The tsunami evaluation and design have evolved as a result of a number of studies and analyses during the original plant design period, the operating license review period, and following the breakwater damage in 1981. The licensing basis for tsunami evaluation is presented in Sections 2.4.7.1 to 2.4.7.6. The background and evolution of the tsunami design and evaluation are provided in Section 2.4.7.7.

2.4.7.1 Probable Maximum Tsunami

Tsunamis are classified according to the distance from the shore to the location of the event (generator) that causes the wave. The design tsunami for DCPP represents the envelope of the following two classes of tsunamis:

> Distantly-generated tsunami: a tsunami whose generator is located more than several times the principal source dimension (e.g., length of postulated fault rupture) from the plant, Marine Advisors, Inc., 1966 (Reference 24)

Locally-generated (near-shore) tsunami: a tsunami whose generator is closer than the distance defined for distantly-generated tsunami

The tsunami runup and drawdown at the intake structure are dependent on the source of the tsunami, the distance to the tsunami generator, and the near-shore undersea terrain, including the topography of the intake basin and the configuration of the breakwater.

Wave heights for the two classes of tsunamis considered in the design of DCPP are described in the following sections.

2.4.7.1.1 Distantly-Generated Tsunamis

The predominant sources of distantly-generated tsunamis are limited to areas of earthquake and volcanic activity on the circum-Pacific belt. Distant sources relative to DCPP include the Aleutian area, the Kuril-Kamchatka region, and the South American coast.

The lack of historical data for the site during the construction permit review raised a question on the degree of confidence for a “virtually no risk of being exceeded” assurance. In 1967, the AEC staff and its consultants, the United States Coast and Geodetic Survey (USCGS), agreed that the probable maximum tsunami at the site, which had virtually no risk of being exceeded, would be less than the 17- to 20- foot waves experienced at Crescent City, California, as a result of the 1964 Anchorage, Alaska, earthquake (Reference 35). To expedite the permit schedule, PG&E decided to use 20 feet as the maximum distantly-generated tsunami wave height.

2.4.7.1.2 Near-Shore Tsunami

A number of investigations and analyses to determine the tsunami-generation potential of near-shore earthquake faults were performed during the period from 1966 to 1975. The design basis tsunami wave heights are based on the analysis performed in 1975 by Hwang, Yuen, and Brandsma (Reference 28). The following earthquake sources and characteristics were considered in the analysis:

- Santa Lucia Bank fault, located approximately 29 miles from the site, considering a resultant displacement of 9.8 feet and a vertical displacement (6.6 feet) equal to 2/3 of the resultant displacement

- Santa Maria Basin fault (later identified as the Hosgri fault), located approximately 3.5 miles from the site, considering a resultant displacement of 11 feet and a vertical displacement (7.3 feet) equal to 2/3 of the resultant displacement

The analysis considered the cases of the breakwaters (a) present as originally constructed, (b) completely absent, and (c) in damaged conditions, in which the sides of the breakwaters slump to a 1-on-4, 1-on-5, or 1-on-6 vertical-to-horizontal slope.

The Santa Maria Basin fault source controls, producing a maximum runup of 9.2 feet and a maximum drawdown of 0.0 feet (Reference 28).

The design basis maximum combined wave runup is the greater of that determined for near-shore or distantly-generated tsunamis, and results from near-shore tsunamis. The bases of these runup values are given in the following two subsections.

- For distantly-generated tsunamis, the combined runup is 30 feet
- For near-shore tsunamis, the combined wave runup is 34.6 feet, as determined by hydraulic model testing (References 21 and 37)

2.4.7.1.3 Combined Wave Runup for Distantly-Generated Tsunamis

The combined wave runup for distantly-generated tsunamis is the same as the value adopted during the construction permit review. The value adopted at that time was 30 feet, as imposed by the NRC (Reference 35).

2.4.7.1.4 Combined Wave Runup for Near-Shore Tsunamis

The combined wave runup for near-shore tsunamis, 34.6 feet, is based on observations during scale model testing (Reference 21), which was performed subsequent to the 1981 breakwater damage. This runup value represents the maximum runup observed at the location of the ventilation shafts in the test model, excluding wave spray. Wave splash and spray, which can extend to higher elevations, are discussed in Section 2.4.7.6.

A degraded breakwater model was used, representing the crest of both breakwaters reduced to MLLW, the seaward slopes below that level remaining as originally constructed, and the intake basin sides widened by as much as the material above MLLW could achieve while coming to rest at a slope of 1 vertical to 1.5 horizontal. The model represents the worst-case breakwater damage that could result from the cumulative effects of severe storms, a tsunami, and Hosgri effects (References 23 and 33).

Tsunami, storm surge, and tide effects have relatively long periods and were combined to represent a static change in the elevation of the still water surface. The dynamic effects of storm waves, which have shorter periods, were then superimposed.

2.4.7.1.5 Combined Wave Drawdown Minimum Water Level

The maximum combined wave drawdown is the greater of that determined for near-shore or distantly-generated tsunamis, and results from distantly-generated tsunamis. This value constitutes the design combined drawdown value, which is 9.0 feet.

- Combined wave drawdown for distantly-generated tsunamis: The combined wave drawdown value of 9 feet, derived by a study performed during the construction permit review, is based on the combination of tsunami, storm wave, storm surge, and tide (Reference 24).

- Combined wave drawdown for near-shore tsunamis: The maximum combined wave drawdown determined by analysis for the case with the breakwaters intact, as originally constructed, is 4.07 feet (Reference 28). The maximum combined drawdown for the case with the breakwater degraded to MLLW has not been evaluated. However, analysis for the case of no breakwater present shows that the drawdown effect is 4.40 feet (Reference 28). Therefore, the drawdown for near-shore tsunamis will be less than for distantly-generated tsunamis. There is a significant margin between the 4.07 feet of drawdown and the available pump submergence depth.

2.4.7.2 Historical Tsunami Record

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

There is no historical record of tsunamis for DCPP site due to the remote location with respect to populated areas. The historical review of the region shows tsunamis that have been recorded in the region are of the same order of magnitude as the normal tide range and that local configurations play a large part in the ultimate effects of the tsunami.

At the California coast, reactions to tsunamis from distant sources have been generally moderate, with the exception of certain sensitive areas that have historically shown an abnormally high response as compared to the coast in general. Avila Beach is the closest sensitive area to DCPP.

A review of historical tsunami records and studies of the underwater topography has determined that wave heights recorded at Avila Beach are the result of local conditions that do not affect DCPP (Reference 24). The review demonstrated that DCPP need consider only a distantly-generated tsunami height of 5.0 to 6.0 feet, corresponding to the normal tidal range. Thus, a 6-foot change in the water level above or below MLLW could result (Reference 24). Hence, the 20-foot tsunami runup from a distantly-generated tsunami suggested by the USCGS (Reference 32) is extremely conservative.

2.4.7.3 Source of Tsunami Wave Height

2.4.7.3.1 Distantly-Generated Tsunamis

As discussed in Section 2.4.7.1.1, the predominant sources of distantly-generated tsunamis are limited to areas of earthquake and volcanic activity on the circum-Pacific belt. Distant sources relative to DCPP include the Aleutian area, the Kuril-Kamchatka region, and the South American coast.

2.4.7.3.2 Near-Shore Tsunamis

A number of investigations and analyses to determine the tsunami-generation potential of near-shore earthquake faults was performed during the period from 1966 to 1975. The following earthquake sources and characteristics were considered in the analyses:

- Santa Lucia Bank fault, located approximately 29 miles from the site, considering a resultant displacement of 9.8 feet and a vertical displacement (6.6 feet) equal to 2/3 of the resultant displacement

- Santa Maria Basin fault (later identified as the Hosgri fault), located approximately 3.5 miles from the site, considering a resultant displacement of 11 feet and a vertical displacement (7.3 feet) equal to 2/3 of the resultant displacement

The design basis tsunami wave heights are based on the analysis performed in 1975 by Hwang, Yuen, and Brandsma of Tetra Tech, Inc. (Reference 28).

2.4.7.4 Tsunami Height Offshore

Estimates of tsunami heights from distant generators offshore are postulated to have dissipated to wave trains with heights on the order of astronomical tidal range of 6 feet. Locally-generated tsunami runup heights from seismic activity or from submarine landslides are estimated to be a maximum of 9.2 feet (Reference 28).

2.4.7.5 Hydrography and Harbor or Breakwater Influences on Tsunami

Since the approach to the intake structure is across very irregular submerged terrain, PG&E decided after the January 1981 storm, which significantly damaged the breakwater, that the wave behavior under both extreme tide and tsunami condition would most reliably be evaluated through the use of a three-dimensional physical scale model. The effects of the intake basin, natural sea floor, and the breakwaters (in the damaged state) were considered in the testing and evaluation. Resonance and ponding effects are automatically incorporated by the model testing.

The 80- by 120-foot, 1:45 scale model was designed and constructed on the basis of detailed surveys and soundings. Wave-making machines were positioned at various parts of the basin to drive waves of defined heights, periods, and directions toward the intake basin. Appropriate instrumentation was included to measure and record wave characteristics, and to measure and record critical forces and loads on the intake structure (References 16 and 20).

2.4.7.6 Effects on PG&E Design Class I Facilities

The only PG&E Design Class I system that has components within the projected sea wave zone is the ASW system. The intake structure, within which this equipment is housed, has a main deck elevation of +20 feet above MLLW; it will withstand a tsunami coincident with high tide and depth-limited maximum storm waves that can occur within the intake basin. The PG&E Design Class I equipment is installed in watertight compartments to protect it from adverse sea wave events to elevation +48 feet above MLLW.

In addition to the ASW pumps, the buried ASW piping outside of the intake structure, which is not attached to the circulating water tunnels, is vulnerable to the effects of tsunami and storm waves. An evaluation was conducted by Bechtel Corporation for PG&E to determine what protective measures were required to protect this buried ASW piping. This evaluation is described in Reference 40. Based on this evaluation, erosion protection, consisting of gabion mattresses, reinforced concrete pavement above this buried piping, and an armored embankment southeast of the intake structure, were designed and installed to resist the effects of tsunami and storm waves.

The ability of the breakwater to resist damage to the intake structure caused by collisions of marine vessels was demonstrated by Kircher et al. (Reference 41) as described in Section 2.2.3.1. The structural integrity of the intake structure to resist extreme wave attack (design flood event) in the unlikely event of degradation of the breakwater was reviewed by model tests conducted by O. J. Lillevang (Reference 16) and Dr. Fredric Raichlen (Reference 20). Data from the model study were used by E. N. Matsuda (Reference 21) to structurally analyze the ability of the intake structure to resist the most extreme wave forces. Matsuda determined that, with minor modifications, the intake structure would not be structurally damaged by the most extreme wave forces that might occur even in the unlikely event the entire breakwater were to be degraded to zero feet MLLW. The modifications were completed in 1983.

In addition to the structural evaluations discussed above, the potential effects of splash and spray of the sea waves on PG&E Design Class I equipment were evaluated. Splashing of water up to and above the top of the ventilation shaft (52 feet MLLW) for the ASW pump rooms was observed during the performance of the scale model testing (Reference 16). The testing demonstrated that the ventilation shaft extensions remained free of the upward splashed water as they are set back from the seaward edge of the concrete vent huts at a considerable distance from the seaward edge of the intake structure, and the openings face away from the sea.

Although the air intake would not be inundated by splashing of water, it could be subject to windborne spray. This spray could potentially wet the vent openings and enter the ASW pump rooms. As described in the following subsections, testing and analysis showed that it is not credible that the water level in a pump room would exceed the maximum design flood level for the room.

Additional tests, using the 1:45 scale model of the intake structure and intake basin, were performed by Offshore Technology Corporation to determine the potential for ingestion of water by the ASW pump room ventilation shafts (Reference 30). Wave splash behavior in the vicinity of the ventilation shafts was recorded using high-speed motion pictures, still photography, and visual observation. Subsequent to the testing, analyses were conducted to evaluate the effect of the splashing on the ASW pumps (Reference 18). The conclusion of this analysis was that the combination of degraded breakwater, tsunami, high tide, severe storm, and extreme winds in the offshore direction necessary to result in a critical volume of water being ingested is not credible (Reference 18).

The ASW pumps are protected against flooding for the maximum wave height under tsunami and storm wave conditions even if the entire length of the breakwater were degraded to MLLW. Since there is no assurance that the breakwater would not degrade below MLLW, even though Wiegel (Reference 33) indicates that this is very unlikely, the DCPP Equipment Control Guidelines (Reference 29) include requirements to monitor the condition of the breakwater, to implement corrective action when limited damage is sustained, and to identify the limiting condition for operation relative to the configuration of the breakwaters.

2.4.7.7 Background and Evolution of the Tsunami Design Basis

The background and evolution of the tsunami design basis have been documented in detail in NRC Supplemental Safety Evaluation Reports (SSERs) 1, 5, 7, 13, and 17.

2.4.8 ICE FLOODING

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

As described in Section 2.3, the mild climate and general lack of freezing temperatures in this region make regional ice formation highly unlikely, and it was, therefore, not considered.

2.4.9 COOLING WATER CANALS AND RESERVOIRS

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

The Pacific Ocean is the source of cooling water for the plant. This cooling water system contains no canals or reservoirs.

2.4.10 CHANNEL DIVERSIONS

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

Upstream diversions associated with rivers, where low flow has an impact on dependable cooling water sources, is not a factor for this site.

2.4.11 FLOODING PROTECTION REQUIREMENTS

The site arrangement, with the plant situated on a coastal terrace 85 feet above MSL, virtually eliminates all risks from flooding.

Roofs of PG&E Design Class I buildings have a drainage system designed in accordance with the Uniform Plumbing Code for an adjusted regional PMP of 4 inches/hour. In addition, overflow scuppers are provided in parapet walls at roof level to prevent ponding of accumulated rainwater in excess of drain capacity. Yard areas around PG&E Design Class I buildings are graded to provide positive slope away from buildings. Storm runoff is overland and unobstructed. It is, therefore, not possible for ponding from local PMP to flood PG&E Design Class I buildings.

2.4.12 LOW WATER CONSIDERATIONS

2.4.12.1 Low Flow in Rivers and Streams

There are no rivers or streams involved in plant operations; therefore, low flow conditions were not evaluated.

2.4.12.2 Low Water Resulting from Surges, Seiches, or Tsunamis

Low water, as a result of tsunami drawdown occurring coincident with low tide and short-period storm waves, is projected by Marine Advisers (Reference 24) to result in a possible low water elevation of 9 feet below MLLW.

2.4.12.3 Historical Low Water

As discussed in Section 2.4.7.2, there is no historical record for the site. Regional ocean low water history is reported in Reference 24.

2.4.12.4 Future Control

Flowrate factors generally associated with plants situated on rivers are not applicable to DCPP.

2.4.12.5 Plant Requirements

The only PG&E Design Class I system impacted by tsunami drawdown is the ASW. To ensure adequate water supply to the ASW system in the event a tsunami downsurge occurs, the arrangement of the intake structure provides free access to the ocean. In the event of a low water elevation of 9 feet below MLLW, each ASW pump will provide approximately 85 percent of the design flow due to increased static head losses (while operating in the one-pump one-heat exchanger alignment) (refer to Section 9.2.7.3.1). This is a temporary condition and would not result in a significant increase in component cooling water (CCW) temperature.

2.4.12.6 Heat Sink Dependability Requirements

The ASW pumps are designed to operate with the water level down to 17.4 feet below MLLW, substantially below the minimum water level of 9 feet below MLLW that might occur during a tsunami. Therefore, operation of the ASW system would not be interrupted by low water levels.

Cavitation (with the potential to significantly reduce system flow) is predicted to occur when operating with one ASW pump supplying two CCW heat exchangers during a tsunami drawdown. In the event a tsunami is indicated (by a tsunami warning or a severe earthquake) with two CCW heat exchangers in service, a loss of suction would be indicated by low ASW pump discharge pressure and/or low CCW heat exchanger differential pressure (D/P), low ASW bay level, or fluctuating pump motor current. Operator action would be required to remove one of the CCW heat exchangers from service to reduce system flow and decrease pump suction head requirements.

2.4.13 ENVIRONMENTAL ACCEPTANCE OF EFFLUENTS

Deep Well 0-2 is the source for groundwater for use at the DCPP site only, and there is no public use of this groundwater (as discussed in Section 2.4.14). No other significant groundwater source exists in this area. No detailed analysis of acceptance of effluents by surface or groundwater is relevant. The releases to the environment via the discharge canal are described in Sections 11.2.2.5.2 and 11.2.3.12.2.2.

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

Estimated releases of activity from the liquid radwaste system are discussed in Section 11.2.2.5, and dilution factors for dilution of liquid wastes are discussed in Section 11.2.2.6. The release points for liquid waste are shown in Figure 11.2-9. *A flow diagram for the design basis case for liquid radwaste processing is shown in Figure 11.2-2. The numbered waste input streams have their annual flow and isotopic spectra listed in Tables 11.2-3 and 11.2-5. The numbered process streams are listed in Tables 11.2-8 and 11.2-9, with flows and isotopic concentrations.*

The possibility of accidental releases and the consequent dispersion of such releases are discussed in Chapter 15. Because of the location of the plant on the ocean and the separation of intake and discharge structures, insignificant recirculation occurs.

2.4.14 GROUNDWATER

2.4.14.1 Description and Onsite Use

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED.

Groundwater at the site is limited to Deep Well 0-2. No other significant groundwater has been encountered. Three small springs were encountered during excavation for plant construction; two of these were wet spots and the third had a flow of less than thirty gallons per minute. The water was analyzed and found to be very hard (1050 mg/l $CaCO_3$ *and high in dissolved residue (2148 mg/l). Groundwater and domestic water supplies are not affected by the operation of the plant. (Draft Environmental Statement of the Directorate of Licensing, United States Atomic Energy Commission, December 1972.) There is no public use of onsite groundwater.*

2.4.14.2 Monitoring and Safeguard Requirements

Process and effluent streams are monitored wherever a potential release of radioactivity exists during all modes of plant operation.

Differential temperature across the condenser is monitored as a condition of the national pollution discharge elimination system (NPDES) permit.

2.4.15 TECHNICAL SPECIFICATIONS AND EMERGENCY OPERATION REQUIREMENTS

Technical Specifications that describe the safe operation or shutdown requirements for the plant are contained in Appendix A to the operating license.

2.4.16 SAFETY EVALUATION

2.4.16.1 General Design Criterion 2, 1967 – Performance Standards

The PG&E Design Class I structures, systems, and components essential to the prevention of accidents or to mitigate their consequences are designed to withstand or are protected from the effects of flooding. Refer to Sections 2.4.3.2.1, 2.4.3.2.2, 2.4.6.7, 2.4.11, 2.4.12.1, 2.4.12.4, 2.4.13, 2.4.14.1, and 2.4.14.2.

2.4.16.2 Regulatory Guide 1.59, Revision 2, August 1977 – Design Basis Floods for Nuclear Power Plants

The PG&E Design Class I structures, systems, and components are designed to withstand and continue to perform their function during the worst site-related flood probable to occur. Refer to Sections 2.4.3.2.2, 2.4.3.2.3, 2.4.6.7, 2.4.7, 2.4.7.1, 2.4.7.1.1, 2.4.7.1.2, 2.4.7.1.3, 2.4.7.1.4, 2.4.7.1.5, 2.4.7.3.1, 2.4.7.3.2, 2.4.7.4, 2.4.7.6, 2.4.12.2, 2.4.12.3, 2.4.12.5, and 2.4.12.6.

2.4.16.3 Regulatory Guide 1.102, Revision 1, September 1976 – Flood Protection for Nuclear Power Plants

The PG&E Design Class I structures, systems, and components are appropriately protected from damage caused by flooding. Refer to Sections 2.4.3.2.3, 2.4.6.7, 2.4.7.6, and 2.4.12.6.

2.4.16.4 Regulatory Guide 1.125, Revision 1, October 1978 – Physical Models for Design and Operation of Hydraulic Structures and Systems for Nuclear Power Plants

Hydraulic modeling of the site intake breakwaters, systems, and structures is appropriately designed, verified, tested, and documented to accurately describe the behavior of these plant facilities. Refer to Sections 2.4.3.2.3, 2.4.6.7, 2.4.7.14, 2.4.7.5, and 2.4.7.6.

2.4.17 REFERENCES

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2. A. O. Waananen, Open File Report, Water Resources Division, Geological Survey, U.S. Department of the Interior, 1977.

3. Report on January - February 1969 Floods, Central Coastal Streams (2 Vol.), San Francisco District, Corps of Engineers, Department of the Army, 1969.

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5. PG&E, Ocean Wave History, Appendix E, of the Preliminary Safety Analysis Report (PSAR) for Nuclear Unit No. 2, San Francisco, California, 1967.

6. United States Weather Bureau (USWB), Hydrometeorological Report (HMR) No. 36, Interim Report - Probable Maximum Precipitation in California, and

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20. F. Raichlen, The Investigation of Wave-Structure Interactions for the Cooling Water Intake Structure of the Diablo Canyon Nuclear Power Plant, California, 1982.

21. E. N. Matsuda, Wave Effects on the Intake Structure, DCPP, California, 1983.

22. O. J. Lillevang, Letter/Report dated May 20, 1982, to R. V. Bettinger.

23. H. Bolton Seed, Letter/Report dated September 22, 1981, to R. V. Bettinger.

24. An Evaluation of Tsunami Potential at the Diablo Canyon Site, Marine Advisers, Inc., Report A-253, 1966. (Appendix E of the PSAR).

25. O. J. Lillevang, A Basin Intake for Cooling Water at Diablo Canyon Power Plant, 1969. (Appendix 2.4A to Diablo Canyon Power Plant Final Safety Analysis Report as amended through August 1980). (See also Reference 27 of Section 2.3.)

26. Deleted

27. Li-San Hwang, et al., Earthquake Generated Water Waves at the Diablo Canyon Power Plant, 1974. (Appendix D of Appendix 2.4C to Diablo Canyon Power Plant Final Safety Analysis Report as amended through August 1980). (See also Reference 27 of Section 2.3.)

28. Li-San Hwang, et al., Earthquake Generated Water Waves at the Diablo Canyon Power Plant, (Part Two), 1975. (Appendix E of Appendix 2.4C to Diablo Canyon Power Plant Final Safety Analysis Report as amended through August 1980). (See also Reference 27 of Section 2.3.)

29. DCPP Equipment Control Guideline 17.3, "Flood Protection," Pacific Gas and Electric Company.

30. J. I. Collins and W. G. Groskopf, Hydraulic Model Study of Diablo Canyon Intake Structure, Test Results - Ingestion Studies, OTC Corporation, 1983.

31. Deleted in Revision 22.

32. U. S. Coast and Geodetic Survey, Report on the Seismicity of the Nuclear Plant at the Diablo Canyon Site, September 1967.

33. R. L. Wiegel, Breakwater Damage by Severe Storm Waves and Tsunami Waves, March 5, 1982.

34. Hydraulic Model Study of Diablo Canyon Intake Structure Test Results, December 1982, OTC-82-42.

35. Department of Engineering Memorandum, "Meeting with AEC Staff and Consultants, November 21, 1967," Pacific Gas and Electric Company, December 4, 1967.

36. F. Raichlen, "Wave Induced Effects in a Cooling Water Basin," Chapter 196, Proceedings of International Coastal Engineering Conference, 1986.

37. PG&E Calculation No. 52.18.13.1, "Combined Runup Depths for Tsunami and Storm Waves," 1997.

38. Regulatory Guide 1.102, Revision 1, Flood Protection for Nuclear Power Sites, USNRC, September 1976.

39. NUREG-0675, Supplement No. 5, Safety Evaluation of the Diablo Canyon Nuclear Power Station, Units 1 and 2, USNRC, September 1996.

40. Diablo Canyon Power Plant - Auxiliary Saltwater Cooling System Erosion Protection for New Bypass Piping, Bechtel Corporation, October 1996.

41. C. A. Kircher, et al., Frequency of Vessel Impact with the Diablo Canyon Intake Structures, December 10, 1982.

42. Regulatory Guide 1.59, Revision 2, Design Basis Floods for Nuclear Power Plants, USNRC, August 1977.

43. Regulatory Guide 1.125, Revision 1, Physical Models for Design and Operation of Hydraulic Structures and Systems for Nuclear Power Plants, USNRC, October 1978.

2.4.18 REFERENCE DRAWINGS

Figures representing controlled engineering drawings are incorporated by reference and are identified in Table 1.6-1. The contents of the drawings are controlled by DCPP procedures.

2.5 GEOLOGY AND SEISMOLOGY

This section presents the findings of the regional and site-specific geologic and seismologic investigations of the Diablo Canyon Power Plant (DCPP) site. Information presented is in compliance with the criteria in Appendix A of 10 CFR Part 100, as described below, and meets the format and content recommendations of Regulatory Guide 1.70, Revision 1 (Reference 39). Because the development of the seismic inputs for DCPP predates the issuance of 10 CFR Part 100, Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants," the DCPP earthquakes are plant specific.

To capture the historical progress of the geotechnical and seismological investigations associated with the DCPP site, information pertaining to the following three time periods is described herein:

(1) Original Design Phase: investigations performed in support of the Preliminary Safety Analysis Report, prior to the issuance of the Unit 1 construction permit (1967), through the early stages of the construction of Unit 1 (1971). The Design Earthquake and Double Design Earthquake ground motions are associated with this phase. These earthquakes are similar to the regulatory ground motion level that the NRC subsequently developed in 10 CFR Part 100 Appendix A as the "Operating Basis Earthquake (OBE)" ground motion and the "Safe Shutdown Earthquake (SSE)" ground motion, respectively.

(2) Hosgri Evaluation Phase: investigations performed in response to the identification of the offshore Hosgri fault zone (1971) through the issuance of the Unit 1 operating license (1984). The 1977 Hosgri Earthquake ground motions are associated with this phase. The Hosgri Evaluation Phase does not affect or change the investigations and conclusions of the Original Design Phase.

(3) Long Term Seismic Program (LTSP) Evaluation Phase: investigations performed in response to the License Condition Item No. 2.C.(7) of the Unit 1 operating license (1984) through the removal of the License Condition (1991), including current on-going investigations. The 1991 L TSP ground motion is associated with this phase. The LTSP Evaluation Phase does not affect or change the investigations and conclusions of either the Original Design Phase or the Hosgri Evaluation Phase.

Overview

Locations of earthquake epicenters within 200 miles of the plant site, and faults and earthquake epicenters within 75 miles of the plant site for either magnitudes or intensities, respectively, are shown in Figures 2.5-2, 2.5-3, and 2.5-4 (through 1972). A geologic and tectonic map of the region surrounding the site is shown in Figure 2.5-5, and detailed information about site geology is presented in Figures 2.5-8 through 2.5-16. Geology and seismology are discussed in detail in Sections 2.5.2 through 2.5.5. Additional information on site geology is contained in References 1 and 2.

Detailed supporting data pertaining to this section are presented in Appendices 2.5A, 2.5B, 2.5C, and 2.5D of Reference 27 in Section 2.3. Geologic and seismic information from investigations that responded to Nuclear Regulatory Commission (NRC) licensing review questions are presented Appendices 2.5E and 2.5F of the same reference. A brief synopsis of the information presented in Reference 27 (Section 2.3) is given below. The DCPP site is located in San Luis Obispo County approximately 190 miles south of San Francisco and 150 miles northwest of Los Angeles, California. It is adjacent to the Pacific Ocean, 12 miles west-southwest of the city of San Luis Obispo, the county seat. The plant site location and topography are shown in Figure 2.5-1.

The site is located near the mouth of Diablo Creek which flows out of the San Luis Range, the dominant feature to the northeast. The Pacific Ocean is southwest of the site. Facilities for the power plant are located on a marine terrace that is situated between the mountain range and the ocean.

The terrace is bedrock overlain by surficial deposits of marine and nonmarine origin. PG&E Design Class I structures at the site are situated on bedrock that is predominantly stratified marine sedimentary rocks and volcanics, all of Miocene age. A more extensive discussion of the regional geology is presented in Section 2.5.2.1 and site geology in Section 2.5.2.2.

Several investigations were performed at the site and in the vicinity of the site to determine: potential vibratory ground motion characteristics, existence of surface faulting, and stability of subsurface materials and cut slopes adjacent to Seismic Category I structures. Details of these investigations are presented in Sections 2.5.2 through 2.5.5. Consultants retained to perform these studies included: Earth Science Associates (geology and seismicity), John A. Blume and Associates (seismic design and foundation materials dynamic response), Harding-Lawson and Associates (stability of cut slope), Woodward-Clyde-Sherard and Associates (soil testing), and Geo-Recon, Incorporated (rock seismic velocity determinations). The findings of these consultants are summarized in this section and the detailed reports are included in Appendices 2.5A, 2.5B, 2.5C, 2.5D, 2.5E, and 2.5F of Reference 27 in Section 2.3.

Geologic investigation of the Diablo Canyon coastal area, including detailed mapping of all natural exposures and exploratory trenches, yielded the following basic conclusions:

(1) The area is underlain by sedimentary and volcanic bedrock units of Miocene age. Within this area, the power plant site is underlain almost wholly by sedimentary strata of the Monterey Formation, which dip northward at moderate to very steep angles. More specifically, the reactor site is underlain by thick-bedded to almost massive Monterey sandstone

that is well indurated and firm. Where exposed on the nearby hillslope, this rock is markedly resistant to erosion.

(2) The bedrock beneath the main terrace area, within which the power plant site has been located, is covered by 3 to 35 feet of surficial deposits. These include marine sediments of Pleistocene age and nonmarine sediments of Pleistocene and Holocene age. In general, they are thickest in the vicinity of the reactor site.

(3) The interface between the unconsolidated terrace deposits and the underlying bedrock comprises flat to moderately irregular surfaces of Pleistocene marine planation and intervening steeper slopes that also represent erosion in Pleistocene time.

(4) The bedrock beneath the power plant site occupies the southerly flank of a major syncline that trends west to northwest. No evidence of a major fault has been recognized within or near the coastal area, and bedrock relationships in the exploratory trenches positively indicate that no such fault is present within the area of the power plant site.

(5) Minor surfaces of disturbance, some of which plainly are faults, are present within the bedrock that underlies the power plant site. None of these breaks offsets the interface between bedrock and the cover of terrace deposits, and none of them extends upward into the surficial cover. Thus, the latest movements along these small faults must have antedated erosion of the bedrock section in Pleistocene time.

(6) No landslide masses or other gross expressions of ground instability are present within the power plant site or on the main hillslope east of the site. Some landslides have been identified in adjacent ground, but these are minor features confined to the naturally oversteepened walls of Diablo Canyon.

(7) No water of subsurface origin was encountered in the exploratory trenches, and the level of permanent groundwater beneath the main terrace area probably is little different from that of the adjacent lower reaches of the deeply incised Diablo Creek.

2.5.1. DESIGN BASIS

2.5.1.1 General Design Criterion 2, 1967 Performance Standards

DCPP systems, structures, and components have been located, designed and analyzed to withstand those forces that might result from the most severe natural earthquake phenomena.

2.5.1.2 License Condition 2.C(7) of DCPP Facility Operating License DPR-80 Rev. 44 (LTSP), Elements (1), (2) and (3)

DCPP developed and implemented a program to re-evaluate the seismic design bases used for the Diablo Canyon Power Plant.

The program included the following three Elements that were completed and accepted by the NRC (References 40, 41, and 43):

(1) The identification, examination, and evaluation of all relevant geologic and seismic data, information, and interpretations that have become available since the 1979 ASLB hearing in order to update the geology, seismology and tectonics in the region of the Diablo Canyon Nuclear Power Plant. If needed to define the earthquake potential of the region as it affects the Diablo Canyon Plant, PG&E has also re-evaluated the earlier information and acquired additional data.

(2) DCPP has re-evaluated the magnitude of the earthquakes used to determine the seismic basis of the Diablo Canyon Nuclear Plant using the information from Element 1.

(3) DCPP has re-evaluated the ground motion at the site based on the results obtained from Element 2 with full consideration of site and other relevant effects.

As a condition of the NRC's closeout of License Condition 2.C.(7), PG&E committed to several ongoing activities in support of the LTSP, as discussed in a public meeting between PG&E and the NRC on March 15, 1991 (Reference 53), described as the "Framework for the Future," in a letter to the NRC, dated April17, 1991 (Reference 50), and affirmed by the NRC in SSER 34 (Reference 43). These ongoing activities are discussed in Section 2.5.7.

2.5.1.3 10 CFR Part 100, March 1966- Reactor Site Criteria

During the determination of the location of the Diablo Canyon Power Plant, consideration was given to the physical characteristics of the site, including seismology and geology.

2.5.2 BASIC GEOLOGIC AND SEISMIC INFORMATION

This section presents the basic geologic and seismic information for DCPP site and surrounding region. Information contained herein has been obtained from literature studies, field investigations, and laboratory testing and is to be used as a basis for evaluations required to provide a safe design for the facility. The basic data contained in this section and in Reference 27 of Section 2.3 are referenced in several other sections of this FSAR Update. Additional information, developed during the Hosgri and LTSP evaluations, is described in Sections 2.5.3.9.3 and 2.5.3.9.4, respectively.

2.5.2.1 Regional Geology

2.5.2.1.1 Regional Physiography

Diablo Canyon is in the southern Coast Range which is a part of the California Coast Ranges section of the Pacific Border physiographic province (refer to Figure 2.5-1). The region surrounding the power plant site consists of mountains, foothills, marine terraces, and valleys. The dominant features are the San Luis Range adjacent to the site to the northeast, the Santa Lucia Range farther inland, the lowlands of the Los Osos and San Luis Obispo Valleys separating the San Luis and Santa Lucia Ranges, and the marine terrace along the coastal margin of the San Luis Range.

Landforms of the San Luis Range and the adjacent marine terrace produce the physiography at the site and in the region surrounding the site. The westerly end of the San Luis Range is a mass of rugged high ground that extends from San Luis Obispo Creek and San Luis Obispo Bay on the east and is bounded by the Pacific Ocean on the south and west. Except for its narrow fringe of coastal terraces, the range is featured by west-northwesterly-trending ridge and canyon topography. Ridge crest altitudes range from about 800 to 1800 feet. Nearly all of the slopes are steep, and they are modified locally by extensive slump and earthflow landslides.

Most of the canyons have narrow-bottomed, V-shaped cross sections. Alluvial fans and talus aprons are prominent features along the bases of many slopes and at localities where ravines debouch onto relatively gentle terrace surfaces. The coastal terrace belt extends between a steep mountain-front backscarp and a near-vertical sea cliff 40 to 200 feet in height. Both the bedrock benches of the terraces and the present offshore wave-cut bench are irregular in detail, with numerous basins and rock projections.

The main terrace along the coastal margin of the San Luis Range is a gently to moderately sloping strip of land as much as 2000 feet in maximum width. The more landward parts of its surface are defined by broad aprons of alluvial deposits. This cover thins progressively in a seaward direction and is absent altogether in a few places along the present sea cliff. The main terrace represents a series of at least three wave-cut rock benches that have approximate shoreline-angle elevations of 70, 100, and 120 feet.

Owing to both the prevailing seaward slopes of the rock surfaces and the variable thickness of overlying marine and nonmarine cover, the present surface of the main terrace ranges from 70 to more than 200 feet in elevation. Remnants of higher terraces exist at scattered locations along upper slopes and ridge crests. The most extensive among these is a series of terrace surfaces at altitudes of 300+, 400+, and 700+ feet at the west end of the ridge between Coon and Islay Creeks, north of Point Buchon. A surface described by Headlee (Reference 19) as a marine terrace at an altitude of about

700 feet forms the top of San Luis Hill. Remnants of a lower terrace at an altitude of 30 to 45 feet are preserved at the mouth of Diablo Canyon and at several places farther north.

Owing to contrasting resistance to erosion among the various bedrock units of the San Luis Range, the detailed topography of the wave-cut benches commonly is very irregular. As extreme examples, both modern and fossil sea stacks rise as much as 100 feet above the general levels of adjacent marine-eroded surfaces at several localities.

2.5.2.1.2 Regional Geologic and Tectonic Setting

2.5.2.1.2.1 Geologic Setting

The San Luis Range is underlain by a synclinal section of Tertiary sedimentary and volcanic rocks, which have been downfolded into a basement of Mesozoic rocks now exposed along its southwest and northeast sides. Two zones of faulting have been recognized within the range. The Edna fault zone trends along its northeast side, and the Miguelito fault zone extends into the range from the vicinity of Avila Bay. Minor faults and bedding-plane shears can be seen in the parts of the section that are well exposed along the sea cliff fringing the coastal terrace benches. None of these faults shows evidence of geologically recent activity, and the most recent movements along those in the rocks underlying the youngest coastal terraces can be positively dated as older than 80,000 to 120,000 years. Geologic and tectonic maps of the region surrounding the site are shown in Figures 2.5-5 (2 sheets), 2.5-6, 2.5-8, and 2.5-9.

2.5.2.1.2.2 Tectonic Features of the Central Coastal Region

DCPP site lies within the southern Coast Ranges structural province, and approximately upon the centerline axis of the northwest-trending block of crust that is bounded by the San Andreas fault on the northeast and the continental margin on the southwest. This crustal block is characterized by northwest-trending structural and geomorphic features, in contrast to the west-trending features of the Transverse Ranges to the south. A major geologic boundary within the block is associated with the Sur-Nacimiento and Rinconada faults, which separate terrains of contrasting basement rock types. The ground southwest of the Sur-Nacimiento zone and the southerly half of the Rinconada fault, referred to as the Coastal Block, is underlain by Franciscan basement rocks of dominantly oceanic types, whereas that to the northeast, referred to as the Salinia Block, is underlain by granitic and metamorphic basement rocks of continental types. Page (Reference 10) outlined the geology of the Coast Ranges, describing it generally in terms of "core complexes" of basement rocks and surrounding sections of younger sedimentary rocks. The principal Franciscan core complex of the southern Coast Range crops out on the coastal side of the Santa Lucia Range from the vicinity of San Luis Obispo to Point Sur, a distance of 120 miles. Its complex features reflect numerous episodes of deformation that evidently included folding, faulting, and the tectonic emplacement of extensive bodies of ultrabasic rocks. Other core complexes consisting of granitic and metamorphic basement rocks are exposed in the southern Coast Ranges in the ground between the Sur-Nacimiento and Rinconada and in the San Andreas fault zones. The locations of these areas of basement rock exposure are shown in Figure 2.5-6 and in Figure 1 of Appendix 2.5D of Reference 27 in Section 2.3.

Younger structural features include thick folded basins of Tertiary strata and the large faults that form structural boundaries between and within the core complexes and basins.

The structure of the southern Coast Ranges has evolved during a lengthy history of deformation extending from the time when the ancestral Sur-Nacimiento zone was a site for subduction (a Benioff zone) along the then-existing continental margin, through subsequent parts of Cenozoic time when the San Andreas fault system was the principal expression of the regional stress-strain system. The latest episodes of major deformation involved folding and faulting of Pliocene and older sediments during mid-Pliocene time, and renewed movements along preexisting faults during early or mid-Pliocene time. Present tectonic activity within the region is dominated by interaction between the Pacific and American crustal plates on opposite sides of the San Andreas fault and by continuing vertical uplift of the Coast Ranges. In the regional setting of DCPP site, the major structural features addressed during the original design phase are the San Andreas, Rinconada-San Marcos-Jolon, Sur-Nacimiento, and Santa Lucia Bank faults. Additional faults were identified during the Hosgri evaluation and LTSP evaluation phases, discussed in Sections 2.5.3.9.3 and 2.5.3.9.4, respectively. The San Simeon fault may also be included with this group. These original design phase faults are described as follows:

1. San Andreas Fault

The San Andreas fault is recognized as a major transform fault of regional dimensions that forms an active boundary between the Pacific and North American crustal plates. Cumulative slip along the San Andreas fault may have amounted to several hundred miles, and a substantial fraction of the total slip has occurred during late Cenozoic time. The fault has spectacular topographic expression, generally lying within a rift valley or along an escarpment mountain front, and having associated sag ponds, low scarps, right-laterally deflected streams, and related manifestations of recent activity.

The most recent episode of large-scale movement along the reach of the San Andreas fault that is closest to the San Luis Range occurred during the great Fort Tejon earthquake of 1857. Geologic evidence pertinent to the behavior of the fault during this and earlier seismic events was studied in great detail by Wallace (Reference 15 and 32) who reported in terms of infrequent great earthquakes accompanied by ground rupture of 10 to 30 feet, with intervening periods of near total quiescence. Allen (Reference 16 suggested that such behavior has been typical for this reach of the San Andreas fault and has been fundamentally different from the behavior of the fault along the reach farther northwest, where creep and numerous small earthquakes have occurred. He further suggested that release of accumulating strain energy might have been facilitated by the presence of large amounts of serpentine in the fault zone to the northwest, and retarded by the locking effect of the broad bend of the fault zone where it crosses the Transverse Ranges to the southeast.

Movement is currently taking place along large segments of the San Andreas fault. The active reach of the fault between Parkfield and San Francisco is currently undergoing relative movement of at least 3 to 4 cm/yr, as determined geodetically and analyzed by Savage and Burford (Reference 33). When the movement that occurs during the episodes of fault displacement in the western part of the Basin and Ranges Province is added to the minimum of 3 to 4 cm/yr of continuously and intermittently released strain, the total probably amounts to at least 5 to 6 cm/yr. This may account for essentially all of the relative motion between the Pacific and North American plates at present. In the Transverse Ranges to the south, this strain is distributed between lateral slip along the San Andreas system and east-west striking lateral slip faulting, thrust faulting, and folding. North of the latitude of Monterey Bay and south of the Transverse Ranges, transcurrent movement is again concentrated along the San Andreas system, but in those regions, it is distributed among several major strands of the system.

2. Sur-Nacimiento Fault Zone

The Sur-Nacimiento fault zone has been regarded as the system of faults that extends from the vicinity of Point Sur, near the northwest end of the Santa Lucia Range, to the Big Pine fault in the western Transverse Ranges, and that separates the granitic-metamorphic basement of the Salinian Block from the Franciscan basement of the Coastal Block. The most prominent faults that are included within this zone are, from northwest to southeast, the Sur, Nacimiento, Rinconada, and (south) Nacimiento faults. The Sur fault, which extends as far northward as Point Sur on land, continues to the northwest in the offshore continental margin. At its southerly end, the zone terminates where the (south) Nacimiento fault is cut off by the Big Pine fault. The overall length of the Sur-Nacimiento fault zone between Point Sur and the Transverse Ranges is about 180 miles. The 60 mile long Nacimiento fault, between points of juncture with the Sur and Rinconada faults, forms the longest segment within this zone. Page (Reference 11) stated that:

> "It is unlikely that the Nacimiento fault proper has displaced the ground surface in Late Quaternary time, as there are no indicative offsets of streams, ridges, terrace deposits, or other topographic features. The Great Valley-type rocks on the northeast side must have been down-dropped against the older Franciscan rocks on the southwest, yet they commonly stand higher in the topography. This implies relative quiescence of the Late Quaternary time, allowing differential erosion to take place. In a few localities, the northeast side is the low side, and this inconsistency favors the same conclusion. In addition to the foregoing circumstances, the fault is offset by minor cross-faults in a manner suggesting that little, if any, Late Quaternary near-surface movement had occurred along the main fracture."

Hart (Reference 14), on the other hand, stated that: ". . . youthful topographic features (offset streams, sag ponds, possible fault scarplets, and apparently oversteepened slopes) suggest movement along both (Sur-Nacimiento and Rinconada) fault zones." The map compiled by Jennings (Reference 23), however, shows only the Rinconada with a symbol indicating "Quaternary fault displacement."

The results of photogeologic study of the region traversed by the Sur-Nacimiento fault zone tend to support Page's view. A pronounced zone of fault-controlled topographic lineaments can be traced from the northwest end of the Nacimiento fault southeastward to the Rinconada (south Nacimiento), East Huasna, and West Huasna faults. Only along the Rinconada, however, are there topographic features that seem to have originated through fault disturbances of the ground surface rather than through differential erosion along zones of shearing and juxtaposition of differing rocks. Richter (Reference 13) noted that some historic seismicity, particularly the 1952 Bryson earthquake, appears to have originated along the Nacimiento fault. This view is supported by recent work of S. W. Smith (Reference 30) that indicates that the Bryson shock and the epicenters of several smaller, more recent earthquakes were located along or near the trace of the Nacimiento.

3. Rinconada (Nacimiento)-San Marcos-Jolon-San Antonio Fault System

A system of major faults extends northwestward, parallel to the San Andreas fault, from a point of junction with the Big Pine fault in the western Transverse Ranges. This system includes several faults that have been mapped as separate features and assigned individual names. Dibblee (Reference 27) however, has suggested that these faults are part of a single system, provisionally termed the Rinconada fault zone after one of its more prominent members. He also proposed abandoning the name Nacimiento for the large fault that constitutes the most southerly part of this system, as it is not continuous with the Nacimiento fault to the north, near the Nacimiento River. The newly defined Rinconada fault system comprises the old (south) Nacimiento, Rinconada, and San Marcos faults. Dibblee proposed that the system also include the Espinosa and Reliz faults, to the north, but detailed work by Durham (Reference 28) does not seem to support this interpretation. Instead, the system may extend into Lockwood Valley and die out there along the Jolon and San Antonio faults. All the faults of the Rinconada system have undergone significant movement during middle and late Cenozoic time, though the entire system did not behave as a unit. Dibblee pointed out that: "Relative vertical displacements are controversial, inconsistent, reversed from one segment to another; the major movement may be strike slip, as on the San Andreas fault."

Regarding the structural relationship of the Rinconada fault to nearby faults, Dibblee wrote as follows:

> "Thrust or reverse faults of Quaternary age are associated with the Rinconada fault along much of its course on one or both sides, within 9 miles, especially in areas of intense folding. In the northern part several, including the San Antonio fault, are

present along both margins of the range of hills between the Salinas and Lockwood Valleys . . . . along which this range was elevated in part. Near the southern part are the major southwest-dipping South Cuyama and Ozena faults along which the Sierra Madre Range was elevated against Cuyama Valley, with vertical displacements possibly up to 8000 feet. All these thrust or reverse faults dip inward toward the Rinconada fault and presumably either splay from it at depth, or are branches of it. These faults, combined with the intense folding between them, indicated that severe compression accompanied possible transcurrent movement along the Rinconada fault."

"The La Panza fault along which the La Panza Range was elevated .... in Quaternary time, is a reverse fault that dips northeast under the range, and is not directly related to the Rinconada fault.

"The Big Pine fault against which the Rinconada fault abuts . . . is a high angle left-lateral transcurrent fault active in Quaternary time (Reference 35). The Pine Mountain fault south of it . . . . is a northeast-dipping reverse fault along which the Pine Mountain Range was elevated in Quaternary time. This fault may have been reactivated along an earlier fault that may have been continuous with the Rinconada fault, but displaced about 8 miles from it by left slip on the Big Pine fault (Reference 12) in Quaternary time."

"The Rinconada and Reliz faults were active after deposition of the Monterey Shale and Pancho Rico Formation, which are severely deformed adjacent and near the faults. The faults were again active after deposition of the Paso Robles Formation but to a lesser degree. These faults do not affect the alluvium or terrace deposits. There are no offset stream channels along these faults. However, in two areas several canyons and streams are deviated, possibly by right-lateral movement on the (Espinosa and San Marcos segments of the) Rinconada fault. There are no indications that these faults are presently active."

4. San Simeon Fault

The fault here referred to as the San Simeon fault trends along the base of the peninsula that lies north of the settlement of San Simeon. This fault is on land for a distance of 12 miles between its only outcrop, north of Ragged Point, and Point San Simeon. It may extend as much as 16 miles farther to the southeast, to the vicinity of Point Estero. This possibility is suggested by the straight reach of coastline between Cambria and Point Estero, which is directly aligned with the onshore trend of the fault; its linear form may well have been controlled by a zone of structural weakness associated with the inferred southerly part of the fault. South of Port Estero, however, there is no evidence of faulting observable in the seismic reflection profiles across Estero Bay, and the trend defined by the Los Osos Valley-Estero Bay series of lower Miocene or Oligocene intrusives extends across the San Simeon trend without deviation.

North of Point Piedras Blancas, Silver (Reference 26) reports a fault with about 5 kilometers of vertical separation between the 4-kilometer-thick Tertiary section in the offshore basin and the nearby 1-kilometer-high exposure of Franciscan basement rocks in the coastline mountain front. The existence of a fault in this region is also indicated by the 30- milligal gravity anomaly between the offshore basin and the onshore ranges (Plate II of Appendix 2.5D of Reference 27 in Section 2.3). This postulated fault may well be a northward extension of the San Simeon fault. If this is the case, the San Simeon fault may have a total length of as much as 60 miles.

Between Point San Simeon and Ragged Point, the San Simeon fault lies along the base of a broad peninsula, the surface of which is characterized by elevated marine terraces and younger, steep-walled ravines and canyons. The low, terraced topography of the peninsula contrasts sharply with that of the steep mountain front that rises immediately behind it. Clearly, the ground west of the main fault represents a part of the sea floor that has been locally arched up.

This has resulted in exposure of the fault, which elsewhere is concealed underwater off the shoreline.

The ground between the San Simeon fault and the southwest coastline of the Piedras Blancas peninsula is underlain by faulted blocks and slivers of Franciscan rocks, serpentinites, Tertiary sedimentary breccia and volcanic rocks, and Miocene shale. The faulted contacts between these rock masses trend somewhat more westerly than the trend of the San Simeon fault. One north-dipping reverse fault, which separates serpentinite from graywacke, has broken marine terrace deposits in at least two places, one of them in the basal part of the lowest and youngest terrace. Movement along this branch fault has therefore occurred less than 130,000 years before the present, although the uppermost, youngest Pleistocene deposits are apparently not broken. Prominent topographic lineations defined by northwest-aligned ravines that incise the upper terrace surface, on the other hand, apparently have originated through headward gully erosion along faults and faulted contacts, rather than through the effects of surface faulting.

The characteristics of the San Simeon fault can be summarized as follows: The fault may be related to a fault along the coast to the north that displays some 5 kilometers of vertical displacement. Near San Simeon, it exhibits probable Pleistocene right-lateral strike-slip movement of as much as 1500 feet near San Simeon, although it apparently does not break dune sand deposits of late Pleistocene or early Holocene age. A branch reverse fault, however, breaks upper Pleistocene marine terrace deposits. The San Simeon fault may extend as far south as Point Estero, but it dies out before crossing the northern part of Estero Bay.

5. Santa Lucia Bank Fault

South of the latitude of Point Piedras Blancas, the western boundary of the main offshore Santa Maria Basin is defined by the east-facing scarp along the east side of the

Santa Lucia Bank. This scarp is associated with the Santa Lucia Bank fault, the structure that separates the subsided block under the basin from the structural high of the bank. The escarpment that rises above the west side of the fault trace has a maximum height of about 450 feet, as shown on U.S. Coast and Geodetic Survey (USC&GS) Bathymetric Map 1306N-20.

The Santa Lucia Bank fault can be traced on the sea floor for a distance of about 65 miles. Extensions that are overlapped by upper Tertiary strata continue to the south for at least another 10 miles, as well as to the north. The northern extension may be related to another, largely buried fault that crosses and may intersect the trend of the Santa Lucia Bank fault. This second fault extends to the surface only at points north of the latitude of Point Piedras Blancas.

West of the Santa Lucia Bank fault, between N latitudes 34°30' and 30°, several subparallel faults are characterized by apparent surface scarps. The longest of these faults trends along the upper continental slope for a distance of as much as 45 miles, and generally exhibits a west-facing scarp. Other faults are present in a zone about 30 miles long lying between the 45 mile fault and the Santa Lucia Bank fault. These faults range from 5 to 15 or more miles in length, and have both east-and west-facing scarps.

This zone of faulting corresponds closely in space with the cluster of earthquake epicenters around N latitude 34°45' and 121°30'W longitude, and it probably represents the source structure for those shocks (Figure 2.5-3).

2.5.2.1.2.3 Tectonic Features in the Vicinity of the DCPP Site

Geologic relationships between the major fold and fault structures in the vicinity of Diablo Canyon are shown in Figures 2.5-5, 2.5-6, and 2.5-7, and are described and illustrated in Appendix 2.5D of Reference 27 of Section 2.3. The San Luis Ranges-Estero Bay area is characterized structurally by west-northwest-trending folds and faults. These include the San Luis-Pismo syncline and the bordering Los Osos Valley and Point San Luis antiformal highs, and the West Huasna, Edna, and San Miguelito faults. A few miles offshore, the structural features associated with this trend merge into a north-northwest-trending zone of folds and faults that is referred to herein as the offshore Santa Maria Basin East Boundary zone of folding and faulting. The general pattern of structural highs and lows of the onshore area is warped and stepped downward to the west across this boundary zone, to be replaced by more northerly-trending folds in the lower part of the offshore basin section. The overall relationship between the onshore Coast Ranges and the offshore continental margin is one of differential uplift and subsidence. The East Boundary zone represents the structural expression of the zone of inflection between these regions of contrasting vertical movement.

In terms of regional relationships, structural style, and history of movement, the faults in the San Luis Ranges-Estero Bay vicinity, identified during the original design phase, may be characterized as follows:

1. West Huasna Fault

This fault zone separates the large downwarp of the Huasna syncline on the northeast from Franciscan assemblage rocks of the Los Osos Valley antiform and the Tertiary section of the southerly part of the San Luis-Pismo syncline on the southwest. The West Huasna fault is thought to join with the Suey fault to the south. Differences in thicknesses and facies relationships between units of apparently equivalent age on opposite sides of the fault are interpreted as indicating lateral movement along the fault; however, the available evidence regarding the amount and even the relative sense of displacement is not consistent. The West Huasna shows no evidence of late Quaternary activity.

2. Edna Fault Zone

The Edna fault zone lies along a west-northwesterly trend that extends obliquely from the West Huasna fault at its southeast end to the hills of the San Luis Range south of Morro Bay. Several isolated breaks that lie on a line with the trend are present in the Tertiary strata beneath the south part of Estero Bay, east of the Santa Maria Basin East Boundary fault zone across the mouth of the bay.

The Edna fault is typically a zone of two or more anastomosing branches that range in width from 1/2 mile to as much as 1-1/2 miles. Although individual strands are variously oriented and exhibit various senses of amounts of movement, the zone as a whole clearly expresses high-angle dip-slip displacement (down to the southwest). The irregular traces of major strands suggest that little, if any, strike-slip movement has occurred. Preliminary geologic sections shown by Hall and Surdam (Reference 21) and Hall (Reference 20) imply that the total amount of vertical separation ranges from 1500 to a few thousand feet along the central part of the fault zone. The amount of displacement across the main fault trend evidently decreases to the northwest, where the zone is mostly overlapped by upper Tertiary strata.

It may be, however, that most of the movement in the Baywood Park vicinity has been transferred to the north-trending branch of the Edna, which juxtaposes Pliocene and Franciscan rocks where last exposed. In the northwesterly part of the San Luis Range, the Edna fault forms much of the boundary between the Tertiary and basement rock sections. Most of the measurable displacements along this zone of rupture occurred during or after folding of the Pliocene Pismo Formation but prior to deposition of the lower Pleistocene Paso Robles Formation. Some additional movement has occurred during or since early Pleistocene time, however, because Monterey strata have been faulted against Paso Robles deposits along at least one strand of the Edna near the head of Arroyo Grande valley. This involved steep reverse fault movement, with the southwest side raised, in contrast to the earlier normal displacement down to the southwest.

Search has failed to reveal dislocation of deposits younger than the Paso Robles Formation, disturbance of late Quaternary landforms, or other evidence of Holocene or late Pleistocene activity.

3. San Miguelito Fault Zone

Northwesterly-trending faults have been mapped in the area between Pismo Beach and Arroyo Grande, and from Avila Beach to the vicinity of the west fork of Vineyard Canyon, north of San Luis Hill. Because these faults lie on the same trend, appear to reflect similar senses of movement, and are "separated" only by an area of no exposure along the shoreline between Pismo Beach and Avila Beach, they may well be part of a more or less continuous zone about 10 miles long. As on the Edna fault, movements along the San Miguelito fault appear to have been predominantly dip-slip, but with displacement down on the northeast. Hall's preliminary cross section indicates total vertical separation of about 1400 feet. The fault is mapped as being overlain by unbroken deposits of the Paso Robles Formation near Arroyo Grande.

Field checking of the ground along the projected trend of the San Miguelito fault zone northwest of Vineyard Canyon in the San Luis Range has substantiated Hall's note that the fault cannot be traced west of that area.

Detailed mapping of the nearly continuous sea cliff exposures extending across this trend northeast of Point Buchon has shown there is no faulting along the San Miguelito trend at the northwesterly end of the range. Like the Edna fault zone, the San Miguelito fault zone evidently represents a zone of high-angle dip-slip rupturing along the flank of the San Luis-Pismo syncline.

4. East Boundary Zone of the Offshore Santa Maria Basin

The boundary between the offshore Santa Maria Basin and the onshore features of the southern Coast Ranges is a 4 to 5 wide zone of generally north-northwest-trending folds, faults, and onlap unconformities referred to as the "Hosgri fault zone" by Wagner (Reference 31). The geology of this boundary zone has been investigated in detail by means of extensive seismic reflection profiling, high resolution surface profiling, and side scan sonar surveying.

More general information about structural relationships along the boundary zone has been obtained from the pattern of Bouguer Gravity anomaly values that exist in its vicinity. These data show the East Boundary zone to consist of a series of generally parallel north-northwest-trending faults and folds, developed chiefly in upper Pliocene strata that flank upwarped lower Pliocene and older rocks. The zone extends from south of the latitude of Point Sal to north of Point Piedras Blancas. Within the zone, individual fault breaks range in length from less than 1000 feet up to a maximum of about 30 miles. The overall length of the zone is approximately 90 miles, with about 60 miles of relatively continuous faulting.

The apparent vertical component of movement is down to the west across some faults and down to the east across others. Along the central reach of the zone, opposite the San Luis Range, a block of ground has been dropped between the two main strands of the fault to form a graben structure. Within the graben, and at other points along the East Boundary zone, bedding in the rock has been folded down toward the upthrown side of the west side down fault. This feature evidently is an expression of "reverse drag" phenomena.

The axes of folds in the ground on either side of the principal fault breaks can be traced for distances of as much as 22 miles. The fold axes typically are nearly horizontal; maximum axial plunges seem to be 5° or less. The structure and onlap relationships of the upper Pliocene, as reflected in the configuration of the unconformity at its base, are such that it consistently rises from the offshore basin and across the boundary zone via a series of upwarps, asymmetric folds, and faults. This configuration seems to correspond generally to a zone of warping and partial disruption along the boundary between relatively uplifting and subsiding regions.

2.5.2.1.3 Geologic History

The geologic history reflected by the rocks, structural features, and landforms of the San Luis Range is typical of that of the southern Coast Ranges of California in its length and complexity. Six general episodes for which there is direct evidence can be tabulated as follows:

Age	Episode	Evidence
Late Mesozoic	Development of Franciscan and Upper Cretaceous rock assemblages	Franciscan and other Mesozoic rocks
Late Mesozoic - Early Tertiary	Early Coast Ranges deformation	Structural features pre-served in the Mesozoic rocks
Mid-Tertiary	Uplift and erosion	Erosion surface at the base of the Tertiary section
Mid- and late-Tertiary	Accumulation of Miocene and Pliocene sedimentary and volcanic rocks	Vaqueros, Rincon, Obispo, Point Sal, Monterey, and Pismo Formation and associated volcanic intrusive, and brecciated rocks
Pliocene	Folding and faulting associated with the Pliocene Coast Ranges deformation	Folding and faulting of the Tertiary and basement rocks

Pleistocene	Uplift and erosion, development of successive tiers of wave-cut-benches alluvial fan, talus, and landslide deposition.	Pleistocene and Holocene deposits, present land-forms.

The earliest recognizable geologic history of the southern Coast Ranges began in Mesozoic time, during the Jurassic period when eugeosynclinal deposits (graywacke sandstone, shale, chert, and basalt) accumulated in an offshore trench developed in oceanic crust.

Some time after the initiation of Franciscan sedimentation, deposition of a sequence of miogeosynclinal or shelf sandstones and shales, known as the Great Valley Sequence, began on the continental crust, at some distance to the east of the Franciscan trench. Deposition of both sequences continued into Cretaceous time, even while the crustal basement section on which the Great Valley strata were being deposited was undergoing plutonism involving emplacement of granitic rocks. Subsequently, the Franciscan assemblage, the Great Valley Sequence, and the granite-intruded basement rocks were tectonically juxtaposed. The resulting terrane consisted generally of granitic basement thrust over intensely deformed Franciscan, with Great Valley Sequence strata overlying the basement, but thrust over and faulted into the Franciscan.

The processes that were involved in the tectonic juxtaposition evidently were active during the Mesozoic, and continued into the early Tertiary. Page (Reference 25) has shown that they were completed by no later than Oligocene time, so that the dual core complex basement of the southern Coast Ranges was formed by then.

The Miocene and later geologic history of the southern Coast Ranges region began with deposition of the Vaqueros and Rincon Formations on a surface eroded on the Franciscan and Great Valley core complex rocks.

Following deposition and some deformation and erosion of these formations, the stratigraphic unit that includes the Point Sal and Obispo Formations as approximately contemporaneous facies was laid down. The Obispo consists of a section of tuffaceous sandstone and mudstone, with lesser amounts of shale, and lensing layers of vitric and lithic-crystal tuff. Locally, the unit is featured by masses of clastic-textured tuffaceous rock that exhibit cross-cutting intrusive relations with the bedded parts of the formation. The Obispo and Point Sal were folded and locally eroded prior to initiation of the main episode of upper Miocene and Pliocene marine sedimentation.

During late middle Miocene to late Miocene time, deposition of the thick sections of silica-rich shale of the Monterey Formation began. Deposition of this formation and equivalent strata took place throughout much of the coastal region of California, but apparently was centered in a series of offshore basins that all developed at about the same time, some 10 to 12 million years ago. Local volcanism toward the latter part of this time is shown by the presence of diabase dikes and sills in the Monterey. Near the end of the Miocene, the Monterey strata were subjected to compressional deformation resulting in folding, in part with great complexity, and in faulting. Near the old continental margin, represented by the Sur-Nacimiento fault zone, the deformation was most intense, and was accompanied by uplift. This apparently resulted in the first development of many of the large folds of the southern Coast Ranges including the Huasna and San Luis-Pismo synclines, and in the partial erosion of the folded Monterey section in areas of uplift. The pattern of regional uplift of the Coast Ranges and subsidence of the offshore basins, with local upwarping and faulting in a zone of inflection along the boundary between the two regions, apparently became well established during the episode of late Miocene and Mio-Pliocene diastrophism.

Sedimentation resumed in Pliocene time throughout much of the region of the Miocene basins, and several thousand feet of siltstone and sandstone was deposited. This was the last significant episode of marine sedimentation in the region of the present Coast Ranges. Pliocene deposits in the region of uplift were then folded, and there was renewed movement along most of the preexisting larger faults.

Differential movements between the Coast Ranges uplift and the offshore basins were again concentrated along the boundary zone of inflection, resulting in upwarping and faulting of the basement, Miocene, and Pliocene sections. Relative displacement across parts of this zone evidently was dominantly vertical, because the faulting in the Pliocene has definitely extensional character, and Miocene structures can be traced across the zone without apparent lateral offset. The basement and Tertiary sections step down seaward, away from the uplift, along a system of normal faults having hundreds to nearly a thousand feet of dip-slip offset. A second, more seaward system of normal faults is antithetic to the master set and exhibits only tens to a few hundreds of feet of displacement. Strata between these faults locally exhibit reverse drag downfolding toward the edge of the Pliocene basin, whereas the section is essentially undeformed farther offshore. This style of deformation indicates a passive response, through gravity tectonics, to the onshore uplift.

The Plio-Pleistocene uplift was accompanied by rapid erosion, with consequent nearby deposition of clastic sediments such as the Paso Robles Formation in valleys throughout the southern Coast Ranges. The high-angle reverse and normal faulting observed by Compton (Reference 38) in the northern Santa Lucia Range also occurred farther south, probably more or less contemporaneously with accumulation of the continental deposits. Much of the Quaternary faulting other than that related to the San Andreas right lateral stress-strain system may well have occurred at this time.

Tectonic activity during the Quaternary has involved continued general uplift of the southern Coast Ranges, with superimposed local downwarping and continued movement along faults of the San Andreas system. The uplift is shown by the general high elevation and steep youthful topography that characterizes the Coast Ranges and by the widespread uplifted marine and stream terraces. Local downwarping can be seen in valleys, such as the Santa Maria Valley, where thick sections of Plio-Pleistocene and younger deposits have accumulated. Evidence of significant late Quaternary fault movement is seen in the topography along the Rinconada-San Marcos, Espinosa, San Simeon, and Santa Lucia Bank faults, as well as along the San Andreas itself. Only along the San Andreas, however, is there evidence of Holocene or contemporary movement.

The latest stage in the evolution of the San Luis Range has extended from mid-Pleistocene time to the present, and has involved more or less continuous interaction between apparent uplift of the range and alternating periods of erosion or deposition, especially along the coast, during times of relatively rising, falling, or unchanging sea level. The development of wave-cut benches and the accumulation of marine deposits on these benches have provided a reliable guide to the minimum age of latest displacements along breaks in the underlying bedrock. Detailed exploration of the interfaces between wave-cut benches and overlying marine deposits at the site of DCPP has shown that no breaks extend across these interfaces. This demonstrates that the youngest faulting or other bedrock breakage in that area antedated the time of terrace cutting, which is on the order of 80,000 to 120,000 years before the present.

The bedrock section and the surficial deposits that formerly capped this bedrock on which the power plant facilities are located have been studied in detail to determine whether they express any evidence of deformation or dislocation ascribable to earthquake effects.

The surficial geologic materials at the site consisted of a thin, discontinuous basal section of rubbly marine sand and silty sand, and an overlying section of nonmarine rocky sand and sandy clay alluvial and colluvial deposits. These deposits were extensively exposed by exploratory trenches, and were examined and mapped in detail. No evidence of earthquake-induced effects such as lurching, slumping, fissuring, and liquefaction was detected during this investigation.

The initial movement of some of the landslide masses now present in Diablo Canyon upstream from the switchyard area may have been triggered by earthquake shaking. It is also possible that some local talus deposits may represent earthquake-triggered rock falls from the sea cliff or other steep slopes in the vicinity.

Deformation of the rock substrata in the site area may well have been accompanied by earthquake activity at the time of its occurrence in the geologic past. There is no evidence, however, of post-terrace earthquake effects in the bedrock where the power plant is being constructed.

2.5.2.1.4 Stratigraphy of the San Luis Range and Vicinity

The geologic section exposed in the San Luis Range comprises sedimentary, igneous, and tectonically emplaced ultrabasic rocks of Mesozoic age, sedimentary, pyroclastic, and hypabyssal intrusive rocks of Tertiary age, and a variety of surficial deposits of Quaternary age. The lithology, age, and distribution of these rocks were studied by Headlee and more recently have been mapped in detail by Hall. The geology of the San Luis Range is shown in Figure 2.5-6 with a geologic cross section constructed using exploratory oil wells shown in Figure 2.5-7. The geologic events that resulted in the stratigraphic units described in this section are discussed in Section 2.5.2.1.3, Geologic History.

2.5.2.1.4.1 Basement Rocks

An assemblage of rocks typical of the Coast Ranges basement terrane west of the Nacimiento fault zone is exposed along the south and northeast sides of the San Luis Range. As described by Headlee, this assemblage includes quartzose and greywacke sandstone, shale, radiolarian chert, intrusive serpentine and diabase, and pillow basalt. Some of these rocks have been dated as Upper Cretaceous from contained microfossils, including pollen and spores, and Headlee suggested that they may represent dislocated parts of the Great Valley Sequence. There is contrasting evidence, however, that at least the pillow basalt and associated cherty rocks may be more typically Franciscan. Certainly, such rocks are characteristic of the Franciscan terrane. Further, a potassium-argon age of 156 million years, equivalent to Upper Jurassic, has been determined for a core of similar rocks obtained from the bottom of the Montodoro Well No. 1 near Point Buchon.

2.5.2.1.4.2 Tertiary Rocks

Five formational units are represented in the Tertiary section of the San Luis Range. The lower part of this section comprises rocks of the Vaqueros, Rincon, and Obispo Formations, which range in age from lower Miocene through middle Miocene. These strata crop out in the vicinity of Hazard Canyon, at the northwest end of the range, and in a broad band along the south coastal margin of the range. In both areas the Vaqueros rests directly on Mesozoic basement rocks. The core of the western San Luis Range is underlain by the Upper Miocene Monterey Formation, which constitutes the bulk of the Tertiary section. The Upper Miocene to Lower Pliocene Pismo Formation crops out in a discontinuous band along the southwest flank and across the west end of the range, resting with some discordance on the Monterey section and elsewhere directly on older Tertiary or basement rocks.

The coastal area in the vicinity of Diablo Canyon is underlain by strata that have been variously correlated with the Obispo, Point Sal, and Monterey Formations. Headlee, for example, has shown the Point Sal as overlying the Obispo, whereas Hall has considered these two units as different facies of a single time-stratigraphic unit. Whatever the exact stratigraphic relationships of these rocks might prove to be, it is clear that they lie above the main body of tuffaceous sedimentary rocks of the Obispo Formation and below the main part of the Monterey Formation. The existence of intrusive bodies of both tuff breccia and diabase in this part of the section indicates either that local volcanic activity continued beyond the time of deposition of the Obispo Formation, or that the section represents a predominantly sedimentary facies of the upper part of the Obispo Formation. In either case, the strata underlying the power plant site range downward through the Obispo Formation and presumably include a few hundred feet of the Rincon and Vaqueros Formations resting upon a basement of Mesozoic rocks.

A generalized description of the major units in the Tertiary section follows, and a more detailed description of the rocks exposed at the power plant site is included in a later section.

The Vaqueros Formation has been described by Headlee as consisting of 100 to 400 feet of resistant, massive, coarse-grained, calcareously cemented bioclastic sandstone. The overlying Rincon Formation consists of 200 to 300 feet of dark gray to chocolate brown calcareous shale and mudstone.

The Obispo Formation (or Obispo Tuff) is 800 to 2000 feet thick and comprises alternating massive to thick-bedded, medium to fine grained vitric-lithic tuffs, finely laminated black and brown marine siltstone and shale, and medium grained light tan marine sandstone. Headlee assigned to the Point Sal Formation a section described as consisting chiefly of medium to fine grained silty sandstone, with several thin silty and fossiliferous limestone lenses; it is gradational upward into siliceous shale characteristic of the Monterey Formation. The Monterey Formation itself is composed predominantly of porcelaneous and finely laminated siliceous and cherty shales.
The Pismo Formation consists of massive, medium to fine grained arkosic sandstone, with subordinate amounts of siltstone, sandy shale, mudstone, hard siliceous shale, and chert.

2.5.2.1.4.3 Quaternary Deposits

Deposits of Pleistocene and Holocene age are widespread on the coastal terrace benches along the southwest margin of the San Luis Range, and they exist farther onshore as local alluvial and stream-terrace deposits, landslide debris, and various colluvial accumulations. The coastal terrace deposits include discontinuous thin basal sections of marine silt, sand, gravel, and rubble, some of which are highly fossiliferous, and generally much thicker overlying sections of talus, alluvial-fan debris, and other deposits of landward origin. All of the marine deposits and most of the overlying nonmarine accumulations are of Pleistocene age, but some of the uppermost talus and alluvial deposits are Holocene. Most of the alluvial and colluvial materials consist of silty clayey sand with irregularly distributed fragments and blocks of locally exposed rock types. The landslide deposits include chaotic mixtures of rock fragments and fine-grained matrix debris, as well as some large masses of nearly intact to thoroughly disrupted bedrock.

A more detailed description of surficial deposits that are present in the vicinity of the power plant site is included in a later section.

2.5.2.1.5 Structure of the San Luis Range and Vicinity

2.5.2.1.5.1 General Features

The geologic structure of the San Luis Range-Estero Bay and adjacent offshore area is characterized by a complex set of folds and faults (Figures 2.5-5, 2.5-6, and 2.5-7). Tectonic events that produced these folds and faults are discussed in Section 2.5.2.1.3, Geologic History. The San Luis Range-Estero Bay and adjacent offshore area lies within the zone of transition from the west-trending Transverse Range structural province to the northwest-trending Coast Ranges province. Major structural features are the long narrow downfold of the San Luis-Pismo syncline and the bordering antiformal structural highs of Los Osos Valley on the northeast, and of Point San Luis and the adjacent offshore area on the southwest. This set of folds trends obliquely into a north-northwest aligned zone of basement upwarping, folding, and high-angle normal faulting that lies a few miles off the coast. The main onshore folds can be recognized, by seismic reflection and gravity techniques, in the structure of the buried, downfaulted Miocene section that lies across (west of) this zone.

Lesser, but yet important structural features in this area include smaller zones of faulting and trends of volcanic intrusives. The Edna and San Miguelito fault zones disrupt parts of the northeast and southwest flanks of the San Luis-Pismo syncline. A southward extension of the San Simeon fault, the existence of which is inferred on the basis of the linearity of the coastline between Cambria and Point Estero, and of the gravity gradient in that area, may extend into, and die out within, the northern part of Estero Bay. An aligned series of plugs and lensoid masses of Tertiary volcanic rocks that intrude the Franciscan Formation along the axis of the Los Osos Valley antiform extends from the outer part of Estero Bay southeastward for 22 miles (Figure 2.5-6).

These features define the major elements of geologic structure in the San Luis Range-Estero Bay area. Other structural elements include the complex fold and fault structures within the Franciscan core complex rocks and the numerous smaller folds within the Tertiary section.

2.5.2.1.5.2 San Luis-Pismo Syncline

The main synclinal fold of the San Luis Range, referred to here as the San Luis-Pismo syncline, trends about N60°W and forms a structural trend more than 15 miles in length. The fold system comprises several parallel anticlines and synclines across its maximum onshore width of about 5 miles. Individual folds of the system typically range in length from hundreds of feet to as much as 10,000 feet. The folds range from zero to more than 30° in plunge, and have flank dips as steep as 90°. Various kinds of smaller folds exist locally, especially flexures and drag folds associated with tuff intrusions and with zones of shear deformation.

Near Estero Bay, the major fold extends to a depth of more than 6000 feet. Farther south, in the central part of the San Luis Range, it is more than 11,000 feet deep. Parts of the northeast flank of the fold are disrupted by faults associated with the Edna fault zone. Local breaks along the central part of the southwest flank have been referred to as the San Miguelito fault zone.

2.5.2.1.5.3 Los Osos Valley Antiform

The body of Franciscan and Great Valley Sequence rocks that crops out between the San Luis-Pismo and Huasna synclines is here referred to as the Los Osos Valley antiform. This composite structure extends southward from the Santa Lucia Range, across the central and northern part of Estero Bay, and thence southeastward to the point where it is faulted out at the juncture of the Edna and the West Huasna fault zones.

Notable structural features within this core complex include northwest- and west-northwest- trending-faults that separate Franciscan melange, graywacke, metavolcanic, and serpentinite units. The serpentinites have been intruded or dragged within faults, apparently over a wide range of scales. One of the more persistent zones of serpentinite bodies occurs along a trend which extends west-northwestward from the West Huasna fault. It has been suggested that movement from this fault may have taken place within this serpentine belt. The range of hills that lies between the coast and Highway 1 between Estero Bay and Cambria is underlain by sandstone and minor shale of the Great Valley Sequence, referred to as the Cambria slab, which has been underthrust by Franciscan rocks. The thrust contact extends southeastward under Estero Bay near Cayucos. This contact is probably related to the fault contact between Great Valley and Franciscan rocks located just north of San Luis Obispo, which Page has shown to be overlain by unbroken lower Miocene strata.

A prominent feature of the Los Osos Valley antiform is the line of plugs and lensoid masses of intrusive Tertiary volcanic rocks. These distinctive bodies are present at isolated points along the approximate axis of the antiform over a distance of 22 miles, extending from the center of outer Estero Bay to the upper part of Los Osos Valley (Figure 2.5-6). The consistent trend of the intrusives provides a useful reference for assessing the possibility of northwest-trending lateral slip faulting within Estero Bay. It shows that such faulting has not extended across the trend from either the inferred San Simeon fault offshore south extension, or from faults in the ground east of the San Simeon trend.

2.5.2.1.5.4 Edna and San Miguelito Fault Zones

These fault zones are described in Section 2.5.2.1.2.3.

2.5.2.1.5.5 Adjacent Offshore Area and East Boundary of the Offshore Santa Maria Basin

The stratigraphy and west-northwest-trending structure that characterize the onshore region from Point Sal to north of Point Estero have been shown by extensive marine geophysical surveying to extend into the adjacent offshore area as far as the north-northwest trending structural zone that forms a boundary with the main offshore Santa Maria Basin. Owing to the irregular outline of the coast, the width of the offshore shelf east of this boundary zone ranges from 2-1/2 to as much as 12 miles. The shelf area is narrowest opposite the reach of coast between Point San Luis and Point Buchon, and widest in Estero Bay and south of San Luis Bay.

The major geologic features that underlie the near-shore shelf include, from south to north, the Casmalia Hills anticline, the broad Santa Maria Valley downwarp, the anticlinal structural high off Point San Luis, the San Luis-Pismo syncline, and the Los Osos Valley antiform.

The form of these features is defined by the outcrop pattern and structure of the older Pliocene, Miocene, and basement core complex rocks. The younger Pliocene strata that constitute the upper 1000 to 2000 feet of section in the adjacent offshore Santa Maria Basin are partly buttressed and partly faulted against the rocks that underlie the near-shore shelf, and they unconformably overlap the boundary zone and parts of the shelf in several areas.

The boundaries between the San Luis-Pismo syncline and the adjacent Los Osos Valley and Point San Luis antiforms can be seen in the offshore area to be expressed chiefly as zones of inflection between synclinal and anticlinal folds, rather than as zones of fault rupture such as occurs farther south along the Edna and San Miguelito faults. Isolated west-northwest- trending faults of no more than a few hundred feet displacement are located along the northeast flank of the syncline in Estero Bay. These faults evidently are the northwesternmost expressions of breakage along the Edna fault trend.

The main San Luis-Pismo synclinal structure opens to the northwest, attaining a maximum width of 8 or 9 miles in the southerly part of Estero Bay. The Point San Luis high, on the other hand, is a domal structure, the exposed basement rock core of which is about 10 miles long and 5 miles wide.

The general characteristics of the Santa Maria Basin East Boundary zone have been described in Section 2.5.2.1.2.3. As was noted there, the zone is essentially an expression of the boundary between the synclinorial downwarp of the offshore basin and the regional uplift of the southern Coast Ranges. In the vicinity of the San Luis Range, the zone is characterized by pronounced upwarping and normal faulting of the basement and overlying Tertiary rock sections. Both modes of deformation have contributed to the structural relief of about 500 feet in the Pliocene section, and of 1500 feet or more in the basement rocks, across this boundary. Successively younger strata are banked unconformably against the slopes that have formed from time to time in response to the relative uplifting of the ground east of the boundary zone.

A series of near-surface structural troughs forms prominent features within the segment of the boundary zone structure that extends between the approximate latitudes of

Arroyo Grande and Estero Bay. This trough structure apparently has formed through the extension and subsidence of a block of ground in the zone where the downwarp of the offshore basin has pulled away from the Santa Lucia uplift. Continued subsidence of this block has resulted in deformation and partial disruption of the buttress unconformity between the offshore Pliocene section and the near-shore Miocene and older rocks. This deformation is expressed by normal faulting and reverse drag type downfolding of the Pliocene strata adjacent to the contact, along the east side of the trough.

On the opposite, seaward side of the trough, a series of antithetic down-to-the-east normal faults of small displacement has formed in the Pliocene strata west of the contact zone. These faults exhibit only a few tens of feet displacement, and they seem to exhibit constant or even decreasing displacement downward.

The structural evolution of the offshore area near Estero Bay and the San Luis Range involved episodes of compressional deformation that affected the upper Tertiary section similarly on opposite sides of the boundary zone. The section on either side exhibits about the same intensity and style of folding. Major folds, such as the San Luis-Pismo syncline and the Piedras Blancas anticline, can be traced into the ground across the boundary zone.

The internal structure of the zone, including the presence of several on-lap unconformities in the adjacent Pliocene section, shows that, at least during Pliocene and early Pleistocene time, the boundary zone has been the inflection line between the Coast Ranges uplift and the offshore Santa Maria Basin downwarp.

Evidence that uplift has continued through late Pleistocene time, at least in the vicinity of the San Luis Range, is given by the presence of successive tiers of marine terraces along the seaward flank of the range. The wave-cut benches and back scarps of these terraces now exist at elevations ranging from about -300 feet (below sea level) to more than 300 feet above sea level.

The ground within which the East Boundary zone lies has been beveled by the post-Wisconsin marine transgression, and so the zone generally is not expressed topographically. Small topographic features, such as a seaward topographic step-up of the sea floor surface across the east-down fault at the BBN (Reference 37) (offshore) survey line 27 crossing, in Estero Bay, and several possible fault-line notch back scarps, however, may represent minor topographic expressions of deformation within the zone.

2.5.2.1.6 Structural Stability

The potential for surface or subsurface subsidence, uplift, or collapse at the site or in the region surrounding the site, is discussed in Section 2.5.5, Stability of Subsurface Materials.

2.5.2.1.7 Regional Groundwater

Groundwater in the region surrounding the site is used as a backup source due to its poor quality and the lack of a significant groundwater reservoir. Section 2.4.13 states that most of the groundwater at the site or in the area around the site is either in the alluvial deposits of Diablo Creek or seeps from springs encountered in excavations at the site.

2.5.2.2 Site Geology

2.5.2.2.1 Site Physiography

The site consists of approximately 750 acres near the mouth of Diablo Creek and is located on a sloping coastal terrace, ranging from 60 to 150 feet above sea level. The terrace terminates at the Pacific Ocean on the southwest and extends toward the San Luis Mountains on the northeast. The terrace consists of bedrock overlain by surficial deposits of marine and nonmarine origin.

The remainder of this section presents a detailed description of site geology.

2.5.2.2.2 General Features

The area of the DCPP site is a coastal tract in San Luis Obispo County approximately 6.5 miles northwest of Point San Luis. It lies immediately southeast of the mouth of Diablo Canyon, a major westward-draining feature of the San Luis Range, and about a mile southeast of Lion Rock, a prominent offshore element of the highly irregular coastline.

The ground being developed as a power plant site occupies an extensive topographic terrace about 1000 feet in average width. In its pregrading, natural state, the gently undulating surface of this terrace sloped gradually southwestward to an abrupt termination along a cliff fronting the ocean; in a landward, or northeasterly, direction, it rose with progressively increasing slope to merge with the much steeper front of a foothill ridge of the San Luis Range. The surface ranged in altitude from 65 to 80 feet along the coastline to a maximum of nearly 300 feet along the base of the hillslope to the northeast, but nowhere was its local relief greater than 10 feet. Its only major interruption was the steep-walled canyon of lower Diablo Creek, a gash about 75 feet in average depth.

The entire subject area is underlain by a complex sequence of stratified marine sedimentary rocks and tuffaceous volcanic rocks, all of Tertiary (Miocene) age. Diabasic intrusive rocks are locally exposed high on the walls of Diablo Canyon at the edge of the area. Both the sedimentary and volcanic rocks have been folded and otherwise disturbed over a considerable range of scales.

Surficial deposits of Quaternary age are widespread. In a few places, they are as thick as 50 feet, but their average thickness probably is on the order of 20 feet over the terrace areas and 10 feet or less over the entire mapped ground. The most extensive deposits underlie the main topographic terrace.

Like many other parts of the California coast, the Diablo Canyon area is characterized by several wave-cut benches of Pleistocene age. These surfaces of irregular but generally low relief were developed across bedrock by marine erosion, and they are ancient analogues of the benches now being cut approximately at sea level along the present coast. They were formed during periods when the sea level was higher, relative to the adjacent land, than it is now. Each is thinly and discontinuously mantled with marine sand, gravel, and rubble similar to the beach and offshore deposits that are accumulating along the present coastline. Along its landward margin each bears thicker and more localized coarse deposits similar to the modern talus along the base of the present sea cliff.

Both the ancient wave-cut benches and their overlying marine and shoreline deposits have been buried beneath silty to gravelly detritus derived from landward sources after the benches were, in effect, abandoned by the ocean. This nonmarine cover is essentially an apron of coalescing fan deposits and other alluvial debris that is thickest adjacent to the mouths of major canyons.

Where they have been deeply trenched by subsequent erosion, as along Diablo Canyon in the map areas, these deposits can be seen to have buried some of the benches so deeply that their individual identities are not reflected by the present (pregrading) rather smooth terrace topography. Thus, the surface of the main terrace is defined mainly by nonmarine deposits that conceal both the older benches of marine erosion and some of the abruptly rising ground that separates them (refer to Figures 2.5-8 and 2.5-10).

The observed and inferred relationships among the terrace surfaces and the wave-cut benches buried beneath them can be summarized as follows:

Wave-cut Bench		Terrace Surface	
Altitude, feet	Location	Altitude, feet	Location
170-175	Small remnants on sides of Diablo Canyon	Mainly 170-190	Sides of Diablo Canyon and upper parts of main terrace; in places separated from lower parts of terrace by scarps
145-155	Very small remnants on sides of Diablo Canyon	Mainly 150-170	
120-130 90-100 65-80	Subparallel benches elongate in a northwest-southeast direction but with considerable aggregate width; wholly	Mainly 70-160	Most of main terrace, a wide-spread surface on a composite section of nonmarine deposits; no well-defined scarps

	beneath main terrace surface	50-100	Small remnants above modern sea cliff
30-45	Small remnants above modern sea cliff		No depositional terrace
Approx. 0	Small to moderately large areas along present coastline.		

Within the subject area the wave-cut benches increase progressively in age with increasing elevation above present sea level; hence, their order in the above list is one of decreasing age. By far, the most extensive of these benches slopes gently seaward from a shoreline angle that lies at an elevation of 100 feet above present sea level.

The geology of the power plant site is shown in the site geologic maps, Figures 2.5-8 and 2.5-9, and geologic section, Figure 2.5-10.

2.5.2.2.3 Stratigraphy

2.5.2.2.3.1 Obispo Tuff

The Obispo Tuff, which has been classified either as a separate formation or as a member of the Miocene Monterey Formation, is the oldest bedrock unit exposed in the site area. Its constituent rocks generally are well exposed, appear extensively in the coastward parts of the area, and form nearly all of the offshore prominences and shoals. They are dense to highly porous, and thinly layered to almost massive. Their color ranges from white to buff in fresh exposures, and from yellowish to reddish brown on weathered surfaces, many of which are variegated in shades of brown. Outcrop surfaces have a characteristic "punky" to crusty appearance, but the rocks in general are tough, cohesive, and relatively resistant to erosion.

Several pyroclastic rock types constitute the Obispo Tuff ("To" on map, Figure 2.5-8) in and near the subject area. By far, the most widespread is fine-grained vitric tuff with rare to moderately abundant tabular crystals of sodic plagioclase. The constituent glass commonly appears as fresh shards, but in many places it has been partly or completely devitrified. Crystal tuffs are locally prominent, and some of these are so crowded with 1/8 to 3/8 inch crystals of plagioclase that they superficially resemble granitoid plutonic rocks. Other observed rock types include pumiceous tuffs, pumice-pellet tuff breccias, perlitic vitreous tuffs, tuffaceous siltstones and mudstones, and fine-grained tuff breccias with fragments of glass and various Monterey rocks. No massive flow rocks were recognized anywhere in the exposed volcanic section.

In terms of bulk composition, the pyroclastic rocks appear to be chiefly soda rhyolites and soda quartz latites. Their plagioclase, which ranges from calcic albite to sodic oligoclase, commonly is accompanied by lesser amounts of quartz as small rounded crystals and irregular crystal fragments. Biotite, zircon, and apatite also are present in many of the specimens that were examined under the microscope. Most of the tuffaceous rocks, and especially the more vitreous ones, have been locally to pervasively altered. Products of silicification, zeolitization, and pyritization are readily recognizable in many exposures, where the rocks generally are traversed by numerous thin, irregular veinlets and layers of cherty to opaline material. Veinlets and thin, pod-like concentrations of gypsum also are widespread. Where pyrite is present, the rocks weather yellowish to brownish and are marked by gossan-like crusts.

The various contrasting rock types are simply interlayered in only a few places; much more typical are abutting, intertonguing, and irregularly interpenetrating relationships over a wide range of scales. Septa and inclusions of Monterey rocks are abundant, and a few of them are large enough to be shown separately on the accompanying geologic map (Figure 2.5-8). Highly irregular inclusions, a few inches to several feet in maximum dimension, are so densely packed together in some places that they form breccias with volcanic matrices.

The Obispo Tuff is underlain by mudstones of early Miocene (pre-Monterey) age, on which it rests with a highly irregular contact that appears to be in part intrusive. This contact lies offshore in the vicinity of the power plant site, but it is exposed along the seacoast to the southeast.

In a gross way, the Obispo underlies the basal part of the Monterey formation, but many of its contacts with these sedimentary strata are plainly intrusive. Moreover, individual sills and dikes of slightly to thoroughly altered tuffaceous rocks appear here and there in the Monterey section, not uncommonly at stratigraphic levels well above its base (refer to Figures 2.5-8 and 2.5-13). The observed physical relationships, together with the local occurrence of diatoms and foraminifera within the principal masses of volcanic rocks, indicate that much of the Obispo Tuff in this area probably was emplaced at shallow depths beneath the Miocene sea floor during accumulation of the Monterey strata. The tuff unit does not appear to represent a single, well-defined eruptive event, nor is it likely to have been derived from a single source conduit.

2.5.2.2.3.2 Monterey Formation

Stratified marine rocks variously correlated with the Monterey Formation, Point Sal Formation, and Obispo Tuff underlie most of the subject area, including all of that portion intended for power plant location. They are almost continuously exposed along the crescentic sea cliff that borders Diablo Cove, and elsewhere they appear in much more localized outcrops. For convenience, they are here assigned to the Monterey Formation ("Tm" on map, Figure 2.5-8) in order to delineate them from the adjacent more tuffaceous rocks so typical of the Obispo Tuff.

The observed rock types, listed in general order of decreasing abundance, are silty and tuffaceous sandstone, siliceous shale, shaly siltstone and mudstone, diatomaceous shale, sandy to highly tuffaceous shale, calcareous shale and impure limestone, bituminous shale, fine- to coarse-grained sandstone, impure vitric tuff, silicified limestone and shale, and tuff-pellet sandstone. Dark colored and relatively fine-grained strata are most abundant in the lowest part of the section, as exposed along the east side of Diablo Cove, whereas lighter colored sandstones and siliceous shales are dominant at stratigraphically higher levels farther north. In detail, however, the different rock types are interbedded in various combinations, and intervals of uniform lithology rarely are thicker than 30 feet. Indeed, the closely-spaced alternations of contrasting strata yield a prominent rib-like pattern of outcrop along much of the sea cliff and shoreline bench forming the margin of Diablo Cove.

The sandstones are mainly fine- to medium-grained, and most are distinctly tuffaceous. Shards of volcanic glass generally are recognizable under the microscope, and the very fine-grained siliceous matrix may well have been derived largely through alteration of original glassy material. Some of the sandstone contains small but megascopically visible fragments of pumice, perlitic glass, and tuff, and a few beds grade along strike into submarine tuff breccia. The sandstones are thinly to very thickly layered; individual beds 6 inches to 4 feet thick are fairly common, and a few appear to be as thick as 15 feet. Some of them are hard and very resistant to erosion, and they typically form subdued but nearly continuous elongated projections on major hillslopes (Figure 2.5-8).

The siliceous shales are buff to light gray platy rocks that are moderately hard to extremely hard according to their silica content, but they tend to break readily along bedding and fracture surfaces. The bituminous rocks and the siltstones and mudstones are darker colored, softer, and grossly more compact. Some of them are very thinly bedded or laminated, others appear almost massive or form matrices for irregularly ellipsoidal masses of somewhat sandier material. The diatomaceous, tuffaceous, and sandy rocks are lighter colored. The more tuffaceous types are softer, and the diatomaceous ones are soft to the degree of punkiness; both kinds of rocks are easily eroded, but are markedly cohesive and tend to retain their gross positions on even the steepest of slopes.

The siliceous shale and most of the hardest, highly silicified rocks weather to very light gray, and the dark colored, fine-grained rocks tend to bleach when weathered. The other types, including the sandstones, weather to various shades of buff and light brown. Stains of iron oxides are widespread on exposures of nearly all the Monterey rocks, and are especially well developed on some of the finest-grained shales that contain disseminated pyrite. All but the hardest and most thick-bedded rocks are considerably broken to depths of as much as 6 feet in the zone of weathering on slopes other than the present sea cliff, and the broken fragments have been separated and displaced by surface creep to somewhat lesser depths.

2.5.2.2.3.3 Diabasic Intrusive Rocks

Small, irregular bodies of diabasic rocks are poorly exposed high on the walls of Diablo Canyon at and beyond the northeasterly edge of the map area. Contact relationships are readily determined at only a few places where these rocks evidently are intrusive into the Monterey Formation. They are considerably weathered, but an ophitic texture is recognizable. They consist chiefly of calcic plagioclase and augite, with some olivine, opaque minerals, and zeolitic alteration products.

2.5.2.2.3.4 Masses of Brecciated Rocks

Highly irregular masses of coarsely brecciated rocks, a few feet to many tens of feet in maximum dimension, are present in some of the relatively siliceous parts of the Monterey section that adjoin the principal bodies of Obispo Tuff. The fracturing and dislocation is not genetically related to any recognizable faults, but instead seems to have been associated with emplacement of the volcanic rocks; it evidently was accompanied by, or soon followed by, extensive silicification. Many adjacent fragments in the breccias are closely juxtaposed and have matching opposed surfaces, so that they plainly represent no more than coarse crackling of the brittle rocks. Other fragments, though angular or subangular, are not readily matched with adjacent fragments and hence may represent significant translation within the entire rock masses.

The ratio of matrix materials to coarse fragments is very low in most of the breccias and nowhere was it observed to exceed about 1:3. The matrices generally comprise smaller angular fragments of the same Monterey rocks that are elsewhere dominant in the breccias, and they characteristically are set in a siliceous cement. Tuffaceous matrices, with or without Monterey fragments, also are widespread and commonly show the effects of pervasive silicification. All the exposed breccias are firmly cemented, and they rank among the hardest and most resistant units in the entire bedrock section.

A few 3 to 18 inch beds of sandstone have been pulled apart to form separate tabular masses along specific stratigraphic horizons in higher parts of the Monterey sequence. Such individual tablets, which are boudins rather than ordinary breccia fragments, are especially well exposed in the sea cliff at the northern corner of Diablo Cove. They are flanked by much finer-grained strata that converge around their ends and continue essentially unbroken beyond them. This boudinage or separation and stringing out of sandstone beds that lie within intervals of much softer and more shaly rocks has resulted from compression during folding of the Monterey section. Its distribution is stratigraphically controlled and is not systematically related to recognizable faults in the area.

2.5.2.2.3.5 Surficial Deposits

1. Coastal Terrace Deposits

The coastal wave-cut benches of Pleistocene age, as described in a foregoing section, are almost continuously blanketed by terrace deposits (Qter in Figure 2.5-8) of several contrasting types and modes of origin. The oldest of these deposits are relatively thin and patchy in their occurrence, and were laid down along and adjacent to ancient beaches during Pleistocene time. They are covered by considerably thicker and more extensive nonmarine accumulations of detrital materials derived from various landward sources.

The marine deposits consist of silt, sand, gravel, and cobbly to bouldery rubble. They are approximately 2 feet in average thickness over the entire terrace area and reach a maximum observed thickness of about 8 feet. They rest directly upon bedrock, some of which is marked by numerous holes attributable to the action of boring marine mollusks, and they commonly contain large rounded cobbles and boulders of Monterey and Obispo rocks that have been similarly bored. Lenses and pockets of highly fossiliferous sand and gravel are present locally.

The marine sediments are poorly to very well sorted and loose to moderately well consolidated. All of them have been naturally compacted; the degree of compaction varies according to the material, but it is consistently greater than that observed in any of the associated surficial deposits of other types. Near the inner margins of individual wave-cut benches the marine deposits merge landward into coarser and less well-sorted debris that evidently accumulated along the bases of ancient sea cliffs or other shoreline slopes. This debris is locally as much as 12 feet thick; it forms broad but very short aprons, now buried beneath younger deposits, that are ancient analogues of the talus accumulations along the inner margin of the present beach in Diablo Cove. One of these occurrences, identified as "fossil Qtb" in the geologic map of Figure 2.5-8, is well exposed high on the northerly wall of Diablo Canyon.

A younger, thicker, and much more continuous nonmarine cover is present over most of the coastal terrace area. It consistently overlies the marine deposits noted above, and, where these are absent, it rests directly upon bedrock. It is composed in part of alluvial detritus contributed during Pleistocene time from Diablo Canyon and several smaller drainage courses, and it thickens markedly as traced sourceward toward these canyons. The detritus represents a series of alluvial fans, some of which appear to have partly coalesced with adjacent ones. It is chiefly fine- to moderately-coarse-grained gravel and rubble characterized by tabular fragments of Monterey rocks in a rather abundant silty to clayey matrix. Most of it is thinly and regularly stratified, but the distinctness of this layering varies greatly from place to place.

Slump, creep, and slope-wash deposits, derived from adjacent hillsides by relatively slow downhill movement over long periods of time, also form major parts of the nonmarine terrace cover. All are loose and uncompacted. They comprise fragments of Monterey rocks in dark colored clayey matrices, and their internal structure is essentially chaotic. In some places they are crudely interlayered with the alluvial fan deposits, and elsewhere they overlie these bedded sediments. On parts of the main terrace area not reached by any of the alluvial fans, a cover of slump, creep, and slope-wash deposits, a few inches to nearly 10 feet thick, rests directly upon either marine terrace deposits or bedrock.

Thus, the entire section of terrace deposits that caps the coastal benches of Pleistocene marine erosion is heterogeneous and internally complex; it includes contributions of detritus from contrasting sources, from different directions at different times, and via several basically different modes of transport and deposition.

2. Stream-terrace Deposits

Several narrow, irregular benches along the walls of Diablo Canyon are veneered by a few inches to 6 feet of silty gravels that are somewhat coarser but otherwise similar to the alluvial fan deposits described above. These stream-terrace deposits (Qst) originally occupied the bottom of the canyon at a time when the lower course of Diablo Creek had been cut downward through the alluvial fan sediments of the main terrace and well into the underlying bedrock. Subsequent deepening of the canyon left remnants of the deposits as cappings on scattered small terraces.

3. Landslide Deposits

The walls of Diablo Canyon also are marked by tongue- and bench-like accumulations of loose, rubbly landslide debris (Qls), consisting mainly of highly broken and jumbled masses of Monterey rocks with abundant silty and soily matrix materials. These landslide bodies represent localized failure on naturally oversteepened slopes, generally confined to fractured bedrock in and immediately beneath the zone of weathering. Individual bodies within the mapped area are small, with probable maximum thicknesses no greater than 20 feet. All of them lie outside the area intended for power plant construction.

Landslide deposits along the sea cliff have been recognized at only one locality, on the north side of Diablo Cove about 400 feet northwest of the mouth of Diablo Canyon. Here slippage has occurred along bedding and fracture surfaces in siliceous Monterey rocks, and it has been confined essentially to the axial region of a well-defined syncline (refer to Figure 2.5-8). Several episodes of sliding are attested by thin, elongate masses of highly broken ground separated from one another by well-defined zones of dislocation. Some of these masses are still capped by terrace deposits. The entire composite accumulation of debris is not more than 35 feet in maximum thickness, and ground failure at this locality does not appear to have resulted in major recession of the cliff. Elsewhere within the mapped area, landsliding along the sea cliff evidently has not been a significant process.

Large landslides, some of them involving substantial thickness of bedrock, are present on both sides of Diablo Canyon not far northeast of the power plant area. These occurrences need not be considered in connection with the plant site, but they have been regarded as significant factors in establishing a satisfactory grading design for the switchyard and other up-canyon installations. They are not dealt with in this section.

4. Slump, Creep, and Slope-wash Deposits

As noted earlier, slump, creep, and slope-wash deposits (Qsw) form parts of the nonmarine sedimentary blanket on the main terrace. These materials are shown separately on the geologic map only in those limited areas where they have been considerably concentrated along well-defined swales and are readily distinguished from other surficial deposits. Their actual distribution is much wider, and they undoubtedly are present over a large fraction of the areas designated as Qter; their average thickness in such areas, however, is probably less than 5 feet.

Angular fragments of Monterey rocks are sparsely to very abundantly scattered through the slump, creep, and slope-wash deposits, whose most characteristic feature is a fine-grained matrix that is dark colored, moderately rich in clay minerals, and extremely soft when wet. Internal layering is rarely observable and nowhere is sharply expressed. The debris seems to have been rather thoroughly intermixed during its slow migration down hillslopes in response to gravity. That it was derived mainly from broken materials in the zone of weathering is shown by several exposures in which it grades downward through soily debris into highly disturbed and partly weathered bedrock, and thence into progressively fresher and less broken bedrock.

5. Talus and Beach Deposits

Much of the present coastline in the subject area is marked by bare rock, but Diablo Cove and a few other large indentations are fringed by narrow, discontinuous beaches and irregular concentrations of sea cliff talus. These deposits (Qtb) are very coarse grained. Their total volume is small, and they are of interest mainly as modern analogues of much older deposits at higher levels beneath the main terrace surface.

The beach deposits consist chiefly of well-rounded cobbles. They form thin veneers over bedrock, and in Diablo Cove they grade seaward into patches of coarse pebbly sand. The floors of both Diablo Cove and South Cove probably are irregular in detail and are featured by rather hard, fresh bedrock that is discontinuously overlain by irregular thin bodies of sand and gravel. The distribution and abundance of kelp suggest that bedrock crops out over large parts of these cove areas where the sea bottom cannot be observed from onshore points.

6. Stream-laid Alluvium

Stream-laid alluvium (Qal) occurs as a strip along the present narrow floor of Diablo Canyon, where it is only a few feet in average thickness. It is composed of irregularly intertongued silt, sand, gravel, and rubble. It is crudely to sharply stratified, poorly to well sorted, and, in general, somewhat compacted. Most of it is at least moderately porous.

7. Other Deposits

Earlier inhabitation of the area by Indians is indicated by several midden deposits that are rich in charcoal and fragments of shells and bones. The most extensive of these occurrences marks the site of a long-abandoned village along the edge of the main terrace immediately northwest of Diablo Canyon. Others have been noted on the main terrace just east of the mouth of Diablo Canyon, on the shoreward end of South Point, and at several places in and near the plant site.

2.5.2.2.4 Structure

2.5.2.2.4.1 Tectonic Structures Underlying the Region Surrounding the Site

The dominant tectonic structure in the region of the power plant site is the San Luis-Pismo downwarp system of west-northwest-trending folds. This structure is bounded on the northeast by the antiformal basement rock structure of the Los Osos and San Luis Valley trend. The west-northwest-trending Edna fault zone lies along the northeast flank of the range, and the parallel Miguelito fault extends into the southeasterly end of the range. A north-northwest- trending structural discontinuity that may be a fault has been inferred or interpolated from widely spaced traverses in the offshore, extending within about 5 miles of the site at its point of closest approach. To the west of this discontinuity, the structure is dominated by north to north-northwest-trending folds in Tertiary rocks. These features are illustrated in Figure 2.5-3 and described in this section.

Tectonic structures underlying the site and region surrounding the site are identified in the above and following sections, and they are shown in Figures 2.5-3, 2.5-5, 2.5-8, 2.5-10, 2.5-15, and 2.5-16. They are listed as follows:

2.5.2.2.4.2 Tectonic Structures Underlying the Site

The rocks underlying the DCPP site have been subjected to intrusive volcanic activity and to later compressional deformation that has given rise to folding, jointing and fracturing, minor faulting, and local brecciation. The site is situated in a section of moderately to steeply north-dipping strata, about 300 feet south of an east-west-trending synclinal fold axis (Figures 2.5-8 and 2.5-10). The rocks are jointed throughout, and they contain local zones of closely spaced high-angle fractures (Figure 2.5-16).

A minor fault zone extends into the site from the west, but dies out in the vicinity of the Unit 1 turbine building. Two other minor faults were mapped for distances of 35 to more than 200 feet in the bedrock section exposed in the excavation for the Unit 1 containment structure. In addition to these features, cross-cutting bodies of tuff and tuff brecia, and cemented "crackle breccia" could be considered as tectonic structures.

Exact ages of the various tectonic structures at the site are not known. It has been clearly demonstrated, however, that all of them are truncated by, and therefore antedate, the principal marine erosion surface that underlies the coastal terrace bench. This terrace can be correlated with coastal terraces to the north and south that have been dated as 80,000 to 120,000 years old. The tectonic structures probably are related to the Pliocene-lower Pleistocene episode of Coast Ranges deformation, which occurred more than 1 million years ago.

The bedrock units within the entire subject area form part of the southerly flank of a very large syncline that is a major feature of the San Luis Range. The northerly-dipping sequence of strata is marked by several smaller folds with subparallel trends and flank-to-flank dimensions measured in hundreds of feet. One of these, a syncline with gentle to moderate westerly plunge, is the largest flexure recognized in the vicinity of the power plant site. Its axis lies a short distance north of the site and about 450 feet northeast of the mouth of Diablo Canyon (Figures 2.5-8 and 2.5-10). East of the canyon this fold appears to be rather open and simple in form, but farther west it probably is complicated by several large wrinkles and may well lose its identity as a single feature. Some of this complexity is clearly revealed along the northerly margin of Diablo Cove, where the beds exposed in the sea cliff have been closely folded along east to northeast trends. Here a tight syncline (shown in Figure 2.5-8) and several smaller folds can be recognized, and steep to near-vertical dips are dominant in several parts of the section.

The southerly flank of the main syncline within the map area steepens markedly as traced southward away from the fold axis. Most of this steepening is concentrated within an across-strike distance of about 300 feet as revealed by the strata exposed in the sea cliff southeastward from the mouth of Diablo Canyon; farther southward the beds of sandstone and finer-grained rocks dip rather uniformly at angles of 70° or more. A slight overturning through the vertical characterizes the several hundred feet of section exposed immediately north of the Obispo Tuff that underlies South Point and the north shore of South Cove (refer to Figure 2.5-8). Thus the main syncline, though simple in gross form, is distinctly asymmetric. The steepness of its southerly flank may well have resulted from buttressing, during the folding, by the relatively massive and competent unit of tuffaceous rocks that adjoins the Monterey strata at this general level of exposure.
Smaller folds, corrugations, and highly irregular convolutions are widespread among the Monterey rocks, especially the finest-grained and most shaley types. Some of these flexures trend east to southeast and appear to be drag features systematically related to the larger-scale folding in the area. Most, however, reflect no consistent form or trend, range in scale from inches to only a few feet, and evidently are confined to relatively soft rocks that are flanked by intervals of harder and more massive strata. They constitute crudely tabular zones of contortion within which individual rock layers can be traced for short distances but rarely are continuous throughout the deformed ground.

Some of this contortion appears to have derived from slumping and sliding of unconsolidated sediments on the Miocene sea floor during accumulation of the

Monterey section. Most of it, in contrast, plainly occurred at much later times, presumably after conversion of the sediments to sedimentary rocks, and it can be most readily attributed to highly localized deformation during the ancient folding of a section that comprises rocks with contrasting degrees of structural competence.

2.5.2.2.4.3 Faults

Numerous faults with total displacements ranging from a few inches to several feet cut the exposed Monterey rocks. Most of these occur within, or along the margins of, the zones of contortion noted above. They are sharp, tight breaks with highly diverse attitudes, and they typically are marked by 1/16-inch or less of gouge or microbreccia. Nearly all of them are curving or otherwise somewhat irregular surfaces, and many can be seen to terminate abruptly or to die out gradually within masses of tightly folded rocks. These small faults appear to have been developed as end products of localized intense deformation caused by folding of the bedrock section. Their unsystematic attitudes, small displacements, and limited effects upon the host rocks identify them as second-order features, i.e., as results rather than causes of the localized folding and convolution with which they are associated.

Three distinctly larger and more continuous faults also were recognized within the mapped area. They are well exposed on the sea cliff that fringes Diablo Cove (refer to Figure 2.5-8), and each lies within a zone of moderately to severely contorted fine-grained Monterey strata. Each is actually a zone, 6 inches to several feet wide, within which two or more subparallel tight breaks are marked by slickensides, 1/4-inch or less of gouge, and local stringers of gypsum. None of these breaks appears to be systematically related to individual folds within the adjoining rocks. None of them extends upward into the overlying blanket of Quaternary terrace deposits.

One of these faults, exposed on the north side of the cove, trends north-northwest essentially parallel to the flanking Monterey beds, but it dips more steeply than these beds. Another, exposed on the east side of the cove, trends east-southeast and is essentially vertical; thus, it is essentially parallel to the structure of the host Monterey section. Neither of these faults projects toward the ground intended for power plant construction. The third fault, which appears on the sea cliff at the mouth of Diablo Canyon, trends northeast and projects toward the ground in the northernmost part of the power plant site. It dips northward somewhat more steeply than the adjacent strata.

Total displacement is not known for any of these three faults on the basis of natural exposures, but it could amount to as much as tens of feet. That these breaks are not major features, however, is strongly suggested by their sharpness, by the thinness of gouge along individual surfaces of slippage, and by the essential lack of correlation between the highly irregular geometry of deformation in the enclosing strata and any directions of movement along the slip surfaces.

The possibility that these surfaces are late-stage expressions of much larger-scale faulting at this general locality was tested by careful examination of the deformed rocks that they transect. On megascopic scales, the rocks appear to have been deformed much more by flexing than by rupture and slippage, as evidenced by local continuity of numerous thin beds that denies the existence of pervasive faulting within much of the ground in question. That the finer-grained rocks are not themselves fault gouged was confirmed by examination of 34 samples under the microscope.

Sedimentary layering, recognized in 27 of these samples, was observed to be grossly continuous even though dislocated here and there by tiny fractures. Moreover, nearly all the samples were found to contain shards of volcanic glass and/or the tests of foraminifera; some of these delicate components showed effects of microfracturing and a few had been offset a millimeter or less along tiny shear surfaces, but none appeared to have been smeared out or partially obliterated by intense shearing or grinding. Thus, the three larger faults in the area evidently were superimposed upon ground that already had been deformed primarily by small-scale and locally very intense folding rather than by pervasive grinding and milling.

It is not known whether these faults were late-stage results of major folding in the region or were products of independent tectonic activity. In either case, they are relatively ancient features, as they are capped without break by the Quaternary terrace deposits exposed along the upper part of the sea cliff. They probably are not large-scale elements of regional structure, as examination of the nearest areas of exposed bedrock along their respective landward projections revealed no evidence of substantial offsets among recognizable stratigraphic units.

Seaward projection of one or more of these faults might be taken to explain a possible large offset of the Obispo Tuff units exposed on North Point and South Point. The notion of such an offset, however, would rest upon the assumption that these two units are displaced parts of an originally continuous body, for which there is no real evidence. Indeed, the two tuff units are bounded on their northerly sides by lithologically different parts of the Monterey Formation; hence, they were clearly originally emplaced at different stratigraphic levels and are not directly correlative.

2.5.2.2.5 Geological Relationships at the Units 1 and 2 Power Plant Site

2.5.2.2.5.1 Geologic Investigations at the Site

The geologic relationships at DCPP site have been studied in terms of both local and regional stratigraphy and structure, with an emphasis on relationships that could aid in dating the youngest tectonic activity in the area. Geologic conditions that could affect the design, construction, and performance of various components of the plant installation also were identified and evaluated. The investigations were carried out in three main phases, which spanned the time between initial site selection and completion of foundation construction.

2.5.2.2.5.2 Feasibility Investigation Phase

Work directed toward determining the pertinent general geologic conditions at the plant site comprised detailed mapping of available exposures, limited hand trenching in areas with critical relationships, and petrographic study of the principal rock types. The results of this feasibility program were presented in a report that also included recommendations for determining suitability of the site in terms of geologic conditions. Information from this early phase of studies is included in the preceding four sections and illustrated in Figures 2.5-8, 2.5-9, and 2.5-10.

2.5.2.2.5.3 Suitability Investigation Phase

The record phase of investigations was directed toward testing and confirming the favorable judgments concerning site feasibility. Inasmuch as the principal remaining uncertainties involved structural features in the local bedrock, additional effort was made to expose and map these features and their relationships. This was accomplished through excavation of large trenches on a grid pattern that extended throughout the plant area, followed by photographing the trench walls and logging the exposed geologic features. Large-scale photographs were used as a mapping base, and the recorded data were then transferred to controlled vertical sections at a scale of 1 inch = 20 feet. The results of this work were reported in three supplements to the original geologic report (Reference 1). Supplementary Reports I and III presented data and interpretation based on trench exposures in the areas of the Unit 1 and Unit 2 installations, respectively. Supplementary Report II described the relationships of small bedrock faults exposed in the exploratory trenches and in the nearby sea cliff.
During these suitability investigations, special attention was given to the contact between bedrock and overlying terrace deposits in the plant site area. It was determined that none of the discontinuities present in the bedrock section displaces either the erosional surface developed across the bedrock or the terrace deposits that rest upon this surface. The pertinent data are presented farther on in this section and illustrated in Figures 2.5-11, 2.5-12, 2.5-13, and 2.5-14.

2.5.2.2.5.4 Construction Geology Investigation Phase

Geologic work done during the course of construction at the plant site spanned an interval of 5 years, which encompassed the period of large-scale excavation. It included detailed mapping of all significant excavations, as well as special studies in some areas of rock bolting and other work involving rock reinforcement and temporary instrumentation. The mapping covered essentially all parts of the area to be occupied by structures for Units 1 and 2, including the excavations for the circulating water intake and outlet, the turbine-generator building, the auxiliary building, and the containment structures. The results of this mapping are described farther on and illustrated in Figures 2.5-15 and 2.5-16.

2.5.2.2.5.5 Exploratory Trenching Program, Unit 1 Site

Four exploratory trenches were cut beneath the main terrace surface at the power plant site, as shown in Figures 2.5-8, 2.5-11, 2.5-12, and 2.5-13. Trench AF (Trench A), about 1080 feet long, extended in a north-northwesterly direction and thus was roughly parallel to the nearby margin of Diablo Cove. Trench BE (Trench B), 380 feet long, was parallel to Trench A and lay about 150 feet east of the northerly one-third of the longer trench. Trenches C and D, 450 and 490 feet long, respectively were nearly parallel to each other, 130 to 150 feet apart, and lay essentially normal to Trenches A and B. The two pairs of trenches crossed each other to form a "#" pattern that would have been symmetrical were it not for the long southerly extension of Trench A. They covered the area intended for Unit 1 power plant construction, and the intersection of Trenches B and C coincided in position with the center of the Unit 1 nuclear reactor structure.

All four trenches, throughout their aggregate length of approximately 2400 feet, revealed a section of surficial deposits and underlying bedrock that corresponds to the two-ply sequence of surficial deposits and Monterey strata exposed along the sea cliff in nearby Diablo Cove. The trenches ranged in depth from 10 feet to nearly 40 feet, and all had sloping sides that gave way downward to essentially vertical walls in the bedrock encountered 3 to 8 feet above their floors.

To facilitate detailed geologic mapping, the easterly walls of Trenches A and B and the southerly walls of Trenches C and D were trimmed to near-vertical slopes extending upward from the trench floors to levels well above the top of bedrock. These walls subsequently were scaled back by means of hand tools in order to provide fresh, clean exposures prior to mapping of the contact between bedrock and overlying unconsolidated materials.

1. Bedrock

The bedrock that was continuously exposed in the lowest parts of all the exploratory trenches lies within a portion of the Montery Formation characterized by a preponderance of sandstone. It corresponds to the part of the section that crops out in lower Diablo Canyon and along the sea cliff souteastward from the canyon mouth. The sandstone ranges from light gray through buff to light reddish brown, from silty to markedly tuffaceous, and from thin-bedded and platy to massive. The distribution and thickness of beds can be readily appraised from sections along Trenches A and B (Figure 2.5-12) that show nearly all individual bedding surfaces that could be recognized on the ground.

The sandstone ranges from very hard to moderately soft, and some of it feels slightly punky when struck with a pick. All of it is, however, firm and very compact. In general, the most platy parts of the sequence are also the hardest, but the soundest rock in the area is almost massive sandstone of the kind that underlies the site of the intended reactor structure. This rock is well exposed on the nearby hillslope adjoining the main terrace area, where it has been markedly resistant to erosion and stands out as distinct low ridges.

Tuff, consisting chiefly of altered volcanic glass, forms irregular sills and dikes in several parts of the bedrock section. This material, generally light gray to buff, is compact but distinctly softer than the enclosing sandstone. Individual bodies are 1/2 inch to 4 feet thick. They are locally abundant in Trench C west of Trench A, and in Trench A southward beyond the end of the section in Figure 2.5-12. They are very rare or absent in Trenches B and D, and in the easterly parts of Trench C and the northerly parts of Trench A. These volcanic rocks probably are related to the Obispo Tuff as described earlier, but all known masses of typical Obispo rocks in this area lie at considerable distances west and south of the ground occupied by the trenches.

2. Bedrock Structure

The stratification of the Monterey rocks dips northward wherever it was observable in the trenches, in general, at angles of 35 to 55°. Thus, the bedrock beneath the power plant site evidently lies on the southerly flank of the major syncline noted and described earlier. Zones of convolution and other expressions of locally intense folding were not recognized, and probably are much less common in this general part of the section than in other, previously described parts that include intervals of softer and more shaley rocks.

Much of the sandstone is traversed by fractures. Planar, curving, and irregular surfaces are well represented, and, in places, they are abundant and closely spaced. All prominent fractures and many of the minor and discontinuous ones are shown in the sections of Figure 2.5-12. Also shown in these sections are all recognized slip joints, shear surfaces, and faults, i.e., all surfaces along which the bedrock has been displaced. Such features are most abundant in Trenches A and C near their intersection, in Trench D west of the intersection with Trench A, and near the northerly end of Trench B.

Most of the surfaces of movement are hairline features with or without thin films of clay and/or gypsum. Displacements range from a small fraction of an inch to several inches. The other surfaces are more prominent, with well-defined zones of gouge and fine-grained breccia ordinarily 1/8 inch or less in thickness. Such zones were observed to reach a maximum thickness of nearly 1/2 inch along two small faults, but only as local lenses or pockets. Exposures were not sufficiently extensive in three dimensions for definitely determining the magnitude of slip along the more prominent faults, but all of these breaks appeared to be minor features. Indeed, no expressions of major faulting were recognized in any of the trenches despite careful search, and the continuous bedrock exposures precluded the possibility that such features could have been readily overlooked.

A northeast-trending fault that appears on the sea cliff at the mouth of Diablo Canyon projects toward the ground in the northernmost part of the power plant site, as noted in a foregoing section. No zone of breaks as prominent as this one was identified in the trench exposures, and any distinct northeastward continuation of the fault would necessarily lie north of the trenched ground. Alternatively, this fault might well separate northeastward into several smaller faults; some or all of these could correspond to some or all of the breaks mapped in the northerly parts of Trenches A and B.

3. Terrace Deposits

Marine terrace deposits of Pleistocene age form a cover, generally 2 to 5 feet thick, over the bedrock that lies beneath the power plant site. This cover was observed to be continuous in Trench C and the northerly part of Trench A, and to be nearly continuous in the other two trenches. Its lithology is highly variable, and includes bouldery rubble, loose beach sand, pebbly silt, silty to clayey sand with abundant shell fragments, and soft clay derived from underlying tuffaceous rocks. Nearly all of these deposits are at least sparsely fossiliferous, and, in a few places, they consist mainly of shells and shell fragments. Vertebrate fossils, chiefly vertebral and rib materials representing large marine mammals, are present locally; recognized occurrences are designated by the symbol X in the sections of Figure 2.5-12.

At the easterly ends of Trenches C and D, the marine deposits intergrade and intertongue in a landward direction with thicker and coarser accumulations of poorly sorted debris. This material evidently is talus that was formed along the base of an ancient sea cliff or other shoreline slope. In some places, the marine deposits are overlain by nonmarine terrace sediments with a sharp break, but elsewhere the contact between these two kinds of deposits is a dark colored zone, a few inches to as much as 2 feet thick, that appears to represent a soil developed on the marine section. Fragments of these soily materials appear here and there in the basal parts of the nonmarine section.

The nonmarine sediments that were exposed in Trenches B, C, and D and in the northerly part of Trench A are mainly alluvial deposits derived in ancient times from Diablo Canyon. They consist of numerous tabular fragments of Monterey rocks in a relatively dark colored silty to clayey matrix, and, in general, they are distinctly bedded and moderately to highly compact. As indicated in the sections of Figure 2.5-12, they thicken progressively in a north-northeastward direction, i.e., toward their principal source, the ancient mouth of Diablo Canyon.

Slump, creep, and slope-wash deposits, which constitute the youngest major element of the terrace section, overlie the alluvial fan gravels and locally are interlayered with them. Where the gravels are absent, as in the southerly part of Trench A, this younger cover rests directly upon bedrock. It is loose and uncompacted, internally chaotic, and is composed of fragments of Monterey rocks in an abundant dark colored clayey matrix.

All the terrace deposits are soft and unconsolidated, and hence are much less resistant to erosion than is the underlying bedrock. Those appearing along the walls of exploratory trenches were exposed to heavy rainfall during two storms, and showed some tendency to wash and locally to rill. Little slumping and no gross failure were noted in the trenches, however, and it was not anticipated that these materials would cause special problems during construction of a power plant.

4. Interface Between Bedrock and Surficial Deposits

As once exposed continuously in the exploratory trenches, the contact between bedrock and overlying terrace deposits represents a broad wave-cut platform of Pleistocene age. This buried surface of ancient marine erosion ranges in altitude between extremes of 82 and 100 feet, and more than three-fourths of it lies within the more limited range of 90 to 100 feet. It terminates eastward against a moderately steep shoreline slope, the lowest parts of which were encountered at the extreme easterly ends of Trenches C and D, and beyond this slope is an older buried bench at an altitude of 120 to 130 feet.

Available exposures indicate that the configuration of the erosional platform is markedly similar, over a wide range of scales, to that of the platform now being cut approximately at sea level along the present coast. Grossly viewed, it slopes very gently in a seaward (westerly) direction and is marked by broad, shallow channels and by upward projections that must have appeared as low spines and reefs when the bench was being formed (Figures 2.5-12 and 2.5-13). The most prominent reef, formerly exposed in Trenches B and D at and near their intersection, is a wide, westerly-trending projection that rises 5 to 15 feet above neighboring parts of the bench surface. It is composed of massive sandstone that was relatively resistant to the ancient wave erosion.

As shown in the sections and sketches of Figure 2.5-12, the surface of the platform is nearly planar in some places but elsewhere is highly irregular in detail. The small-scale irregularities, generally 3 feet or less in vertical extent, including knob, spine, and rib like projections and various wave-scoured pits, crevices, notches, and channels. The upward projections clearly correspond to relatively hard, resistant beds or parts of beds in the sandstone section. The depressions consistently mark the positions of relatively soft silty or shaley sandstone, of very soft tuffaceous rocks, or of extensively jointed rocks. The surface traces of most faults and some of the most prominent joints are in sharp depressions, some of them with overhanging walls. All these irregularities of detail have modern analogues that can be recognized on the bedrock bench now being cut along the margins of Diablo Cove.

The interface between bedrock and overlying surficial deposits is of particular interest in the trenched area because it provides information concerning the age of youngest fault movements within the bedrock section. This interface is nowhere offset by faults revealed in the trenches, but instead has been developed irregularly across these faults after their latest movements. The consistency of this general relationship was established by highly detailed tracing and inspection of the contact as freshly exhumed by scaling of the trench walls. Gaps in exposure of the interface necessarily were developed at the four intersections of trenches; at these localities, the bedrock was carefully laid bare so that all joints and faults could be recognized and traced along the trench floors to points where their relationships with the exposed interface could be determined.

Corroborative evidence concerning the age of the most recent fault displacements stems from the marine deposits that overlie the bedrock bench and form the basal part of the terrace section. That these deposits rest without break across the traces of faults in the underlying bedrock was shown by the continuity of individual sedimentary beds and lenses that could be clearly recognized and traced.

Further, some of the faults are directly capped by individual boulders, cobbles, pebbles, shells, and fossil bones, none of which have been affected by fault movements. Thus, the most recent fault displacements in the plant site area occurred prior to marine planation of the bedrock and deposition of the overlying terrace sediments. As pointed out earlier, the age of the most recent faulting in this area is therefore at least 80,000 years and more probably at least 120,000 years. It might be millions of years.

2.5.2.2.5.6 Exploratory Trenching Program, Unit 2 Site

Eight additional trenches were cut beneath the main terrace surface south of Diablo Canyon (Figure 2.5-13) in order to extend the scope of subsurface exploration to include all ground in the Unit 2 plant site. As in the area of the Unit 1 plant site, the trenches formed two groups; those in each group were parallel with one another and were oriented nearly normal to those of the other group. The excavations pertinent to the Unit 2 plant site can be briefly identified as follows:

1. *North-northwest Alignment*

    a. Trench EJ, 240 feet long, was a southerly extension of older Trench BE (originally designated as Trench B).

    b. Trench WU, 1300 feet long, extended southward from Trench DG (originally designated as Trench D), and its northerly part lay about 65 feet east of Trench EJ. The northernmost 485 feet of this trench was mapped in connection with the Unit 2 trenching program.

    c. Trench MV, 700 feet long, lay about 190 feet east of Trench WU. The northernmost 250 feet of this trench was mapped in connection with the Unit 2 trenching program.

    d. Trench AF (originally designated as Trench A) was mapped earlier in connection with the detailed study of the Unit 1 plant site. A section for this trench, which lay about 140 feet west of Trench EJ, was included with others in the report on the Unit 1 trenching program.

2. East-northeast Alignment

a. Trench KL, about 750 feet long, lay 180 feet south of Trench DG (originally designated as Trench D) and crossed Trenches AF, EJ, and WU.

b. Trench NO, about 730 feet long, lay 250 feet south of Trench KL and crossed Trenches AF, WU, and MV.

These trenches, or parts thereof, covered the area intended for the Unit 2 power plant construction, and the intersection of Trenches WU and KL coincided in position with the center of the Unit 2 nuclear reactor structure.

All five additional trenches, throughout their aggregate length of nearly half a mile, revealed a section of surficial deposits and underlying Monterey bedrock that corresponded to the two-ply sequence of surficial deposits and Monterey strata exposed in the older trenches and along the sea cliff in nearby Diablo Cove. The trenches ranged in depth from 10 feet (or less along their approach ramps) to nearly 35 feet, and all had sloping sides that gave way downward to essentially vertical walls in the bedrock encountered 3 to 22 feet above their floors. To facilitate detailed geologic mapping, the easterly walls of Trenches EJ, WU, and MV and the southerly walls of Trenches KL and NO were trimmed to near-vertical slopes extending upward from the trench floors to levels well above the top of bedrock. These walls subsequently were scaled back by means of hand tools in order to provide fresh, clean exposures prior to mapping of the contact between bedrock and overlying unconsolidated materials.

The geologic sections shown in Figures 2.5-12 and 2.5-13 correspond in position to the vertical portions of the mapped trench walls. Relationships exposed at higher levels on sloping portions of the trench walls have been projected to the vertical planes of the sections. Centerlines of intersecting trenches are shown for convenience, but the planes of the geologic sections do not contain the centerlines of the respective trenches.

3. Bedrock

The bedrock that was continuously exposed in the lowest parts of all the exploratory trenches lies within a part of the Monterey Formation characterized by a preponderance of sandstone. It corresponds to the portion of the section that crops out along the sea cliff southward from the mouth of Diablo Canyon. The sandstone is light to medium gray where fresh, and light gray to buff and reddish brown where weathered. It ranges from silty to markedly tuffaceous, with tuffaceous units tending to dominate southward and southwestward from the central parts of the trenched area (refer to geologic section in Figure 2.5-13). Much of the sandstone is thin-bedded and platy, but the most siliceous parts of the section are characterized by a strata a foot or more in thickness. Individual beds commonly are well defined by adjacent thin layers of more silty material.

Bedding is less distinct in the more tuffaceous parts of the section, some of which seem to be almost massive. These rocks typically are broken by numerous tight fractures disposed at high angles to one another so that, where weathered, their appearance is coarsely blocky rather than layered.

As broadly indicated in the geologic sections, the sandstone ranges from very hard to moderately soft, and some of it feels slightly punky when struck with a pick. All of it, however, is firm and very compact. In general, the most platy parts of the sequence are relatively hard, but the hardest and soundest rock in the area is thick-bedded to almost massive sandstone of the kind at and immediately north of the site for the intended reactor structure. This resistant rock is well exposed as distinct low ridges on the nearby hillslope adjoining the main terrace area.

Tuff, consisting chiefly of altered volcanic glass, is abundant within the bedrock section. Also widely scattered, but much less abundant, is tuff breccia, consisting typically of small fragments of older tuff, pumice, or Monterey rocks in a matrix of fresh to altered volcanic glass. These materials, which form sills, dikes, and highly irregular intrusive masses, are generally light gray to buff, gritty, and compact but distinctly softer than much of the enclosing sandstone. Individual bodies range from stringers less than a quarter of an inch thick to bulbous or mushroom-shaped masses with maximum exposed dimensions measured in tens of feet. As shown on the geologic sections, they are abundant in all the trenches.

These volcanic rocks probably are related to the Obispo Tuff, large masses of which are well exposed west and south of the trenched ground. The bodies exposed in the trenches doubtless represent a rather lengthy period of Miocene volcanism, during which the Monterey strata were repeatedly invaded by both tuff and tuff breccia. Indeed, several of the mapped tuff units were themselves intruded by dikes of younger tuff, as shown, for example, in Sections KL and NO.

4. Bedrock Structure

The stratification of the Monterey rocks dips northward wherever it was observable in the trenches, in general, at angles of 45 to 85°. The steepness of dip increases progressively from north to south in the trenched ground, a relationship also noted along the sea cliff southward from the mouth of Diablo Canyon. Thus, the bedrock beneath the power plant site evidently lies on the southerly flank of the major syncline that was described previously. Zones of convolution and other expressions of locally intense folding were not recognized, and they probably are much less common in this general part of the section than in other (previously described) parts that include intervals of softer and more shaley rocks.

Much of the sandstone is traversed by fractures. Planar, curving, and irregular surfaces are well represented, and in places they are abundant and closely spaced. All prominent fractures and nearly all of the minor and discontinuous ones are shown on the geologic sections (Figure 2.5-13). Also shown in these sections are all recognized shear surfaces, faults, and other discontinuities along which the bedrock has been displaced. Such features are nowhere abundant in the trench exposures.

Most of the surfaces of movement are hairline breaks with or without thin films of clay, calcite, and/or gypsum. Displacements range from a small fraction of an inch to several inches. A few other surfaces are more prominent, with well-defined zones of fine-grained breccia and/or infilling mineral material ordinarily 1/8 inch or less in thickness. Such zones were observed to reach maximum thicknesses of 3/8 to 1/2 inch along three small faults, but only as local lenses or pockets.

Exposures are not sufficiently extensive in three dimensions for definitely determining the magnitude of slip along all the faults, but for most of them it is plainly a few inches or less. None of them appears to be more than a minor break in a bedrock section that has been folded on a large scale. Indeed, no expressions of major faulting were recognized in any of the trenches despite careful search, and the continuous bedrock exposures preclude the possibility that such features could be readily overlooked.

Most surfaces of past movement probably were active during times when the Monterey rocks were being deformed by folding, when rupture and some differential movements would be expected in a section comprising such markedly differing rock types. Some of the fault displacements may well have been older, as attested in two places by relationships involving small faults, the Monterey rocks, and tuff.

In Trench WU south of Trench KL, for example, sandstone beds were seen to have been offset about a foot along a small fault. A thin sill of tuff occupies the same stratigraphic horizon on opposite sides of this fault, but the sill has not been displaced by the fault. Instead, the tuff occupies a short segment of the fault to effect the slight jog between its positions in the strata on either side. Intrusion of the tuff plainly postdated all movements along this fault.

5. Terrace Deposits

Marine terrace deposits of Pleistocene age form covers, generally 2 to 5 feet thick, but locally as much as 12 feet thick, over the bedrock that lies beneath the Unit 2 plant site. These covers were observed to be continuous in some parts of all the trenches, and thin and discontinuous in a few other parts. Elsewhere, the marine sediments were absent altogether, as in the lower and more southerly parts of Trenches EJ and WU and in the lower and more westerly parts of Trenches KL and NO.

The range in lithology of these deposits is considerable, and includes bouldery rubble, gravel composed of well-rounded fragments of shells and/or Monterey rocks, beach sand, loose accumulations of shells, pebbly silt, silty to clayey sand with abundant shell fragments, and soft clay derived from underlying tuffaceous rocks. Nearly all of the deposits are at least sparsely fossiliferous, and many of them contain little other than shell material. Vertebrate fossils, chiefly vertebral and rib materials representing large marine mammals, are present locally.

The trenches in and near the site of the reactor structure exposed a buried narrow ridge of hard bedrock that once projected westward as a bold promontory along an ancient sea coast, probably at a time when sea level corresponded approximately to the present 100 foot contour (refer to Figure 2.5-11). Along the flanks of this promontory and the face of an adjoining buried sea cliff that extends southeastward through the area in which Trenches MV and NO intersected, the marine deposits intergrade and intertongue with thicker and coarser accumulations of poorly sorted debris. This rubbly material evidently is talus that was formed and deposited along the margins of the ancient shoreline cliff.

Similar gradations of older marine deposits into older talus deposits were observable at higher levels in the easternmost parts of Trenches KL and NO, where the rubbly materials doubtless lie against a more ancient sea cliff that was formed when sea level corresponded to the present 140 foot contour. The cliff itself was not exposed, however, as it lies slightly beyond the limits of trenching.

In many places, the marine covers are overlain by younger nonmarine terrace sediments with a sharp break, but elsewhere the contact between these two kinds of deposits is a zone of dark colored material, a few inches to as much as 6 feet thick, that represents weathering and development of soils on the marine sections. Fragments of these soily materials are present here and there in the basal parts of the nonmarine section. Over large areas, the porous marine deposits have been discolored through infiltration by fine-grained materials derived from the overlying ancient soils.

The nonmarine accumulations, which form the predominant fraction of the entire terrace cover, consist mainly of slump, creep, and slope-wash debris that is characteristically loose, uncompacted, and internally chaotic. These relatively dark colored deposits are fine grained and clayey, but they contain sparse to very abundant fragments of Monterey rocks generally ranging from less than an inch to about 2 feet in maximum dimension. Toward Diablo Canyon they overlie and, in places, intertongue with silty to clayey gravels that are ancient contributions from Diablo Creek when it flowed at levels much higher than its present one. These "dirty" alluvial deposits appeared only in the most northerly parts of the more recently trenched terrace area, and they are not distinguished from other parts of the nonmarine cover on the geologic sections (Figure 2.5-13).

All the terrace deposits are soft and unconsolidated, and hence are much less resistant to erosion than is the underlying bedrock. Those appearing along the walls of the exploratory trenches showed some tendency to wash and locally to rill when exposed to heavy rainfall, but little slumping and no gross failure were noted in the trenches.

6. Interface Between Bedrock and Surficial Deposits

As exposed continuously in the exploratory trenches, the contact between bedrock and overlying terrace deposits represents two wave-cut platforms and intervening slopes, all of Pleistocene age. The broadest surface of ancient marine erosion ranges in altitude from 80 to 105 feet, and its shoreward margin, at the base of an ancient sea cliff, lies uniformly within 5 feet of the 100 foot contour. A higher, older, and less extensive marine platform ranges in altitude from 130 to 145 feet, and most of it lies within the ranges of 135 to 140 feet. As noted previously, these are two of several wave-cut benches in this coastal area, each of which terminates eastward against a cliff or steep shoreline slope and westward at the upper rim of a similar but younger slope.

Available exposures indicate that the configurations of the erosional platforms are markedly similar, over a wide range of scales, to that of the platform now being cut approximately at sea level along the present coast. Grossly viewed, they slope very gently in a seaward (westerly) direction and are marked by broad, shallow channels and by upward projections that must have appeared as low spines and reefs when the benches were being formed. The most prominent reefs, which rise from a few inches to about 5 feet above neighboring parts of the bench surfaces, are composed of hard, thick-bedded sandstone that was relatively resistant to ancient wave erosion.
As shown in the geologic sections (Figure 2.5-13), the surfaces of the platforms are nearly planar in some places but elsewhere are highly irregular in detail. The small scale irregularities, generally 3 feet or less in vertical extent, include knob-, spine-, and rib-like projections and various wave-scoured pits, notches, crevices, and channels. Most of the upward projections closely correspond to relatively hard, resistant beds or parts of beds in the sandstone section. The depressions consistently mark the positions of relatively soft silty or shaley sandstone, of very soft tuffaceous rocks, or of extensively jointed rocks. The surface traces of most faults and some of the most prominent joints are in sharp depressions, some of them with overhanging walls. All these irregularities of detail have modern analogues that can be recognized on the bedrock bench now being cut along the margins of Diablo Cove.

The interface between bedrock and overlying surficial deposits provides information concerning the age of youngest fault movements within the bedrock section. This interface is nowhere offset by faults that were exposed in the trenches, but instead has been developed irregularly across the faults after their latest movements. The consistency of this general relationship was established by highly detailed tracing and inspection of the contact as freshly exhumed by scaling of the trench walls. Gaps in exposure of the interface necessarily were developed at the intersections of trenches as in the exploration at the Unit 1 site. At such localities, the bedrock was carefully laid bare so that all joints and faults could be recognized and traced along the trench floors to points where their relationships with the exposed interface could be determined.

Corroborative evidence concerning the age of the most recent fault displacements stems from the marine deposits that overlie the bedrock bench and form a basal part of the terrace section. That these deposits rest without break across the traces of faults in the underlying bedrock was shown by the continuity of individual sedimentary beds and lenses that could be clearly recognized and traced. As in other parts of the site area, some of the faults are directly capped by individual boulders, cobbles, pebbles, shells, and fossil bones, none of which have been affected by fault movements. Thus, the most recent fault displacements in the plant site area occurred before marine planation of the bedrock and deposition of the overlying terrace sediments.

The age of the most recent faulting in this area is therefore at least 80,000 years. More probably, it is at least 120,000 years, the age most generally assigned to these terrace deposits along other parts of the California coastline. Evidence from the higher bench in the plant site area indicates a much older age, as the unfaulted marine deposits there are considerably older than those that occupy the lower bench corresponding to the 100 foot terrace. Moreover, it can be noted that ages thus determined for most recent fault displacements are minimal rather than absolute, as the latest faulting actually could have occurred millions of years ago.

During the Unit 2 exploratory trenching program, special attention was directed to those exposed parts of the wave-cut benches where no marine deposits are present, and hence where there are no overlying reference materials nearly as old as the benches themselves. At such places, the bedrock beneath each bench has been weathered to depths ranging from less than 1 inch to at least 10 feet, a feature that evidently corresponds to a lengthy period of surface exposure from the time when the bench was abandoned by the sea to the time when it was covered beneath encroaching nonmarine deposits derived from hillslopes to the east.

Stratification and other structural features are clearly recognizable in the weathered bedrock, and they obviously have exercised some degree of control over localization of the weathering. Moreover, in places where upward projections of bedrock have been gradually bent or rotationally draped in response to weathering and creep, their contained fractures and surfaces of movement have been correspondingly bent. Nowhere in such a section that has been disturbed by weathering have the materials been cut by younger fractures that would represent straight upward projections of breaks in the underlying fresh rocks. Nor have such fractures been observed in any of the overlying nonmarine terrace cover.

Thus, the minimum age of any fault movement in the plant site area is based on compatible evidence from undisplaced reference features of four kinds: (a) Pleistocene wave-cut benches developed on bedrock, (b) immediately overlying marine deposits that are very slightly younger, (c) zones of weathering that represent a considerable span of subsequent time, and (d) younger terrace deposits of nonmarine origin.

2.5.2.2.5.7 Bedrock Geology of the Plant Foundation Excavations

Bedrock was continuously exposed in the foundation excavations for major structural components of Units 1 and 2. Outlines and invert elevations of these large openings, which ranged in depth from about 5 to nearly 90 feet below the original ground surface, are shown in Figures 2.5-15 and 2.5-16. The complex pattern of straight and curved walls with various positions and orientations provided an excellent three-dimensional representation of bedrock structure. These walls were photographed at large scales as construction progressed, and the photographs were used directly as a geologic mapping base. The largest excavations also were mapped in detail on a surveyed planimetric base.

Geologic mapping of the plant excavations confirmed the conclusions based on earlier investigations at the site. The exposed section of Monterey strata was found to correspond in lithology and structure to what had been predicted from exposures at the mouth of Diablo Canyon, along the sea cliffs in nearby Diablo Cove, and in the test trenches. Thus, the plant foundation is underlain by a moderately to steeply north-dipping sequence of thin to thick bedded sandy mudstone and fine-grained sandstone. The rocks at these levels are generally fresh and competent, as they lie below the zone of intense near-surface weathering.

Several thin interbeds of claystone were exposed in the southwestern part of the plant site in the excavations for the Unit 2 turbine-generator building, intake conduits, and outlet structure. These beds, which generally are less than 6 inches thick, are distinctly softer than the flanking sandstone. Some of them show evidence of internal shearing.

Layers of tuffaceous sandstone and sills, dikes, and irregular masses of tuff and tuff breccia are present in most parts of the foundation area. They tend to increase in abundance and thickness toward the south, where they are relatively near the large masses of Obispo Tuff exposed along the coast south of the plant site.

Some of the tuff bodies are conformable with the enclosing sandstone, but others are markedly discordant. Most are clearly intrusive. Individual masses, as exposed in the excavations, range in thickness from less than 1 inch to about 40 feet. The tuff breccia, which is less abundant than the tuff, consists typically of small fragments of older tuff, pumice, or Monterey rocks in a matrix of fresh to highly altered volcanic glass. At the levels of exposure in the excavations, both the tuff and tuff breccia are somewhat softer than the enclosing sandstone.

The stratification of the Monterey rocks dips generally northward throughout the plant foundation area. Steepness of dips increases progressively and, in places, sharply from north to south, ranging from 10 to 15° on the north side of Unit 1 to 75 to 80° in the area of Unit 2. A local reversal in direction of dip reflects a small open fold or warp in the Unit 1 area. The axis of this fold is parallel to the overall strike of the bedding, and strata on the north limb dip southward at angles of 10 to 15°. The more general steepening of dips from north to south may reflect buttressing by the large masses of Obispo Tuff south of the plant site.

The bedrock of the plant area is traversed throughout by fractures, including various planar, broadly curving, and irregular breaks. A dominant set of steeply dipping to vertical joints trends northerly, nearly normal to the strike of bedding. Other joints are diversely oriented with strikes in various directions and dips ranging from 10° to vertical. Many fractures curve abruptly, terminate against other breaks, or die out within single beds or groups of beds.

Most of the joints are widely spaced, ranging from about 1 to 10 feet apart, but within several northerly trending zones, ranging in width from 10 to 20 feet, closely spaced near vertical fractures give the rocks a blocky or platy appearance. The fracture and joint surfaces are predominantly clean and tight, although some irregular ones are thinly coated with clay or gypsum. Others could be traced into thin zones of breccia with calcite cement.

Several small faults were mapped in the foundation excavations for Unit 1 and the outlet structure. A detailed discussion of these breaks and their relationship to faults that were mapped earlier along the sea cliff and in the exploratory trenches is included in the following section.

2.5.2.2.5.8 Relationships of Faults and Shear Surfaces

Several subparallel breaks are recognizable on the sea cliff immediately south of Diablo Canyon, where they transect moderately thick-bedded sandstone of the kind exposed in the exploratory trenches to the east. These breaks are nearly concordant with the bedrock stratification but, in general, they dip more steeply (refer to detailed structure section, Figure 2.5-14) and trend more northerly than the stratification. Their trend differs significantly from much of their mapped trace, as the trace of each inclined surface is markedly affected by the local steep topography. The indicated trend, which projects eastward toward ground north of the Unit 1 reactor site, has been summed from numerous individual measurements of strike on the sea cliff exposures, and it also corresponds to the trace of the main break as observed in nearly horizontal outcrop within the tidal zone west of the cliff.

The structure section shows all recognizable surfaces of faulting and shearing in the sea cliff that are continuous for distances of 10 feet or more. Taken together, they represent a zone of dislocation along which rocks on the north have moved upward with respect to those on the south as indicated by the attitude and roughness sense of slickensides. The total amount of movement cannot be determined by any direct means, but it probably is not more than a few tens of feet and could well be less than 10 feet. This is suggested by the following observed features:

(1) All individual breaks are sharp and narrow, and the strata between them are essentially undeformed except for their gross inclination.

(2) Some breaks plainly die out as traced upward along the cliff surface, and others merge with adjoining breaks. At least one well-defined break butts downward against a cross-break, which in turn butts upward against a break that branches and dies out approximately 20 feet away (refer to structure section, Figure 2.5-14, for details).

(3) Nearly all the breaks curve moderately to abruptly in the general direction of movement along them.

(4) Most of the breaks are little more than knife-edge features along which rock is in direct contact with rock, and others are marked by thin films of gouge. Maximum thickness of gouge anywhere observed is about 1/2 inch, and such exceptional occurrences are confined to short curving segments of the main break at the southerly margin of the zone.

(5) No fault breccia is present; instead, the zone represents transection of otherwise undeformed rocks by sharply-defined breaks. No bedrock unit is cut off and juxtaposed against a unit of different lithology along any of the breaks.

(6) Local prominence of the exposed breaks, and especially the main one, is due to slickensides, surface coatings of gypsum, and iron-oxide stains rather than to any features reflecting large-scale movements.

This zone of faulting cannot be regarded as a major tectonic element, nor is it the kind of feature normally associated with the generation of earthquakes. It appears instead to reflect second-order rupturing related to a marked change in dip of strata to the south, and its general sense of movement is what one would expect if the breaks were developed during folding of the Monterey section against what amounts to a broad buttress of Obispo Tuff farther south (refer to geologic map, Figure 2.5-8). That the fault and shear movements were ancient is positively indicated by upward truncation of the zone at the bench of marine erosion along the base of the overlying terrace deposits.

As indicated earlier, bedrock was continuously exposed along several exploratory trenches. This bedrock is traversed by numerous fractures, most of which represent no more than rupture and very small amounts of simple separation. The others additionally represent displacement of the bedrock, and the map in Figure 2.5-14 shows every exposed break in the initial set of trenches along which any amount of displacement could be recognized or inferred.

That the surfaces of movement constitute no more than minor elements of the bedrock structure was verified by detailed mapping of the large excavations for the plant structures. Detailed examination of the excavation walls indicated that the faults exposed in the sea cliff south of Diablo Canyon continue through the rock under the Unit 1 turbine-generator building, where they are expressed as three subparallel breaks with easterly trend and moderately steep northerly dips (Figure 2.5-15).
Stratigraphic separation along these breaks ranges from a few inches to nearly 5 feet, and, in general, decreases eastward on each of them. They evidently die out in the ground immediately west of the containment excavation, and their eastward projections are represented by several joints along which no offsets have occurred. Such joints, with eastward trend and northward dip, also are abundant in some of the ground adjacent to the faults on the south (Figure 2.5-15).

The easterly reach of the Diablo Canyon sea cliff faults apparently corresponds to the two most northerly of the north-dipping faults mapped in Trench A (Figure 2.5-14).

Dying out of these breaks, as established from subsequent large excavations in the ground east of where Trench A was located, explains and verifies the absence of faults in the exposed rocks of Trenches B and C. Other minor faults and shear surfaces mapped in the trench exposures could not be identified in the more extensive exposures of fresher rocks in the Unit 1 containment and turbine-generator building excavations. The few other minor faults that were mapped in these large excavations evidently are not sufficiently continuous to have been present in the exploratory trenches.

2.5.2.2.6 Site Engineering Properties

2.5.2.2.6.1 Field and Laboratory Investigations

In order to determine anticipated ground accelerations at the site, it was necessary to conduct field surveys and laboratory testing to evaluate the engineering properties of the materials underlying the site.

Bore holes were drilled into the rock upon which PG&E Design Class 1 structures are founded. The borings were located at or near the intersection of the then existing Unit 1 exploration trenches. (refer to Figures 2.5-11, 2.5-12, and 2.5-13 for exploratory trenching programs and boring locations.) These holes were cored continuously and representative samples were taken from the cores and submitted for laboratory testing.

The field work also included a reconnaissance to evaluate physical condition of the rocks that were exposed in trenches, and samples were collected from the ground surface in the trenches for laboratory testing. These investigations included seismic refraction measurements across the ground surface and uphole seismic measurements in the various drill holes to determine shear and compressional velocities of vertically propagated waves.

Laboratory testing, performed by Woodward-Clyde-Sherard & Associates, included unconfined compression tests, dynamic elastic moduli tests under controlled stress conditions, density and water content determinations, and Poisson's ratio tests. Tests were also carried out by Geo-Recon, Incorporated, to determine seismic velocities on selected rock samples in the laboratory. The results of seismic measurements in the field were used to construct a three-dimensional model of the subsurface materials beneath the plant site showing variations of shear wave velocity and compressional wave velocity both laterally and vertically. The seismic velocity data and elastic moduli determined from laboratory testing were correlated to determine representative values of elastic moduli necessary for use in dynamic analyses of structures.

Details of field investigations and results of laboratory testing and correlation of data are contained in Appendices 2.5A and 2.5B of Reference 27 in Section 2.3.

2.5.2.2.6.2 Summary and Correlation of Data

The foundation material at the site can be categorized as a stratified sequence of fine to very fine grained sandstone deeply weathered to an average elevation of 75 to 80 feet, mean sea level (MSL). The rock is closely fractured, with tightly closed or healed fractures generally present below elevation 75 feet. Compressional and shear wave velocity interfaces generally are at an average elevation of 75 feet, correlating with fracture conditions.

Time-distance plots and seismic velocity profiles presenting results of each seismic refraction line and time depth plots with results for each uphole seismic survey are included in Appendices 2.5A and 2.5B of Reference 27 in Section 2.3. Compressional wave velocities range from 2350 to 5700 feet per second and shear wave velocities from 1400 to 3600 feet per second as determined by the refraction survey. These same parameters range from 2450 to 9800 and 1060 to 6050 feet per second as determined by the uphole survey. For the Hosgri Evaluation an average shear wave velocity of 3600 feet per second is used at the foundation grade. An isometric diagram summarizing results of the refraction survey for Unit 1 is also included in Appendix 2.5A of Reference 27 in Section 2.3.

Table 1 of Appendix 2.5A of Reference 27 of Section 2.3 shows calculations of Poisson's ratio and Young's Modulus based on representative compressional and shear wave velocities from the field geophysical investigations and laboratory measurements of compressional wave velocities. Table 2 of Appendix 2.5A of the same reference presents laboratory test results including density, unconfined compressive strength, Poisson's ratio and calculated values for compressional and shear wave velocities, shear modulus, and constrained modulus. Secant modulus values in Table 2 were determined from cyclic stress-controlled laboratory tests.

Compressional wave velocity measurements were made in the laboratory of four selected core samples and three hand specimens from exposures in the trench excavations. Measured values ranged from 5700 to 9500 feet per second. A complete tabulation of these results can be found in Appendix 2.5A of Reference 27 of Section 2.3.

2.5.2.2.6.3 Dynamic Elastic Moduli and Poisson's Ratio

Laboratory test results are considered to be indicative of intact specimens of foundation materials. Field test results are considered to be indicative of the gross assemblage of foundation materials, including fractures and other defects. Load stress conditions are obtained by evaluating cyclic load tests. In-place load stress conditions and confinement of the material at depth are also influential in determining elastic behavior. Because of these considerations, originally recommended representative values for Young's Modulus of Elasticity and Poisson's ratio for the site were:

Depth Below Bottom of Trench	E	δ
0 to approximately 15 feet	44×10^6 lb/ft^2	0.20
Below 15 feet	148×10^6 lb/ft^2	0.18

A single value was selected for Young's Modulus below 15 feet because the initial analyses of the seismic response of the structures utilized a single value that was considered representative of the foundation earth materials as a whole.

More detailed seismic analyses were performed subsequent to the initial analyses. These analyses, discussed in Section 3.7.2, incorporated the finite element method and made it possible to model the rock beneath the plant site in a more refined manner by accounting for changes in properties with increasing depth. To determine the refined properties of the founding materials for these analyses, the test data were reviewed and consideration was given to: (a) strain range of the materials at the site, (b) overburden pressure and confinement, (c) load imposed by the structure, (d) observation of fracture condition and geometry of the founding rock in the open excavation, (e) decreases in Poisson's ratio with depth, and (f) significant advances in state-of-the-art techniques of testing and analysis in rock mechanics that had been made and which resulted in considerably more being known about the behavior of rock under seismic strains in 1970 than in 1968 or 1969.

For the purposes of developing the mathematical models that represented the rock mass, the foundation was divided into horizontal layers based on: (a) the estimated depth of disturbance of the foundation rock below the base of the excavation, (b) changes in rock type and physical condition as determined from bore hole logs, (c) velocity interfaces as determined by refraction geophysical surveys, and (d) estimated depth limit of fractures across which movement cannot take place because of confinement and combined overburden and structural load. Based on these considerations, the founding material properties as shown in Figure 2.5-19 were selected as being representative of the physical conditions in the founding rock.

2.5.2.2.6.4 Engineered Backfill

Backfill operations were carefully controlled to ensure stability and safety. All engineered backfill was placed in lifts not exceeding 8 inches in loose depth. Yard areas and roads were compacted to 95 percent relative compaction as determined by the method specified in ASTM D1557. Rock larger than 8 inches in its largest dimension that would not break down under the compactors was not permitted. Figures 2.5-17 and 2.5-18 show the plan and profile view of excavation and backfill for major plant structures.

2.5.2.2.6.5 Foundation Bearing Pressures

PG&E Design Class I structures were analyzed to determine the foundation pressures resulting from the combination of dead load, live load, and the double design earthquake (DDE). The maximum pressure was found to be 158 ksf and occurs under the containment structure foundation slab. This analysis assumed that the lateral seismic shear force will be transferred to the rock at the base of the slab which is embedded 11 feet into rock. This computed bearing pressure is considered conservative in that no passive lateral pressure was assumed to act on the sides of the slab. Based on the results of the laboratory tests of unconfined compressive strength of representative samples of rock at the site, which ranged from 800 to 1300 ksf, the calculated foundation pressure is well below the ultimate in situ rock bearing capacity.

Adverse hydrologic effects on the foundations of PG&E Design Class I structures (there are no PG&E Design Class I embankments) can be safely neglected at this site, since PG&E Design Class I structures are founded on a substantial layer of bedrock, and the groundwater level lies well below grade, at a level corresponding to that of Diablo Creek. Additionally, the computed factors of safety (minimum of 5 under DDE) of foundation pressures versus unconfined compressive strength of rock are sufficiently high to ensure foundation integrity in the unlikely event groundwater levels temporarily rose to foundation grade.

Soil properties such as grain size, Atterberg limits, and water content need not be considered since PG&E Design Class I structures and PG&E Design Class II structures housing PG&E Design Class I equipment are founded on rock.

2.5.3 VIBRATORY GROUND MOTION

2.5.3.1 Geologic Conditions of the Site and Vicinity

DCPP is situated at the coastline on the southwest flank of the San Luis Range, in the southern Coast Ranges of California. The San Luis Range branches from the main coastal mountain chain, the Santa Lucia Range, in the area north of the Santa Maria Valley and southeast of the plant site, and thence follows an alignment that curves toward the west. Owing to this divergence in structural grain, the range juts out from the regional coastline as a broad peninsula and is separated from the Santa Lucia Range by an elongated lowland that extends southeasterly from Morro Bay and includes Los Osos and San Luis Obispo Valleys. It is characterized by rugged west-northwesterly trending ridges and canyons, and by a narrow fringe of coastal terraces along its southwesterly flank.

Diablo Canyon follows a generally west-southwesterly course from the central part of the range to the north-central part of the terraced coastal strip. Detailed discussions of the lithology, stratigraphy, structure, and geologic history of the plant site and surrounding region are presented in Section 2.5.2.

2.5.3.2 Underlying Tectonic Structures

Evidence pertaining to tectonic and seismic conditions in the region of the DCPP site, developed during the original design phase, is summarized later in the section, and is illustrated in Figures 2.5-2, 2.5-3, 2.5-4, and 2.5-5. Table 2.5-1 includes a summary listing of the nature and effects of all significant historic earthquakes within 75 miles of the site that have been reported through the end of 1972. Table 2.5-2 shows locations of 19 selected earthquakes that have been investigated by S. W. Smith. Table 2.5-3 lists the principal faults in the region that were identified during the original design phase and indicates major elements of their histories of displacement, in geological time units.

Prior to the start of construction of DCPP, Benioff and Smith (reference 5) assessed the maximum earthquakes to be expected at the site, and John A. Blume and Associates (references 6 and 7) derived the site vibratory motions that could result from these maximum earthquakes, which form the basis of the Design Earthquake. An extensive discussion of the geology of the southern Coast Ranges, the western Transverse Ranges, and the adjoining offshore region is presented in Appendix 2.5D of Reference 27 of Section 2.3. Tectonic features of the central coastal region are discussed in Section 2.5.2.1.2, Regional Geologic and Tectonic Setting.

Additional information about the tectonic and seismic conditions was gathered during the Hosgri evaluation and LTSP evaluation phases, as discussed in Sections 2.5.3.9.3 and 2.5.3.9.4, respectively.

2.5.3.3 Behavior During Prior Earthquakes

Physical evidence that indicates the behavior of subsurface materials, strata, and structure during prior earthquakes is presented in Section 2.5.2.2.5. The section presents the findings of the exploratory trenching programs conducted at the site.

2.5.3.4 Engineering Properties of Materials Underlying the Site

A description of the static and dynamic engineering properties of the materials underlying the site is presented in Section 2.5.2.2.6, Site Engineering Properties.

2.5.3.5 Earthquake History

The seismicity of the southern Coast Ranges region is known from scattered records extending back to the beginning of the 19th century, and from instrumental records dating from about 1900. Detailed records of earthquake locations and magnitudes became available following installation of the California Institute of Technology and University of California (Berkeley) seismograph arrays in 1932.

A plot of the epicenters for all large historical earthquakes and for all instrumentally recorded earthquakes of Magnitude 4 or larger that have occurred within 200 miles of DCPP site, through the end of 1972, is given in Figure 2.5-2. Plots of all historically and instrumentally recorded epicenters and all mapped faults within about 75 miles of the site, known through the end of 1972, are shown in Figures 2.5-3 and 2.5-4.

A tabulated list of seismic events through the end of 1972, representing the computer printout from the Berkeley Seismograph Station records, supplemented with records of individual shocks of greater than Magnitude 4 that appear only in the Caltech records, is included as Table 2.5-1. Table 2.5-2 gives a summary of revised epicenters of a representative sample of earthquakes off the coast of California near San Luis Obispo, as determined by S. W. Smith.

2.5.3.6 Correlation of Epicenters With Geologic Structures

Studies of particular aspects of the seismicity of the southern Coast Ranges region have been made by Benioff and Smith, Richter, and Allen. From results of these studies, together with data pertaining to the broader aspects of the geology and seismicity of central and eastern California, it can be concluded that, although the southern Coast Ranges region may be subjected to vibratory ground motion from earthquakes originating along faults as distant as 200 miles or more, the region itself is traversed by faults capable of producing large earthquakes, and that the strongest shaking possible for sites within the region probably would be caused by earthquakes no more than a few tens of miles away. Therefore, only the seismicity of the southern Coast Ranges, the adjacent offshore area, and the western Transverse Ranges is reviewed in detail.

Figure 2.5-3 shows three principal concentrations of earthquake epicenters, three smaller or more diffuse areas of activity, and a scattering of other epicenters, for earthquakes recorded through 1972. The most active areas, in terms of numbers of shocks, are the reach of the San Andreas fault north of about 35°7' latitude, the offshore area near Santa Barbara, and the offshore Santa Lucia Bank area. Notable concentrations of epicenters also are located as occurring in Salinas Valley, at Point San Simeon, and near Point Conception. The scattered epicenters are most numerous in the general vicinities of the most active areas, but they also occur at isolated points throughout the region.

The reliability of the position of instrumentally located epicenters of small shocks in the central California region has been relatively poor in the past, owing to its position between the areas covered by the Berkeley and Caltech seismograph networks. A recent study by Smith, however, resulted in relocation of nineteen epicenters in the coastal and offshore region between the latitudes of Point Arguello and Point Sur. Studies by Gawthrop (reference 29) and reported in Wagner have led to results that seem to accord generally with those achieved by Smith.

The epicenters relocated by Smith and those recorded by Gawthrop are plotted in Figure 2.5-3. This plot shows that most of the epicenters recorded in the offshore region seem to be spatially associated with faults in the Santa Lucia Bank region, the East Boundary zone, and the San Simeon fault. Other epicenters, including ones for the 1952 Bryson shock, and several smaller shocks originally located in the offshore area, were determined to be centered on or near the Sur-Nacimiento fault north of the latitude of San Simeon.

2.5.3.7 Identification of Active Faults

Faults that have evidence of recent activity and have portions passing within 200 miles of the site, as known through the end of 1972, are identified in Section 2.5.2.1.2.

2.5.3.8 Description of Active Faults

Active faults that have any part passing within 200 miles of the site, as known through the end of 1972, are described in Section 2.5.2.1.2. Additional active faults were identified during the Hosgri and LTSP evaluation phases, as described in Sections 2.5.3.9.3 and 2.5.3.9.4, respectively.

2.5.3.9 Design and Licensing Basis Earthquakes

The seismic design and evaluation of DCPP is based on the earthquakes described in the following four subsections. Refer to Section 3.7 for the design criteria associated with the application of these earthquakes to the structures, systems, and components. The DE, DDE, and HE are design bases earthquakes and the LTSP is a licensing bases earthquake.

2.5.3.9.1 Design Earthquake

During the original design phase, Benioff and Smith, in reviewing the seismicity of the region around DCPP site, determined the maximum earthquakes that could reasonably be expected to affect the site. Their conclusions regarding the maximum size earthquakes that can be expected to occur during the life of the reactor are listed below:

(1) Earthquake A: A great earthquake may occur on the San Andreas fault at a distance from the site of more than 48 miles. It would be likely to produce surface rupture along the San Andreas fault over a distance of 200 miles with a horizontal slip of about 20 feet and a vertical slip of 3 feet. The duration of strong shaking from such an event would be about 40 seconds, and the equivalent magnitude would be 8.5.

(2) Earthquake B: A large earthquake on the Nacimiento (Rinconada) fault at a distance from the site of more than 20 miles would be likely to produce a 60 mile surface rupture along the Nacimiento fault, a slip of 6 feet in the horizontal direction, and have a duration of 10 seconds. The equivalent magnitude would be 7.25.

(3) Earthquake C: Possible large earthquakes occurring on offshore fault systems that may need to be considered for the generation of seismic sea waves are listed below:

Location	Length of Fault Break	Slip, feet	Magnitude	Distance to Site
Santa Ynez Extension	80 miles	10 horizontal	7.5	50 miles
Cape Mendocino, NW Extension of San Andreas fault	100 miles	10 horizontal	7.5	420 miles
Gorda Escarpment	40 miles	5 vertical or horizontal	7	420 miles

(4) Earthquake D: Should a great earthquake occur on the San Andreas fault, as described in "A" above, large aftershocks may occur out to distances of about 50 miles from the San Andreas fault, but those aftershocks which are not located on existing faults would not be expected to produce new surface faulting, and would be restricted to depths of about 6 miles or more and magnitudes of about 6.75 or less. The distance from the site to such aftershocks would thus be more than 6 miles.

The available information suggests that the faults in this region can be associated with contrasting general levels of seismic potential. These are as follows:

(1) Level I: Potential for great earthquakes involving surface faulting over distances on the order of 100 miles: seismic activity at this level should occur only on the reach of the San Andreas fault that extends between the locales of Cajon Pass and Parkfield. This was the source of the 1857 Fort Tejon earthquake, estimated to have been of Magnitude 8.

(2) Level II: Potential for large earthquakes involving faulting over distances on the order of tens of miles: seismic activity at this level can occur along offshore faults in the Santa Lucia Bank region (the likely source of the Magnitude 7.3 earthquake of 1927), and possibly along the Big Pine and Santa Ynez faults in the Transverse Ranges.

Although the Rinconada-San Marcos-Jolon, Espinosa, Sur-Nacimiento, and San Simeon faults do not exhibit historical or even Holocene activity indicating this level of seismic potential, the fault dimensions, together with evidence of late Pleistocene movements along these faults, suggest that they may be regarded as capable of generating similarly large earthquakes.

(3) Level III: Potential for earthquakes resulting chiefly from movement at depth with no surface faulting, but at least with some possibility of surface faulting of as much as a few miles strike length and a few feet of slip:

Seismic activity at this level probably could occur on almost any major fault in the southern Coast Ranges and adjacent regions.

From the observed geologic record of limited fault activity extending into Quaternary time, and from the historical record of apparently associated seismicity, it can be inferred that both the greater frequency of earthquake activity and larger shocks from earthquake source structures having this level of seismic potential probably will be associated with one of the relatively extensive faults. Faults in the vicinity of the San Luis Range that may be considered to have such seismic potential include the West Huasna, Edna, and offshore Santa Maria Basin East Boundary zone.

(4) Level IV: Potential for earthquakes and aftershocks resulting from crustal movements that cannot be associated with any near-surface fault structures: such earthquakes apparently can occur almost anywhere in the region.

This information forms the basis of the Design Earthquake, described in section 2.5.3.10.1.

2.5.3.9.2 Double Design Earthquake

During the original design phase, in order to assure adequate reserve seismic resisting capability of safety related structures, systems, and components, an earthquake producing two-times the acceleration values of the Design Earthquake was also considered (Reference 51).

2.5.3.9.3 Hosgri Earthquake

In 1976, subsequent to the issuance of the construction permit of Unit 1, PG&E was requested by the NRC to evaluate the plant's capability to withstand a postulated Richter Magnitude 7.5 earthquake centered along an offshore zone of geologic faulting, approximately 3 miles offshore, generally referred to as the "Hosgri fault." Details of the investigations associated with this fault are provided in Appendices 2.5D, 2.5E, and 2.5F of Reference 27 in Section 2.3. An overview is provided in Section 2.5.3.10.3. Note that the Shoreline Fault Zone (refer to Section 2.5.7.1) is considered to be a lesser included case under the Hosgri evaluation (Reference 55).

A further assessment of the seismic potential of faults mapped in the region of DCPP site was made following the extensive additional studies of on and offshore geology and is reported in Appendix 2.5D of Reference 27 of Section 2.3. This was done in terms of observed Holocene activity, to achieve assessment of what seismic activity is reasonably probable, in terms of observed late Pleistocene activity, fault dimensions, and style of deformation.

2.5.3.9.4 1991 Long Term Seismic Program Earthquake

PG&E performed a reevaluation of the seismic design bases of DCPP in response to License Condition No. 2.C.(7) of the Unit 1 Operating License. Details of this reevaluation, referred to as the Long Term Seismic Program, are provided in Section 2.5.7.

PG&E's evaluations included the development of significant additional data applicable to the geology, seismology, and tectonics of the DCPP region, including characterization of the Hosgri, Los Osos, San Luis Bay, Olson, San Simeon, and Wilmar Avenue faults. These faults were evaluated as potential seismic sources (Reference 40, Chapter 3). However, PG&E determined that the potential seismic sources of significance to the ground motions at the site are: the Hosgri and Los Osos fault zones, and the San Luis Bay fault, based on the probabilistic seismic hazard analysis; and the Hosgri fault zone, based on the deterministic analysis. Details are provided in Reference 40, Chapters 2 and 3, and summarized in SSER 34, Section 2.5.1, "Geology" and 2.5.2, "Seismology".

The NRC's review of PG&E's evaluations is documented in References 42 and 43.

2.5.3.10 Ground Accelerations and Response Spectra

The seismic design and evaluation of DCPP is based on the earthquakes described in the following four subsections. Refer to Section 3.7 for the design criteria associated with the application of the DE, DDE, and HE to the structures, systems, and components and the seismic margin assessment of the LTSP.

2.5.3.10.1 Design Earthquake

During the original design phase, the maximum ground acceleration that would occur at the DCPP site was estimated for each of the postulated earthquakes listed in Section 2.5.3.9, using the methods set forth in References 12 and 24. The plant site acceleration was primarily dependent on the following parameters: Gutenberg-Richter magnitude and released energy, distance from the earthquake focus to the plant site, shear and compressional velocities of the rock media, and density of the rock. Rock properties are discussed under Section 2.5.2.2.6, Site Engineering Properties.

The maximum rock accelerations that would occur at the DCPP site were estimated as:

Earthquake A	0.10 g	Earthquake C	0.05 g
Earthquake B	0.12 g	Earthquake D	0.20 g

In addition to the maximum acceleration, the frequency distribution of earthquake motions is important for comparison of the effects on plant structures and equipment. In general, the parameters affecting the frequency distribution are distance, properties of the transmitting media, length of faulting, focus depth, and total energy release. Earthquakes that might reach the site after traveling over great distances would tend to have their high frequency waves filtered out. Earthquakes that might be centered close to the site would tend to produce wave forms at the site having minor low frequency characteristics.

In order to evaluate the frequency distribution of earthquakes, the concept of the response spectrum is used.

For nearby earthquakes, the resulting response spectra accelerations would peak sharply at short periods and would decay rapidly at longer periods. Earthquake D would produce such response spectra. The March 1957 San Francisco earthquake as recorded in Golden Gate Park (S80°E component) was the same type. It produced a maximum recorded ground acceleration of 0.13 g (on rock) at a distance of about 8 miles from the epicenter. Since Earthquake D has an assigned hypocentral distance of 12 miles, it would be expected to produce response spectra similar in shape to those of the 1957 event.

Large earthquakes centered at some distance from the plant site would tend to produce response spectra accelerations that peak at longer periods than those for nearby smaller shocks. Such spectra maintain a higher spectral acceleration throughout the period range beyond the peak period. Earthquakes A and C are events that would tend to produce this type of spectra. The intensity of shaking as indicated by the maximum predicted ground acceleration shows that Earthquake C would always have lower spectral accelerations than Earthquake A.

Since the two shocks would have approximately the same shape spectra, Earthquake C would always have lower spectral accelerations than Earthquake A, and it is therefore eliminated from further consideration. The north-south component of the 1940 El Centro earthquake produced response spectra that emphasized the long period characteristics described above. Earthquake A, because of its distance from the plant site, would be expected to produce response spectra similar in shape to those produced by the El Centro event. Smoothed response spectra for Earthquake A were constructed by normalizing the El Centro spectra to 0.10 g. These spectra, however, show smaller accelerations than the corresponding spectra for Earthquake B (discussed in the next paragraph) for all building periods, and thus Earthquake A is also eliminated from further consideration.

Earthquake B would tend to produce response spectra that emphasize the intermediate period range inasmuch as the epicenter is not close enough to the plant site to produce large high frequency (short-period) effects, and it is too close to the site and too small in magnitude to produce large low frequency (long-period) effects. The N69°W component to the 1952 Taft earthquake produced response spectra having such characteristics. That shock was therefore used as a guide in establishing the shape of the response spectra that would be expected for Earthquake B.

Following several meetings with the AEC staff and their consultants, the following two modifications were made in order to make the criteria more conservative:

(1) The Earthquake D time-history was modified in order to obtain better continuity of frequency distribution between Earthquakes D and B.

(2) The accelerations of Earthquake B were increased by 25 percent in order to provide the required margin of safety to compensate for possible uncertainties in the basic earthquake data.

Accordingly, Earthquake D-modified was derived by modifying the S80°E component of the 1957 Golden Gate Park, San Francisco earthquake, and then normalizing to a maximum ground acceleration of 0.20 g. Smoothed response spectra for this earthquake are shown in Figure 2.5-21. Likewise, Earthquake B was derived by normalizing the N69°W component of the 1952 Taft earthquake to a maximum ground acceleration of 0.15 g. Smoothed response spectra for Earthquake B are shown in Figure 2.5-20. The maximum vibratory motion at the plant site would be produced by either Earthquake D-modified or Earthquake B, depending on the natural period of the vibrating body.

2.5.3.10.2 Double Design Earthquake

The maximum ground acceleration and response spectra for the Double Design Earthquake are twice those associated with the design earthquake, as described in Section 2.5.3.10.1 (Reference 51).

2.5.3.10.3 Hosgri Earthquake

As mentioned earlier, based on a review of the studies presented in Appendices 2.5D and 2.5E (of Reference 27 in Section 2.3) by the NRC and the United States Geologic Survey (USGS) (acting as the NRC's geological consultant), the NRC issued SSER 4 in May 1976. This supplement included the USGS conclusion that a magnitude 7.5 earthquake could occur on the Hosgri fault at a point nearest to the Diablo Canyon site. The USGS further concluded that such an earthquake should be described in terms of near fault horizontal ground motion using techniques and conditions presented in Geological Survey Circular 672. The USGS also recommended that an effective, rather than instrumental, acceleration be derived for seismic analysis.

The NRC adopted the USGS recommendation of the seismic potential of the Hosgri fault. In addition, based on the recommendation of Dr. N. M. Newmark, the NRC prescribed that an effective horizontal ground acceleration of 0.75g be used for the development of response spectra to be employed in a seismic evaluation of the plant. The NRC outlined procedures considered appropriate for the evaluation including an adjustment of the response spectra to account for the filtering effect of the large building foundations. An appropriate allowance for torsion and tilting was to be included in the analysis. A guideline for the consideration of inelastic behavior, with an associated ductility ratio, was also established.

The NRC issued SSER 5 in September 1976. This supplement included independently-derived response spectra and the rationale for their development. Parameters to be used in the foundation filtering calculation were delineated for each major structure. The supplement prescribed that either the spectra developed by Blume or Newmark would be acceptable for use in the evaluation with the following conditions:

(1) In the case of the Newmark spectra no reduction for nonlinear effects would be taken except in certain specific areas on an individual case basis.

(2) In the case of the Blume spectra a reduction for nonlinear behavior using a ductility ratio of up to 1.3 may be employed.

(3) The Blume spectra would be adjusted so as not to fall below the Newmark spectra at any frequency.

The development of the Blume ground response spectra, including the effect of foundation filtering, is briefly discussed below. The rationale and derivation of the Newmark ground response spectra is discussed in Appendix C to Supplement No. 5 of the SER.

The time-histories of strong motion for selected earthquakes recorded on rock close to the epicenters were normalized to a 0.75g peak acceleration. Such records provide the best available models for the Diablo Canyon conditions relative to the Hosgri fault zone. The eight earthquake records used are listed in the table below.

Earthquake	M	Depth, km	Recorded at	Epicentral Distance, km	Component	Peak Acceleration g
Helena 1935	6	5	Helena	3 to 8	EW	0.16
Helena 1935	6	5	Helena	3 to 8	NS	0.13
Daly City 1957	5.3	9	Golden Gate Park	8	N80W	0.13
Daly City 1957	5.3	9	Golden Gate Park	8	N10E	0.11
Parkfield 1966	5.6	7	Temblor 2	7	S25W	0.33
Parkfield 1966	5.6	7	Temblor 2	7	N65W	0.28
San Fernando 1971	6.6	13	Pacoima Dam	3	S14W	1.17
San Fernando 1971	6.6	13	Pacoima	3	N76W	1.08

The magnitudes are the greatest recorded thus far (September 1985) close in on rock stations and range from 5.3 to 6.6. Adjustments were made subsequently in the period range of the response spectrum above 0.40 sec for the greater long period energy expected in a 7.5M shock as compared to the model magnitudes.

The procedure followed was to develop 7 percent damped response spectra for each of the eight records normalized to 0.75g and then to treat the results statistically according to period bands to obtain the mean, the median, and the standard deviations of spectral response. At this stage, no adjustments for the size of the foundation or for ductility were made. The 7 percent damped response spectra were used as the basis for calculating spectra at other damping values.

Figures 2.5-29 and 2.5-30 show free-field horizontal ground response spectra as determined by Blume and Newmark, respectively, at damping levels from two to seven percent.

Figures 2.5-31 and 2.5-32 show vertical ground response spectra as determined by Blume and Newmark, respectively, for two to seven percent damping. The ordinates of vertical spectra are taken as two-thirds of the corresponding ordinates of the horizontal spectra. These response spectra, finalized in 1977, are described as the ”1977 Hosgri response spectra.” Note that the Shoreline Fault Zone (refer to Section 2.5.7.1) is considered to be a lesser included case under the Hosgri evaluation (Reference 55).

2.5.3.10.4 1991 Long Term Seismic Program Earthquake

As discussed in Section 2.5.3.9.4, the Long Term Seismic Program, in response to License Condition No. 2.C.(7) determined that the governing earthquake source for the deterministic seismic margins evaluation of DCPP (84th percentile ground motion response spectrum) is the Hosgri fault. Ground motions, and the corresponding free-field response spectra for a Richter Magnitude 7.2 earthquake centered along the Hosgri fault, approximately 4.5 km from DCPP, were developed by PG&E, as documented in Reference 40. This event is referred to as the “LTSP Earthquake.” As part of their review of Reference 40, the NRC concluded that spectra developed by PG&E could underestimate the ground motion (Reference 42). As a result, the final spectra, applicable to the LTSP evaluation of DCPP, is an envelope of that developed by PG&E and that developed by the NRC. Figures 2.5-33 and 2.5-34 show the 84th percentile ground motion response spectrum at 5% damping for the horizontal and vertical directions, respectively, described as the "1991 LTSP response spectra". These spectra define the current licensing basis for the LTSP.

Figure 2.5-35 shows a comparison of the horizontal 1991 LTSP response spectrum with the 1977 Newmark Hosgri spectrum (based on Reference 40, Figure 7-2). This comparison indicates that the 1977 Hosgri spectrum is greater than the 1991 LTSP spectrum at all frequencies less than about 15 Hz, but the 1991 LTSP spectrum exceeds the 1977 Hosgri spectrum by approximately 10 percent for frequencies above 15 Hz. This exceedance was accepted by the NRC in SSER 34 (Reference 42), Section 3.8.1.1 (Ground-Motion Input for Deterministic Evaluations):

> "On the basis of PG&E's margins evaluation discussed in Section 3.8.1.7 of this SSER, the staff concludes that these high-frequency spectral exceedances are not significant."

In addition, the NRC states in SSER 34 (Reference 42), Section 1.4 (Summary of Staff Conclusions):

> "The staff notes that the seismic qualification basis for Diablo Canyon will continue to be the original design basis plus the Hosgri evaluation basis, along with the associated analytical methods, initial conditions, etc. The LTSP has served as a useful check of the adequacy of the seismic margins and has generally confirmed that the margins are acceptable."

Therefore, the 1991 LTSP ground motion response spectra does not replace or modify, the DE, DDE, or 1977 Hosgri response spectra described above.

2.5.4 SURFACE FAULTING

2.5.4.1 Geologic Conditions of the Site

The geologic history and lithologic, stratigraphic, and structural conditions of the site and the surrounding area are described in Section 2.5.2 and are illustrated in the various figures included in Section 2.5.

2.5.4.2 Evidence for Fault Offset

Substantive geologic evidence, described under Section 2.5.2.2, Site Geology, indicates that the ground at and near the site has not been displaced by faulting for at least 80,000 to 120,000 years. It can be inferred, on the basis of regional geologic history, that minor faults in the site bedrock date from the mid-Pliocene or, at the latest, from mid-Pleistocene episodes of tectonic activity.

2.5.4.3 Identification of Active Faults

Three zones that include faults greater than 1000 feet in length were mapped within about 5 miles of the site. Two of these, the Edna and San Miguelito fault zones, were mapped on land in the San Luis Range. The third, consisting of several breaks associated with the offshore Santa Maria Basin East Boundary zone of folding and faulting, is described in Sections 2.5.2.1.2.3 and 2.5.2.1.5.5 under Regional Geologic and Tectonic Setting. The mapped trace of each of these structures is shown in Figures 2.5-3 and 2.5-4. Additional active faults that were identified through the studies associated with the Hosgri Evaluation and LTSP are discussed in Sections 2.5.3.9.3 and 2.5.3.9.4, respectively.

2.5.4.4 Earthquakes Associated With Active Faults

The earthquakes discussions are limited to those identified during the original design phase and do not include any earthquakes recorded since 1971.

The Edna fault or fault zone has been active at some time since the deposition of the Plio-Pleistocene Paso Robles Formation, which it displaces. It has no morphologic expression suggestive of late Pleistocene activity, nor is it known to displace late Pleistocene or younger deposits. Four epicenters of small (3.9 to 3M) shocks and 42 other epicenters for shocks of "small" or "unknown" intensity have been reported as occurring in the approximate vicinity of the Edna fault (Figures 2.5-3 and 2.5-4). Owing to the small size of the earthquakes that they represent, however, all of these epicenters are only approximately located. Further, they fall in the energy range of shocks that can be generated by fairly large construction blasts. At present, no conclusive evidence is available to determine whether the Edna fault could be classified as seismically active, or as geologically active in the sense of having undergone multiple movements within the last 500,000 years.

The San Miguelito fault has been mapped as not displacing the Plio-Pleistocene Paso Robles Formation. No instrumental epicenter has been reliably recorded from its vicinity, but the Berkeley Seismological Laboratory indicates Avila Bay as the presumed epicentral location for a moderately damaging (Intensity VII at Avila) earthquake that occurred on December 1, 1916. It seems likely, however, that this shock occurred along the offshore East Boundary zone rather than on the San Miguelito fault zone.

The East Boundary zone has an overall length of about 70 miles. Individual breaks within the zone are as much as 30 miles long, though the varying amount of displacement that occurs along specific breaks indicates that movement along them is not uniform, and it suggests that breakage may have occurred on separate, limited segments of the faults. The reach of the zone that is opposite DCPP site contains four fault breaks. These breaks range from 1 to 15 miles in length, and they have minimum distances of 2.1 to 4.5 miles from the site. The East Boundary zone is considered to be seismically active, since at least five instrumentally well located epicenters and as many as ten less reliably located other epicenters are centered along or near the zone. One of the breaks (located 3-1/2 miles offshore from the site) exhibits topographic expression that may represent a tectonic offset of the sea floor surface at a point along its trace 6 miles north of the site. Other faults in the East Boundary zone have associated erosion features, a few of which could possibly be partly of faultline origin.

The earthquake of December 1, 1916, though listed as having an epicentral location at Avila Bay, is considered more probably to have originated along either the East Boundary zone or, possibly, the Santa Lucia Bank fault. Effects of this shock at Avila included landsliding in Dairy Canyon, 2 miles north of town, and "...disturbance of waters in the Bay of San Luis Obispo." "...plaster in several cottages...was jarred loose...while some of the smokestacks on the (Union Oil Company) refinery were toppled over." It is apparently on this basis that the Berkeley listing of earthquakes assigns this shock a "large" intensity and places its approximate epicentral location at Port San Luis.

A small (Magnitude 2.9) shock that apparently originated near the East Boundary zone a short distance south of DCPP site was lightly felt at the site on September 24, 1974.

This shock, like most of those recorded along the East Boundary zone, was not damaging.

The minor fault zone that was mapped in the sea cliff at the mouth of Diablo Creek and in the excavation for the Unit 1 turbine building has an onshore length of about 550 feet, and it probably continues for some distance offshore. It has been definitely determined to be not active.

2.5.4.5 Correlation of Epicenters With Active Faults

Earthquake epicenters located within 50 miles of DCPP site, for earthquakes recorded through 1972, have been approximately located in the vicinity of each of the faults. The reported earthquakes are listed in Table 2.5-1 and as follows, and their indicated epicentral locations are shown in Figures 2.5-3 and 2.5-4:

Earthquake Epicenters Reported as Being Located Approximately in the Vicinities of San Luis Obispo, Avila, and Arroyo Grande

Date	Geographic N Latitude	Coordinates W Longitude	Magnitude	Intensity	Notes and Greenwich Mean Time (GMT)
7.10.1889	35.17°	120.58°			Arroyo Grande. Shocks for several days.
12.1.1916	35.17°	120.75°		VII	VII at Avila. Considerable glass broken and goods in stores thrown from shelves at San Luis Obispo. Water in bay disturbed, plaster in cottages jarred loose, smoke stacks of Union Oil refinery toppled over at Avila. Severe at Port San Luis. III at Santa Maria: 22:53:00
4.26.1950	35.20°	120.60°	3.5	V	V at Santa Maria. Also felt at Orcutt: 7:23:29
1.26.1971	35.20°	120.70°	3		Near San Luis Obispo: 21:53:53
1830 to 7.21.1931	35.25°	120.67°			42 epicenters

Earthquake Epicenters Reported as Being Located Approximately in the Vicinity of the Offshore Santa Maria Basin East Boundary Zone

Date	Geographic Coordinates N Latitude	W Longitude	Magnitude	Intensity	Notes and Greenwich Mean Time (GMT)
5.27.1935 (30-1)	35.62°	121.64°	3	III	Felt at Templeton: 16:08:00
9.7.1939 (30-6)	35.46°	121.50°	3		Off San Luis Obispo County; felt at Cambria: 2:50:30
1.27.1945	34.75°	120.67°	3.9		17:50:31
12.31.1948 (30-10)	35.60°	121.23°	4.6		Felt along coast from Lompoc to Moss Landing. VI at San Simeon. V at Cayucos, Creston, Moss Landing, Piedras Blancas Light Station: 14:35:46
11.17.1949	34.80°	120.70°	2.8		IV at Santa Maria. Near Priest: 5:06:60
2.5.1955 (30-23)	35.86°	121.15°	3.3		West of San Simeon: 7:10:19
6.21.1957 (30-25A)	35.23°	120.95°	3.7		Off Coast. Felt in San Luis Obispo, Morro Bay: 20:46:42
8.18.1958	35.60°	121.30	3.4		Near San Simeon: 5:30:42
10.25.1967	35.73°	121.45°	2.6		Near San Simeon: 23:05:39.5

(Figures in parentheses refer to events relocated by S. W. Smith, refer to Table 2.5-2).

2.5.4.6 Description of Active Faults

Data pertaining to faults with lengths greater than 1000 feet and reaches within 50 miles of the site, as identified during the original design phase, are included in Section 2.5.2.1.5, Structure of the San Luis Range and Vicinity, and in Figures 2.5-3 and 2.5-4. These data indicate the fault lengths, relationship of the faults to regional tectonic structures, known history of displacements, outer limits, and whether the faults can be considered as active.

2.5.4.7 Results of Faulting Investigation

The site for Units 1 and 2 of DCPP was investigated in detail for faulting and other possibly detrimental geologic conditions. From studies made prior to design of the plant, it was determined that there was need to take into account the possibility of surface faulting in such design. The data on which this determination was based are presented in Section 2.5.2.2, Site Geology.

2.5.5 Stability of Subsurface Materials

The possibility of past or potential surface or subsurface ground subsidence, uplift, or collapse in the vicinity of DCPP was considered during the course of the geologic investigations for Units 1 and 2.

2.5.5.1 Geologic Features

The site is underlain by folded bedrock strata consisting predominantly of sandy mudstone and fine-grained sandstone. The existence of an unbroken and otherwise undeformed section of upper Pleistocene terrace deposits overlying a wave-cut bedrock bench at the site provides positive evidence that all folding and faulting in the bedrock antedated formation of the terrace. Local depressions and other irregularities on the bedrock surface plainly reflect erosion in an ancient surf zone.

The rocks that constitute the bedrock section are not subject to significant solution effects (i.e., development of cavities or channels that could affect the engineering or fluid conducting character of the rock) because the bedrock section does not contain thick or continuous bodies of soluble rock types such as limestone or gypsum. Voids encountered during excavation at the site were limited to thin zones of vuggy breccia and isolated vugs in some beds of calcareous mudstone. Areas where such minor vuggy conditions were present were noted at a few locations in the excavation for the Unit 2 containment and fuel handling structures (at plant grid coordinates N59, N597, E10, E005 and N59, N700, E10, E120).

The maximum size of any individual opening was 3 inches or less, and most were less than 1 inch in maximum dimension. Because of the limited extent and isolated nature of these small voids, they were not considered significant in foundation engineering or slope stability analyses.

It has been determined by field examination that no sea caves exist in the immediate vicinity of the site. The only cave like natural features in the area are shallow pits and hollows in some of the sea cliff outcrops of resistant tuff. These features generally have dimensions of a few inches to about 10 feet. They are superficial, and have originated through differential weathering of variably cemented rock.

Several exploratory wells have been drilled for petroleum within the San Luis Range, but no production was achieved and the wells were abandoned. The area is not now active in terms of either production or exploration. The location of the abandoned wells is shown in Figure 2.5-6, and the geologic relationships in the Range are illustrated in Section A-A' of Figure 2.5-6 and in Figure 2.5-7, Section D-D'. The nearest oil-producing area is the Arroyo Grande field, about 15 miles to the southeast.

The potential for future problems of ground instability at the site, because of nearby petroleum production, can be assessed in terms of the geologic potential for the occurrence of oil within, or offshore from, the San Luis Range. In addition, assessment can be made in terms of the geologic relationships in the site as contrasted with geologic conditions in places where oil field exploitation has resulted in deformation of the ground surface.

As shown in Figures 2.5-6 and 2.5-7, the San Luis Range has the structural form of a broad synclinal fold, which in turn is made up of several tightly compressed anticlines and synclines of lesser order. The configuration is not conducive to entrapment of hydrocarbon fluids, as such fluids tend to migrate upward through bedding and fracture-controlled zones of higher primary and secondary permeability until they reach a local trap or escape into the near surface or surface environment.

Within the San Luis Range, the only recognizable structural traps are in local zones where plunge reversals exist along the crests of the second-order anticlines. Such structures evidently were the actual or hoped-for targets for most of the exploratory wells that have been drilled in the San Luis Range, but none of these wells has produced enough oil or gas to record; thus, the traps have not been effective, or perhaps the strata are essentially lacking in hydrocarbon fluids. Other conditions that indicate poor petroleum prospects for the Range include the general absence of good reservoir rocks within the section and the relatively shallow basement of non petroliferous Franciscan rocks.

In the offshore, adjacent to the southerly flank of the San Luis Range, subsurface conditions are not well known, but are probably generally similar. Scattered data suggest that a structural high, perhaps defined by a west-northwest plunging anticline, may exist a few miles offshore from DCPP site. Such a feature could conceivably serve as a structural trap, if local closure were present along its axis; however, it seems unlikely that it would contain significant amounts of petroleum.

Available data pertaining to exploratory oil wells drilled in the region of the site are given here:

Exploratory Oil Wells in the Vicinity of DCPP Site

Data from exploratory wells drilled outside of oil and gas fields in California to December 31, 1963: Division of Oil and Gas, San Francisco.

Mount Diablo B. & M. T R Sec	Operator	Well No.	Elev, ft	Date Started	Total Depth, ft	Stratigraphy (depth in ft) Age at Bottom of Hole
31S 10E 3	Tidewater Oil Co.	"Montadoro" 1	365	April 1954	6,146	Monterey 0-3800; Obispo Tuff 3800: Franciscan; U. Jurassic
30S 10E 24	Gretna Corp.	"Maino-Gonzales" 1	275	March 1937	1,575	Franciscan; Jurassic
24	Wm. H. Provost	"Spooner" 1	325	July 1952	1,749	Jurassic
24	Shell Oil Co.	"Buchon"	-	-	-	-
34	A. O. Lewis	"Pecho" 1	177	May 1937	2,745	Monterey 0-2612; U. Miocene
30S 11E 9	Van Stone and Dallaston	"Souza" 1	42	Oct 1951	1,233	Franciscan; Jurassic
31S 11E 15	Tidewater Oil Co.	"Honolulu-Tidewater-U.S.L.-Heller “Lease" 1	1,614	Jan 1958	10,788	Monterey 0-4363; Pt. Sal 4363; Obispo Tuff 4722; Rincon Shale 5370; 2nd Tuff 5546; 2nd Rincon Shale 6354; 3rd Tuff 10,174; L. Miocene

For the purpose of assessing the potential for the occurrence of adverse oil field related ground deformation effects at DCPP site, in the unlikely event that petroleum should be discovered and produced at a nearby location, it is useful to review the nature and causes of such ground deformation, and the types of geologic conditions at places where it has been observed.

The general subject of surface deformation associated with oil and gas field operations has been reviewed by Yerkes and Castle (Reference 22), among others. Such deformation includes differential subsidence, development of horizontally compressive strain effects within the central parts of subsidence bowls and horizontally extensive strain effects around their margins, and development or activation of cracks and faults. Pull-apart cracks and normal faults may develop in the marginal zone of extensive strain, while reverse and thrust faults sometimes occur in the central, compressive part of subsidence bowls. These effects all can develop when extraction of petroleum, water, and sand, plus lowering of fluid pressures, result in compression within and adjacent to producing zones, and attendant subsidence of the overlying ground. Other effects, including rebound of the ground surface, fault activation, and earthquake generation, have resulted from injection of fluid into the ground for purposes of secondary recovery, subsidence control, and disposal of fluid waste.

In virtually all instances of ground-surface deformation associated with petroleum production, the producing field has been centered on an anticlinal structure, in general relatively broad and internally faulted. The strata in the producing and overlying parts of the section typically are poorly consolidated sandstone, siltstone, claystone, and shale of low structural competence. The field generally is one with relatively large production, with significant decline of fluid pressure in the producing zones.

The conditions just cited can be contrasted with those obtained in the vicinity of DCPP site, where the rocks lie along the flank of a major syncline. They consist of tight sandstone, tuffaceous sandstone, mudstone, and shale, together with large resistant masses of tuff and diabase. Bedding dips range from near horizontal to vertical and steeply overturned, as shown in Section D-D' of Figure 2.5-7 and Section A-B of Figure 2.5-10. This structural setting is unlike any reported from areas where oil-field-associated surface deformation has occurred.

The foregoing discussion leads to the following conclusions: (a) future development of a producing oil field in the vicinity of DCPP site is highly unlikely because of unfavorable geologic conditions, and (b) geologic conditions in the site vicinity are not conducive to the occurrence of surface deformation, even if nearby petroleum production could be achieved.

As was noted in Section 2.4, the rocks underlying the site do not constitute a significant groundwater reservoir, so that future development of deep rock water wells in the vicinity is not a reasonable possibility. The considerations pertaining to surface deformation resulting from water extraction are about the same as for petroleum extraction, so there is no likelihood that DCPP site could experience artificially induced and potentially damaging subsidence, uplift, collapse, or changes in subsurface effective stress related to pore pressure phenomena.

There are no mineral deposits of economic significance in the ground underlying the site.

Although some regional warping and uplift may well be taking place in the southern Coast Ranges, such deformation cannot be sufficiently rapid and local to impose significant effects on coastal installations. Apparent elevation of the San Luis Range has increased about 100 feet relative to sea level since the cutting of the main terrace bench at least 80,000 years ago.

Expressions of deformation preserved in the bedrock at the site include minor faults, folds, and zones of blocky fracturing in sandstone and intra-bed shearing in claystone. Zones of cemented breccia also are present, as is widespread evidence of disturbance adjacent to intrusive bodies of tuff. Local weakening of the rocks in some of these zones led to some problems during construction, but these were handled by conventional techniques such as overexcavation and rock bolting. No observed features of deformation are large or continuous enough to impose significant effects on the overall performance of the site foundation.

The foundation excavations for Units 1 and 2 were extended below the zone of intense near surface weathering so that the exposed bedrock was found to be relatively fresh and firm. The principal zones of structural weakness are associated with small bodies of altered tuff and with internally sheared beds of claystone. The claystone intra-bed shear was expressed by the development of numerous slickensided shear surfaces within parts of the beds, especially in places where the claystone had locally been squeezed into pod like masses. The shearing and local squeezing clearly are expressions of the preferential occurrence of differential adjustments in the relatively weaker claystone beds during folding of the section.

The claystone beds are localized in a part of the rock section that underlies the discharge structure and extends across the southerly part of the Unit 2 turbine-generator building, thence continuing easterly, along a strike through the ground south of the Unit 2 containment. The bedding dips 48 to 75° north within this zone. Individual claystone beds range from 1/2 inch to about 6 inches in thickness, and they occur as interbeds in the sandstone-mudstone rock section.

The relationship of the claystone layers to the foundation excavation is such that they crop out in several narrow bands across the floor and walls (refer to Figures 2.5-15 and 2.5-16). Thus, the claystone bed remains confined within the rock section, except in a narrow strip at the face of the excavation. Because of the small amount of claystone mass and the geometric relationship of the steeply dipping claystone interbeds to the foundation structures, it was determined that the finished structure would not be affected by any tendency of the claystone to undergo further changes in volume.

The only area in which claystone swelling was monitored was along the north wall of the lower part of the large slot cut for the cooling water discharge structure. There are several thin (6 inches or less) claystone interbeds in the sandstone-mudstone section. Because the orientation of the bedding and the plane of the cut face differ by only about 30°, and the bedding dips steeply into the face, opening of the cut served both to remove lateral support from the rock behind the face, and also to expose the clay beds to rainfall and runoff. This apparently resulted in both load relief and hydration swelling of the newly exposed claystone, which in turn caused some outward movement of the cut face. The movement then continued as gravity creep of the locally destabilized mass of rock between the claystone beds and the free face. The movement was finally controlled by installation of drilled-in lateral tie-backs, prior to placement of the reinforced concrete wall of the discharge structure.

No evidence of unrelieved residual stresses in the bedrock was noted during the excavation or subsequent construction of the plant foundation. Isolated occurrences of temporary slope instability clearly were related to locally weathered and fractured rock, hydration swelling of claystone interbeds, and local saturation by surface runoff. The Units 1 and 2 power plant facilities are founded on physically and chemically stable bedrock.

2.5.5.2 Properties of Underlying Materials

Static and dynamic engineering properties of materials in the subsurface at the site are presented in Section 2.5.2.2.6, Site Engineering Properties.

2.5.5.3 Plot Plan

Plan views of the site indicating exploratory boring and trenching locations are presented in Figures 2.5-8 and 2.5-11 through 2.5-15. Profiles illustrating the subsurface conditions relative to the PG&E Design Class I structures are furnished in Figures 2.5-12 through 2.5-16. Discussions of engineering properties of materials and groundwater conditions are included in Section 2.5.2.2.6, Site Engineering Properties.

2.5.5.4 Soil and Rock Characteristics

Information on compressional and shear wave velocity surveys performed at the site are included in Appendices 2.5A and 2.5B of Reference 27 of Section 2.3. Values of soil modulus of elasticity and Poisson's ratio calculated from seismic measurements are presented in Table 1 of Appendix 2.5A of Reference 27 of Section 2.3, and in Figure 2.5-19. Boring and trench logs are presented in Figures 2.5-23 through 2.5-28.

2.5.5.5 Excavations and Backfill

Plan and profile drawings of excavations and backfill at the site are presented in Figures 2.5-17 and 2.5-18. The engineered backfill placement operations are discussed in Section 2.5.2.2.6.4, Engineered Backfill.

2.5.5.6 Groundwater Conditions

Groundwater conditions at the site are discussed in Section 2.4.13. The effect on foundations of PG&E Design Class I structures is discussed in Section 2.5.2.2.6, Site Engineering Properties.

2.5.5.7 Response of Soil and Rock to Dynamic Loading

Details of dynamic testing on site materials are contained in Appendices 2.5A and 2.5B of Reference 27 in Section 2.3.

2.5.5.8 Liquefaction Potential

As stated in Section 2.5.2.2.6.5, adverse hydrologic effects on foundations of PG&E Design Class I structures can be neglected due to the structures being founded on bedrock and the groundwater level lying well below final grade.

There is a small local zone of medium dense sand located northeast of the intake structure and beneath a portion of buried ASW piping that is not attached to the circulating water tunnels. This zone is susceptible to liquefaction during design basis seismic events (References 45 and 46). The associated liquefaction-induced settlements from seismic events are considered in the design of the buried ASW piping. (References 48 and 49)

2.5.5.9 Earthquake Design Basis

The earthquake design bases for the DCPP site are discussed in Section 2.5.3.9, a discussion of the design response spectra is provided in Section 2.5.3.10, and the application of the earthquake ground motions to the seismic analysis of structures, systems, and components is provided in Section 3.7. Response acceleration curves for the site resulting from Earthquake B and Earthquake D-modified are shown in Figures 2.5-20 and 2.5-21, respectively. Response spectrum curves for the Hosgri earthquake are shown in Figures 2.5-29 through 2.5-32.

2.5.5.10 Static Analysis

A discussion of the analyses performed on materials at the site is presented in Section 2.5.2.2.6, Site Engineering Properties.

2.5.5.11 Criteria and Design Methods

The criteria and methods used in evaluating subsurface material stability are presented in Section 2.5.2.2.6, Site Engineering Properties.

2.5.5.12 Techniques to Improve Subsurface Conditions

Due to the bearing of in situ rock being well in excess of the foundation pressure, no treatment of the in situ rock is necessary. Compaction specifications for backfill are presented in Section 2.5.2.2.6.4, Engineered Backfill.

2.5.6 SLOPE STABILITY

2.5.6.1 Slope Characteristics

The only slope whose failure during a DDE could adversely affect the nuclear power plant is the slope east of the building complex (refer to Figures 2.5-17, 2.5-18, and 2.5-22). To evaluate the stability of this slope, the soil and rock conditions were investigated by exploratory borings, test pits, and a thorough geological reconnaissance by the soil consultant, Harding-Lawson Associates, and was in addition to the overall geologic investigation performed by other consultants.

The slope configuration and representative locations of the subsurface conditions determined from the exploration are shown on Plates 2, 3, and 4 of Appendix 2.5C of Reference 27 of Section 2.3. Reference 44 provides further information compiled in 1997 in response to NRC questions on landslide potential.

Bedrock is exposed along the lower portions of the cut slope up to about the lower bench at elevation 115 feet. It consists of tuffaceous siltstone and fine-grained sandstone of the Monterey Formation. Terrace gravel overlies bedrock and extends to an approximate elevation of 145 feet. Stiff clays and silty soils with gravel and rock fragments constitute the upper material on the site. The upper few feet of fine-grained soils are dark brown and expansive.

No free groundwater was observed in any of the borings which were drilled in April 1971, nor was any evidence of groundwater observed in this slope during the previous years of investigation and construction of the project.

In response to an NRC request in early 1997, PG&E conducted further investigations of slope stability at the site (Reference 44). The results of the investigations showed that earthquake loading, as a result of an earthquake on the Hosgri fault zone, following periods of prolonged precipitation will not produce any significant slope failure that can impact Design Class I structures and equipment. In addition, potential slope failures under such conditions will not adversely impact other important facilities, including the raw water reservoirs, the 230 kV and 500 kV switchyards, and the intake and discharge structures. Potential landslides may temporarily block the access road at several locations. However, there is considerable room adjacent to and north of the road to reroute emergency traffic.The investigation of the cut slope included geologic mapping of the soil and rock conditions exposed on the surface of slope and existing benches. Subsurface conditions were investigated by drilling test borings and by excavating test pits in the natural slope above the plant site (refer to Figure 2.5-22). The test borings were drilled with a truck mounted, 24 inch flight auger drill rig, and the test pits were excavated with a track-mounted backhoe. Boring and Log of Test Pits 1, 2, and 3 were logged by the soil consultant; borings 2 and 3 were logged by PG&E engineering personnel. The logs of all borings were verified by the soil consultant, who examined all samples obtained from each boring. Undisturbed samples were obtained from boring 2 and each of the test pits. Because of the stiffness of the soil, hardness of the rock, and type of drilling equipment used, the undisturbed samples were obtained by pushing an 18-inch steel tube that measured 2.5 inches in outside diameter. A Sprague & Henwood split-barrel sampler containing brass liners was used to obtain undisturbed soil samples from the test pits. The brass liners measured 2.5 inches in outside diameter and 6 inches in height. Logs of the borings and pits are shown in Figures 2.5-23 through 2.5-27. The soils were classified in accordance with the Unified Soil Classification System presented in Figure 2.5-28.

2.5.6.2 Design Criteria and Analyses

Undisturbed samples of the materials encountered in pits and borings were examined by the soil consultant in the laboratory and were subsequently tested to determine the shear strength, moisture content, and dry density. Strain controlled, unconsolidated, undrained triaxial tests at field moisture were performed on the clay to evaluate the shear strength of the materials penetrated. (The samples were maintained at field moisture since adverse moisture or seepage conditions were not encountered during this investigation nor previous investigations.) The confining stress was varied in relation to depth at which the undisturbed sample was taken. The test results are presented on the boring logs and are explained by the Key to Test Data, Figure 2.5-28.

The results of strength tests were correlated with the results developed during earlier investigations of DCPP site. Mohr circles of stresses at failure (6 to 7 percent strain) were drawn for each strength test result, and failure lines were developed through points representing one-half the deviator stresses. An average C-θ strength equal to a cohesion (C) value of 1000 psf and an angle of internal friction (θ) of 29° was selected for the slope stability analysis. The analysis was checked by maintaining the angle of internal friction (θ) constant at 19° and varying the cohesion (C) from 950 psf (weakest layer) to 3400 psf (deepest and strongest layer).

Because of the presence of large gravel sizes, it was not possible to accurately determine the strength of the sand and gravel lense. However, based on tests on sand samples from other parts of the site, an angle of internal friction of 35° was selected as being the minimum available. An assumed rock strength of 5000 psf was used. This value is consistent with strength tests performed on remold rock samples from other areas of the site.

The stability of the slope was analyzed for the forces of gravity using a static method that is, the conventional method of slices. This analysis was checked using Bishop's modified method. The static method of analysis was chosen because, for the soil conditions at the site, it was judged to be more conservative than a dynamic analysis.

Because the overall strength of the rock would preclude a stability failure except along a plane of weakness which was not encountered in the borings or during the many geologic mappings of the slope, only the stability of the soil over the rock was analyzed. The strength parameters were varied as previously discussed to determine the minimum factor of safety under the most critical strength condition. For the static analysis excluding horizontal forces, the factor of safety was computed to be 3. When the additional unbalanced horizontal force of 0.4 times the weight of the soil within the critical surface combined with a vertical force of 0.26 times the weight was included, the minimum computed factor of safety was 1.1.

On the basis of the investigation and analysis, it was concluded that the slope adjacent to DCPP site would not experience instability of sufficient magnitude to damage adjacent safety-related structures.

The above conclusion is substantiated by additional field exploration, laboratory tests, and dynamic analyses using finite element techniques. Refer to Appendix 2.5C of Reference 27 in Section 2.3, Harding-Lawson Associates' report on this work.

2.5.6.3 Slope Stability for Buried Auxiliary Saltwater System Piping

A portion of the buried ASW piping for Unit 1 ascends an approximate 2:1 (horizontal/vertical) slope to the parking area near the meteorology tower (Plates 1 and 2 of Reference 47). To ensure the stability of this slope in which the ASW piping is buried, a geotechnical evaluation, considering various design basis seismic events, was performed by Harding Lawson Associates. This evaluation is described in Reference 47. Based on this evaluation, it was concluded that this slope will be stable during seismic events and that additional loads resulting from permanent deformation of the slope will not impact the buried ASW piping.

2.5.7 LONG TERM SEISMIC PROGRAM

On November 2, 1984, the NRC issued the Diablo Canyon Unit 1 Facility Operating License DPR-80. In DPR-80, License Condition Item 2.C.(7), the NRC stated, in part:

> "PG&E shall develop and implement a program to reevaluate the seismic design bases used for the Diablo Canyon Power Plant."

PG&E's reevaluation effort in response to the license condition was titled the "Long Term Seismic Program" (LTSP). PG&E prepared and submitted to the NRC the "Final Report of the Diablo Canyon Long Term Seismic Program" in July 1988 (Reference 40). Between 1988 and 1991, the NRC performed an extensive review of the Final Report, and PG&E prepared and submitted written responses to formal NRC questions. In February 1991, PG&E issued the "Addendum to the 1988 Final Report of the Diablo Canyon Long Term Seismic Program" (Reference 41). In June 1991, the NRC issued Supplement Number 34 to the Diablo Canyon Safety Evaluation Report (SSER) (Reference 42) in which the NRC concluded that PG&E had satisfied License Condition 2.C.(7) of Facility Operating License DPR-80. In the SSER the NRC requested certain confirmatory analyses from PG&E, and PG&E subsequently submitted the requested analyses. The NRC's final acceptance of the LTSP is documented in a letter to PG&E dated April 17, 1992 (Reference 43).

The LTSP contains extensive data bases and analyses that update the basic geologic and seismic information in this section of the FSAR Update. However, the LTSP material does not address or alter the current design licensing basis for the plant. In SSER 34 (Reference 42), the NRC stated, "The Staff notes that the seismic qualification basis for Diablo Canyon will continue to be the original design basis plus the Hosgri Evaluation basis, along with associated analytical methods, initial conditions, etc.”

As a condition of the NRC's close out of License Condition 2.C.(7), PG&E committed to several ongoing activities in support of the LTSP, as discussed in a public meeting between PG&E and the NRC on March 15, 1991 (Reference 53), described as the "Framework for the Future," in a letter to the NRC, dated April 17, 1991 (Reference 50), and affirmed by the NRC in SSER 34 (Reference 43). These ongoing activities include the following that are related to geology and seismology (Reference 42, Section 2.5.2.4):

(1) To continue to maintain a strong geosciences and engineering staff to keep abreast of new geological, seismic, and seismic engineering information and evaluate it with respect to its significance to Diablo Canyon.

(2) To continue to operate the strong-motion accelerometer array and the coastal seismic network.

A complete listing of bibliographic references to the LTSP reports and other documents may be found in References 40, 41 and 42.

2.5.7.1 Shoreline Fault Zone

In November 2008, as a result of the ongoing activities described in Section 2.5.7, the USGS, working in collaboration with the PG&E Geosciences Department, identified an alignment of microseismicity subparallel to the coastline adjacent to DCPP indicating the possible presence of a previously unidentified fault located approximately 1 km offshore of DCPP. The offshore region associated with this fault was subsequently named the Shoreline fault zone.

PG&E developed estimates of the 84th percentile deterministic ground motion response spectrum for earthquakes associated with the Shoreline fault zone. The results of the study of the Shoreline fault zone are documented in Reference 52. A map showing the location of the Shoreline Fault Zone is provided in Figure 2.5-36. This report includes a comparison of the updated 84th percentile deterministic response spectra with the 1991 LTSP and 1977 Hosgri earthquake response spectra. This comparison indicates that the updated deterministic response spectra are enveloped by both the 1977 Hosgri earthquake spectrum and the 1991 LTSP earthquake spectrum.

The NRC developed an independent assessment of the seismic source characteristics of the Shoreline fault and performed an independent deterministic seismic hazard assessment (References 54 and 55). The NRC concluded that their conservative estimates for the potential ground motions from the Shoreline fault are at or below the ground motions for which the DCPP has been evaluated previously and demonstrated to have a reasonable assurance of safety (i.e., the 1977 Hosgri earthquake and 1991 LTSP earthquake ground motion response spectra). The NRC stated that the "Shoreline scenario should be considered as a lesser included case under the Hosgri evaluation."

2.5.7.2 Evaluation of Updated Estimates of Ground Motion

As an outcome of the Shoreline fault zone evaluation described in Section 2.5.7.1, the process to be used for the evaluation of new/updated geological/seismological information has been developed (References 55 and 56). The new/updated geological/seismological information, resulting from the activities described in Section 2.5.7, will be evaluated using a process that is consistent with the evaluation process defined by the NRC in Reference 57.

2.5.8 Safety Evaluation

2.5.8.1 General Design Criterion 2, 1967 Performance Standards

The determination of the appropriate earthquake parameters for design of plant SSCs is addressed throughout Section 2.5, and the maximum earthquakes for the plant site are presented in Sections 2.5.3.9.1, 2.5.3.9.2, and 2.5.3.9.3. The associated design basis site free field accelerations and response spectra are presented in Sections 2.5.3.10.1, 2.5.3.10.2, and 2.5.3.10.3. The seismic design of these SSC is addressed in Section 3.7.

2.5.8.2 License Condition 2.C(7) of DCPP Facility Operating License DPR-80 Rev 44 (LTSP), Elements (1), (2) and (3)

PG&E’s reevaluation effort in response to the license condition was titled the "Long Term Seismic Program" (LTSP). PG&E prepared and submitted to the NRC the "Final Report of the Diablo Canyon Long Term Seismic Program" in July 1988. Between 1988 and 1991, the NRC performed an extensive review of the Final Report, and PG&E prepared and submitted written responses to formal NRC questions. In February 1991, PG&E issued the "Addendum to the 1988 Final Report of the Diablo Canyon Long Term Seismic Program". In June 1991, the NRC issued Supplement Number 34 to the Diablo Canyon Safety Evaluation Report (SSER) in which the NRC concluded that PG&E had satisfied License Condition 2.C(7) of Facility Operating License DPR-80. In the SSER the NRC requested certain confirmatory analyses from PG&E, and PG&E subsequently submitted the requested analyses. The NRC’s final acceptance of the LTSP is documented in a letter to PG&E dated April 17, 1992

The commitments made as a part of the Diablo Canyon Long Term Seismic Program are detailed in Section 2.5.3.9.4 and Section 2.5.7.

2.5.8.3 10 CFR Part 100, March 1966 - Reactor Site Criteria

As described in Sections 2.5.2 through 2.5.6 above, the physical characteristics of the site, including seismology and geology have been considered.

2.5.9 REFERENCES

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TABLE 2.1-1

HISTORICAL INFORMATION BELOW IS SHOWN IN ITALICS

*POPULATION TRENDS OF THE STATE OF CALIFORNIA
AND OF SAN LUIS OBISPO AND SANTA BARBARA COUNTIES*

Year	*State of California*	*San Luis Obispo County*	*Santa Barbara County*	*Notes*
1940	*6,907,387*	*33,246*	*70,555*	*(a)*
1950	*10,586,233*	*51,417*	*98,220*	*(a)*
1960	*15,717,204*	*81,044*	*168,962*	*(a)*
1970	*19,953,134*	*105,690*	*264,324*	*(a)*
1980	*23,668,562*	*155,345*	*298,660*	*(a)*
1990	*29,760,021*	*217,162*	*369,608*	*(a)*
2000	*33,871,648*	*246,681*	*399,347*	*(a)*
2010	*40,262,400*	*323,100*	*467,700*	*(b)*
2025	*48,626,052*	*426,812*	*603,966*	*(c)*

Notes: (a) U.S. Bureau of the Census
(b) State of California Department of Finance (June 2001)
(c) State of California Department of Finance Data Files (March 16, 2000)

TABLE 2.1-2

HISTORICAL INFORMATION BELOW IS SHOWN IN ITALICS

GROWTH OF PRINCIPAL COMMUNITIES WITHIN 50 MILES OF DCPP SITE

Community	*Population (1960 Census)*	*Population (1970 Census)*	*Population (1980 Census)*	*Population (1990 Census)*	*Population (2000 Census)*
Arroyo Grande	*3,291*	*7,454*	*10,350*	*14,378*	*15,851*
Atascadero	*5,983*	*10,290*	*15,930*	*23,138*	*26,411*
Grover City	*5,210*	*5,939*	*8,827*	*11,656*	*13,067*
Guadalupe	*2,614*	*3,145*	*3,629*	*5,479*	*5,659*
Lompoc	*14,415*	*25,284*	*26,267*	*37,649*	*41,103*
Morro Bay	*3,692*	*7,109*	*9,064*	*9,664*	*10,350*
Paso Robles	*6,617*	*7,168*	*9,163*	*18,583*	*24,297*
Pismo Beach	*1,762*	*4,043*	*5,364*	*7,669*	*8,551*
San Luis Obispo	*20,437*	*28,036*	*34,253*	*41,958*	*44,174*
Santa Maria	*20,027*	*32,749*	*39,685*	*61,284*	*77,423*

TABLE 2.1-3

HISTORICAL INFORMATION BELOW IS SHOWN IN ITALICS

POPULATION CENTERS OF 1,000 OR MORE WITHIN 50 MILES OF DCPP SITE

Community	*County*	*Distance and Direction From the Site*	*Population (1970 Census)*	*Population (1980 Census)*	*Population (1990 Census)*	*Population (2000 Census)*
Baywood-Los Osos	*San Luis Obispo*	*8 miles N*	*3,487*	*10,933*	*15,290*	*14,351*
Morro Bay	*San Luis Obispo*	*10 miles N*	*7,109*	*9,064*	*12,949*	*10,350*
San Luis Obispo	*San Luis Obispo*	*12 miles ENE*	*28,036*	*34,253*	*51,173*	*44,174*
Pismo Beach	*San Luis Obispo*	*13 miles ESE*	*4,043*	*5,364*	*7,699*	*8,551*
Grover City	*San Luis Obispo*	*14 miles ESE*	*5,939*	*8,827*	*11,656*	*13,067*
Oceano	*San Luis Obispo*	*15 miles ESE*	*2,564*	*4,478*	*6,169*	*7,260*
Arroyo Grande	*San Luis Obispo*	*17 miles ESE*	*7,454*	*10,350*	*14,378*	*15,851*
Cayucos	*San Luis Obispo*	*17 miles N*	*1,772*	*2,301*	*2,960*	*2,943*
Atascadero	*San Luis Obispo*	*21 miles NNE*	*10,290*	*15,930*	*23,138*	*26,411*
Guadalupe	*Santa Barbara*	*23 miles SE*	*3,145*	*3,629*	*5,479*	*5,659*
Nipomo	*San Luis Obispo*	*24 miles ESE*	*3,642*	*5,247*	*7,109*	*12,626*
Cambria	*San Luis Obispo*	*28 miles NNW*	*1,716*	*3,061*	*5,382*	*6,232*
Santa Maria	*Santa Barbara*	*29 miles SE*	*39,878*	*39,685*	*61,284*	*77,423*
Paso Robles	*San Luis Obispo*	*30 miles NNE*	*7,168*	*9,163*	*18,583*	*24,297*
Orcutt	*Santa Barbara*	*33 miles SE*	*8,500*	*1,469*	*----*	*28,830*
Vandenberg	*Santa Barbara*	*35 miles SSE*	*13,193*	*13,975*	*----*	*11,953*
Lompoc	*Santa Barbara*	*45 miles SSE*	*25,284*	*26,267*	*37,649*	*41,103*
		Total	*180,793*	*203,996*	*280,898*	*351,081*

TABLE 2.1-4
HISTORICAL INFORMATION BELOW IS SHOWN IN ITALICS
TRANSIENT POPULATION AT RECREATION AREAS
WITHIN 50 MILES OF DCPP SITE

Names	*Visitor - Days*	*Name*	*Visitor - Days*
State Parks (a)		*Los Padres National Forest [c]*	
Cayucos State Beach	*698,000*	*Agua Escondido*	*700*
Hearst San Simeon State Historical Monument	*795,000*	*American Canyon*	*800*
Montana de Oro State Park	*683,000*	*Balm of Gilead*	*200*
Morro Bay State Park	*1,129,000*	*Brookshire Springs*	*1,600*
Morro Strand State Beach	*129,000*	*Buckeye*	*200*
Pismo State Beach	*1,297,000*	*Cerro Alto*	*15,600*
San Simeon State Beach	*696,000*	*French*	*200*
W. R. Hearst Memorial State Beach	*213,000*	*Frus*	*700*
		Hi Mountain	*4,800*
County and Local Parks (b)		*Horseshoe Springs*	*1,400*
		Indians	*600*
		Kerry Canyon	*300*
		La Panza	*4,400*
Atascadero Lake	*300,000*	*Lazy Camp*	*500*
Avila Beach	*800,000*	*Miranda Pine*	*2,300*
Cambria	*15,000*	*Navajo*	*2,800*
Cayucos Beach	*918,000*	*Pine Flat*	*300*
Cuesta	*67,000*	*Pine Springs*	*400*
Lake Nacimiento	*345,000*	*Plowshare Springs*	*300*
Lopez Recreation Area	*379,000*	*Queen Bee*	*2,200*
Los Alamos Park	*45,000*	*Stony Creek*	*1,100*
Miquelito Park	*36,000*	*Sulphur Pot*	*1,000*
Nipomo	*168,000*	*Upper Lopez*	*600*
Ocean Park	*105,000*	*Wagon Flat*	*2,200*
Oceano	*95,000*		
Rancho Guadalupe Dunes Park	*48,000*		
San Antonio Reservoir	*361,000*		
San Miguel	*54,000*		
Santa Margarita Lake	*169,000*		
Shamel	*130,000*		
Templeton	*99,000*		
Waller	*450,000*		

(a) California Department of Parks and Recreation (July 1998 through June 1999).
(b) County Park Departments.
Monterey County (July 1, 1998 through June 30, 1999).
San Luis Obispo and Santa Barbara Counties (July 1998 through June 1999).
(c) Los Padres National Forest (July 1, 1971 through June 30, 1972. Current data is no longer compiled.).

TABLE 2.1-5

HISTORICAL INFORMATION BELOW IS SHOWN IN ITALICS

1985 LAND USE CENSUS
DISTANCES IN MILES FROM THE UNIT 1 CENTERLINE
TO THE NEAREST MILK ANIMAL, RESIDENCE, VEGETABLE GARDEN

22-1/2 Degree[(a)] Radial Sector	*Nearest Milk Animal*	*Nearest Residence km (mi)*	*Residence Azimuth degree*	*Nearest Vegetable Garden*
NW	*None*	*5.95 (3.7)*	*326*	*None*
NNW	*None*	*2.50 (1.55)*	*333*	*None*
N	*None*	*7.15 (4.44)*	*008*	*None*
NNE	*None*	*5.30 (3.3)*	*018.5*	*None*
NE	*None*	*8.15 (5.06)*	*037*	*None*
ENE	*None*	*7.15 (4.44)*	*062.5*	*None*
E	*None*	*7.25 (4.5)*	*096.5*	*None*
ESE	*None*	*None*	*--*	*2*
SE	*None*	*None*	*--*	*None*

(a) *Sectors not shown contain no land beyond the site boundary, other than islets not used for the purposes indicated in this table.*

TABLE 2.3-1
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERSISTENCE OF CALM AT DIABLO CANYON EXPRESSED AS PERCENTAGE OF TOTAL HOURLY OBSERVATIONS FOR WHICH THE MEAN HOURLY WIND SPEED WAS LESS THAN 1 MILE PER HOUR FOR MORE THAN 1 TO 10 HOURS

	Station E	
Consecutive Hours	*25-foot level*	*250-foot level*
1	*5.9*	*4.9*
2	*3.8*	*3.1*
3	*2.5*	*2.0*
4	*1.8*	*1.2*
5	*1.0*	*0.7*
6	*0.7*	*0.4*
7	*0.5*	*0.3*
8	*0.3*	*0.2*
9	*0.2*	*0.2*
10	*0.1*	*0.1*

TABLE 2.3-2

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

NORMALIZED ANNUAL GROUND LEVEL CONCENTRATIONS DOWNWIND FROM DCPP SITE GROUND RELEASE

Ground Level Release 10-meter wind data and Temperature Gradient (76-10 meters). For calculations with wind speeds below 1.5 meters per second stability is based on Temperature Gradient only and either building wake or wind meander is considered - with wind speed above 1.5 meters per second stability is based on measured Sigma A and Temperature Gradient with building wake only considered. Data Period May 1973 through April 1975.

Midpoint of Directions from Plant for each 22.5 degree Sector

Dilution Factors $\chi/Q \times 10^{-8}$ sec m^{-3}

Downwind Distance (km)	*NW*	*NNW*	*N*	*NNE*	*NE*	*ENE*	*E*	*ESE*	*SE*
0.8	*387.15*	*220.81*	*95.726*	*57.503*	*61.687*	*49.292*	*89.447*	*355.48*	*978.67*
5.0	*24.738*	*12.860*	*5.6009*	*3.2347*	*3.8566*	*2.9593*	*5.0400*	*21.388*	*68.029*
10.0	*9.2115*	*4.6658*	*2.0693*	*1.1535*	*1.4426*	*1.0949*	*1.8138*	*7.6144*	*25.269*
15.0	*5.3897*	*2.6719*	*1.2018*	*0.65477*	*0.84233*	*0.63167*	*1.0391*	*4.3081*	*14.651*
30.0	*2.3889*	*1.1375*	*0.52497*	*0.27935*	*0.36768*	*0.27011*	*0.45145*	*1.8261*	*6.3086*
40.0	*1.7484*	*0.82010*	*0.38341*	*0.20223*	*0.26689*	*0.19464*	*0.33046*	*1.3223*	*4.5669*
50.0	*1.3803*	*0.64135*	*0.30252*	*0.15868*	*0.20947*	*0.15208*	*0.26155*	*1.0377*	*3.5778*
80.0	*0.84914*	*0.38822*	*0.18632*	*0.09654*	*0.12747*	*0.09173*	*0.16222*	*0.63113*	*2.1699*

TABLE 2.3-3

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

MONTHLY MIXING HEIGHTS[a] AT DCPP SITE

Month	Morning	Hours of Day[b]	Afternoon	Hours of Day[b]	Evening	Hours of Day[b]	Night	Hours of Day[b]
January	500	9-11	600	12-16	700	17-19	500	20-8
February	600	9-11	600	12-17	800	18-20	600	21-8
March	700	8-10	800	11-17	1,000	18-20	800	21-7
April	600	7-10	700	11-18	800	19-21	700	22-6
May	500	7-11	600	12-20	700	21-23	600	24-6
June	500	7-10	500	11-20	600	21-23	500	24-6
July	500	7-9	500	10-20	700	21-23	500	24-6
August	500	7-9	600	10-20	700	21-23	600	24-6
September	500	8-10	600	11-19	800	20-22	600	23-7
October	500	8-10	600	11-19	800	20-22	500	23-7
November	500	8-10	600	11-17	700	18-20	500	21-7
December	500	9-11	600	12-17	700	18-20	500	21-8

(a) Mixing heights (in meters) derived from seasonal estimates given by Holzworth[6]

(b) Definition of morning, afternoon, evening, and nighttime hours. Hours are inclusive in local time.

TABLE 2.3-4

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

ESTIMATES OF RELATIVE CONCENTRATIONS (χ/Q sec m^{-3}) AT SPECIFIED LOCATIONS DOWNWIND OF DCPP SITE[(a, b)]

Direction From Site	*Distance, mi*	*χ/Q (σ_r - ΔT)*
NW	*0.5*	*3.87×10^{-6}*
326	*3.6*	*1.71×10^{-7}*
NW	*5.0*	*1.25×10^{-7}*
NNW	*0.5*	*2.21×10^{-6}*
330	*1.75*	*4.28×10^{-7}*
NNW	*5.0*	*6.37×10^{-8}*
N	*0.5*	*9.57×10^{-7}*
N	*5.0*	*2.81×10^{-8}*
NNE	*0.5*	*5.75×10^{-7}*
NNE	*3.3*	*2.93×10^{-8}*
NNE	*5.0*	*1.58×10^{-8}*
NE	*0.5*	*6.17×10^{-7}*
035	*4.9*	*1.64×10^{-8}*
NE	*5.0*	*1.95×10^{-8}*
ENE	*0.7*	*2.83×10^{-7}*
ENE	*4.7*	*1.62×10^{-8}*
ENE	*5.0*	*1.49×10^{-8}*
E	*1.0*	*2.86×10^{-7}*
E	*3.8*	*3.70×10^{-8}*
E	*5.0*	*2.48×10^{-8}*
ESE	*1.0*	*1.21×10^{-6}*
ESE	*5.0*	*1.05×10^{-7}*
SE	*1.1*	*3.10×10^{-6}*
124	*2.0*	*9.42×10^{-7}*
SE	*5.0*	*3.43×10^{-7}*

(a) Based on the models described in Reference 21 and used for Table 2.3-2 (January 1978, Amendment 57) of the DCPP FSAR.

(b) Estimates Involve Wind Data From the 10 Meter Level and Temperature Gradient From the 76m - 10m Levels.

TABLE 2.3-6
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE PRECIPITATION DATA

Mean Monthly and Annual Precipitation for Indicated Period of Record
Precipitation in Inches -- Record in Years

													Annual			Mean No. Days [a] Precipitation Greater Than 0.09 and 0.49	
STATIONS	*JAN*	*FEB*	*MAR*	*APR*	*MAY*	*JUN*	*JUL*	*AUG*	*SEP*	*OCT*	*NOV*	*DEC*	*MEAN*	*MAX*	*MIN*		
Morro Bay	*2.94*	*2.72*	*1.86*	*1.46*	*0.22*	*0.05*	*0.06*	*0.01*	*0.21*	*0.72*	*2.65*	*2.50*	*15.40*	*24.12*	*6.60*	*31*	*(10)*
Years	*14*	*14*	*14*	*14*	*14*	*14*	*13*	*13*	*13*	*12*	*13*	*13*					
Pismo Beach	*3.79*	*3.05*	*2.10*	*1.92*	*0.34*	*0.04*	*0.06*	*0.01*	*0.20*	*0.46*	*1.82*	*2.65*	*16.44*	*27.45*	*6.75*	*28*	*(11)*
Years	*11*	*11*	*11*	*11*	*11*	*11*	*12*	*12*	*12*	*12*	*12*	*12*					
San Luis Obispo	*4.72*	*4.12*	*3.34*	*1.60*	*0.51*	*0.11*	*0.01*	*0.02*	*0.20*	*0.82*	*1.72*	*3.94*	*21.11*	*48.76*	*6.93*	*30*	*(14)*
Years	*91*	*91*	*91*	*91*	*91*	*91*	*92*	*92*	*92*	*92*	*92*	*92*					
Santa Maria	*2.81*	*2.50*	*2.60*	*1.05*	*0.39*	*0.08*	*0.02*	*0.02*	*0.20*	*0.73*	*1.18*	*2.32*	*13.90*	*28.46*	*4.40*	*25*	*(7)*
Years	*69*	*69*	*69*	*68*	*68*	*68*	*68*	*69*	*69*	*69*	*69*	*69*					
Santa Margarita	*6.04*	*5.81*	*5.27*	*3.25*	*0.73*	*0.05*	*0.06*	*0.01*	*0.22*	*1.03*	*3.11*	*6.47*	*32.05*	*49.55*	*7.67*	*34*	*(21)*
Years	*20*	*20*	*20*	*20*	*21*	*21*	*21*	*21*	*20*	*21*	*21*	*21*					
Camp San Luis	*3.91*	*3.48*	*3.29*	*1.95*	*0.45*	*0.05*	*0.03*	*0.01*	*0.13*	*0.59*	*2.02*	*3.62*	*19.53*	*29.89*	*10.29*	*32*	*(13)*
Years	*18*	*18*	*18*	*18*	*18*	*18*	*17*	*18*	*18*	*18*	*18*	*19*					

(a) Values shown in parentheses are mean number of days with precipitation amounts greater than 0.49.

TABLE 2.3-7

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE TEMPERATURE DATA

Coastal Stations Morro Bay and Pismo Beach. Values Shown in Parentheses are Pismo Beach. Period of Record: Morro Bay 14 years; Pismo Beach 12 years

Temperature in °F

Months	*Mean Temperature*		*Mean Maximum*		*Mean Minimum*		*Extreme Maximum*		*Extreme Minimum*		*Mean No. of Days Above 90°F*		*Mean No. of Days Below 32°F*	
January	*52.6*	*(51.7)*	*62.0*	*(61.3)*	*43.2*	*(42.0)*	*82*	*(80)*	*30*	*(24)*	*0*	*(0)*	*1*	*(2)*
February	*53.8*	*(53.7)*	*63.0*	*(64.0)*	*44.6*	*(43.4)*	*82*	*(82)*	*30*	*(29)*	*0*	*(0)*	*0*	*(1)*
March	*53.1*	*(54.8)*	*62.5*	*(65.5)*	*43.6*	*(44.0)*	*85*	*(88)*	*32*	*(30)*	*0*	*(0)*	*0*	*(1)*
April	*54.1*	*(56.1)*	*63.5*	*(66.1)*	*44.7*	*(46.1)*	*93*	*(90)*	*33*	*(32)*	*0*	*(0)*	*0*	*(0)*
May	*55.1*	*(57.3)*	*62.9*	*(67.5)*	*47.3*	*(47.1)*	*98*	*(89)*	*33*	*(36)*	*0*	*(1)*	*0*	*(0)*
June	*57.5*	*(59.8)*	*64.4*	*(69.8)*	*50.5*	*(49.7)*	*98*	*(96)*	*40*	*(40)*	*0*	*(0)*	*0*	*(0)*
July	*58.2*	*(60.5)*	*65.1*	*(68.7)*	*51.3*	*(52.3)*	*89*	*(104)*	*34*	*(38)*	*0*	*(0)*	*0*	*(0)*
August	*55.5*	*(60.6)*	*66.7*	*(68.5)*	*52.7*	*(52.7)*	*94*	*(102)*	*45*	*(43)*	*0*	*(0)*	*0*	*(0)*
September	*60.7*	*(62.1)*	*68.8*	*(71.8)*	*52.5*	*(52.3)*	*101*	*(99)*	*43*	*(41)*	*1*	*(1)*	*0*	*(0)*
October	*60.8*	*(60.6)*	*70.5*	*(71.3)*	*51.0*	*(49.8)*	*99*	*(95)*	*38*	*(32)*	*1*	*(1)*	*0*	*(0)*
November	*57.0*	*(58.3)*	*66.0*	*(69.4)*	*47.8*	*(47.1)*	*92*	*(91)*	*32*	*(29)*	*0*	*(0)*	*0*	*(0)*
December	*52.4*	*(54.6)*	*61.6*	*(65.3)*	*43.2*	*(43.9)*	*79*	*(92)*	*29*	*(28)*	*0*	*(0)*	*1*	*(1)*
Annual	*55.9*	*(57.5)*	*64.8*	*(67.4)*	*47.7*	*(47.5)*	*101*	*(104)*	*29*	*(24)*	*2*	*(3)*	*2*	*(5)*

Inland Stations San Luis Obispo and Santa Maria. Values Shown in Parenthesis are Santa Maria. Period of Record: San Luis Obispo 66 years; Santa Maria 17 years.

Months	*Mean Temperature*		*Mean Maximum*		*Mean Minimum*		*Extreme Maximum*		*Extreme Minimum*		*Mean No. of Days Above 90°F*		*Mean No. of Days Below 32°F*	
January	*51.8*	*(50.2)*	*62.1*	*(62.3)*	*41.5*	*(38.2)*	*84*	*(82)*	*20*	*(21)*	*0*	*(0)*	*1*	*(4)*
February	*53.6*	*(51.6)*	*63.5*	*(63.3)*	*43.5*	*(39.9)*	*89*	*(87)*	*25*	*(24)*	*0*	*(0)*	*1*	*(4)*
March	*54.9*	*(53.0)*	*65.2*	*(64.3)*	*44.8*	*(41.6)*	*93*	*(88)*	*28*	*(29)*	*0*	*(0)*	*0*	*(1)*
April	*56.7*	*(55.3)*	*67.6*	*(66.3)*	*46.0*	*(44.3)*	*97*	*(97)*	*30*	*(31)*	*0*	*(0)*	*0*	*(0)*
May	*58.6*	*(57.2)*	*69.3*	*(67.7)*	*47.8*	*(46.8)*	*100*	*(93)*	*34*	*(34)*	*0*	*(0)*	*0*	*(0)*
June	*62.0*	*(59.8)*	*73.6*	*(70.2)*	*50.2*	*(49.4)*	*110*	*(95)*	*37*	*(36)*	*1*	*(0)*	*0*	*(0)*
July	*64.6*	*(62.0)*	*76.9*	*(71.6)*	*52.0*	*(52.4)*	*106*	*(104)*	*42*	*(43)*	*2*	*(0)*	*0*	*(0)*
August	*64.7*	*(61.9)*	*77.0*	*(71.5)*	*52.4*	*(52.2)*	*107*	*(93)*	*40*	*(43)*	*1*	*(0)*	*0*	*(0)*
September	*64.9*	*(62.7)*	*77.8*	*(74.1)*	*52.0*	*(51.3)*	*110*	*(102)*	*38*	*(36)*	*4*	*(1)*	*0*	*(0)*
October	*62.5*	*(60.0)*	*75.3*	*(72.6)*	*49.8*	*(47.4)*	*103*	*(103)*	*35*	*(30)*	*2*	*(1)*	*0*	*(0)*
November	*58.3*	*(55.8)*	*70.7*	*(69.7)*	*45.9*	*(42.0)*	*96*	*(93)*	*24*	*(25)*	*0*	*(0)*	*0*	*(1)*
December	*53.5*	*(52.2)*	*64.4*	*(64.8)*	*42.8*	*(39.6)*	*92*	*(90)*	*24*	*(26)*	*0*	*(0)*	*0*	*(3)*
Annual	*58.8*	*(56.8)*	*70.3*	*(68.2)*	*47.4*	*(45.4)*	*110*	*(104)*	*20*	*(21)*	*10*	*(2)*	*2*	*(13)*

Air Weather Service - Directorate of Climatology
Data Control Division

Surface Winds

TABLE 2.3-8

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*; *Santa Maria, California WBAS* — *Station Name*; *All* — *Month*; Class

Jan 1948 - Jun 1958
Years

Speed Dir.	1-3 Knots	4-10 Knots	11-21 Knots	22-27 Knots	28-40 Knots	41 Knots and Over	Total 4 Knots and Over	Total No. of Observations %	Total No. of Observations Obs	Sum of Speed	Mean Wind Speed, Knots
N	0.5	1.1	0.7				1.8	2.2	2095	17809	8.5
NNE	0.3	1.0	0.9	0.1			2.0	2.3	2160	21637	10.0
NE	0.8	1.2	0.5	0.1			1.8	2.6	2412	18236	7.6
ENE	0.5	1.2	0.1				1.3	1.8	1637	8937	5.5
E	1.2	5.2	0.2				5.5	6.7	6230	37649	6.0
ESE	0.8	2.9	0.3				3.3	4.1	3814	24253	6.4
SE	0.8	2.9	0.8	0.1			3.8	4.6	4295	33136	7.7
SSE	0.4	0.9	0.5				1.4	1.8	1644	13935	8.5
S	0.5	0.8	0.2				1.0	1.6	1455	9343	6.4
SSW	0.4	0.7	0.2				0.9	1.3	1205	7848	6.5
SW	0.9	2.0	0.3				2.4	3.3	3119	18690	6.0
WSW	0.9	3.3	0.9				4.2	5.1	4737	34900	7.4
W	1.6	9.4	4.4	0.1			13.8	15.5	14446	127257	8.8
WNW	1.2	9.8	5.4	0.1			15.3	16.5	15458	142383	9.2
NW	0.9	4.5	1.2				5.8	6.7	6221	46750	7.5
NNW	0.3	1.0	0.2				1.1	1.5	1375	9091	6.6
CALM								21.8	20397		
TOTALS	12.0	47.9	16.8	0.6	0.1		65.3	100.0	92700	571854	6.1

Air Weather Service - Directorate of Climatology
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Surface Winds

TABLE 2.3-9

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station* | *Santa Maria, California WBAS* — *Station Name* | *Jan* — *Month* | Class

48 49 50 51 52 53 54 55 56 57 58
Years

Speed Dir.	1-3 Knots	4-10 Knots	11-21 Knots	22-27 Knots	28-40 Knots	41 Knots and Over	Total 4 Knots and Over	Total No. of Observations %	Total No. of Observations Obs.	Sum of Speed	Mean Wind Speed, Knots
N	*0.4*	*1.9*	*1.4*	*0.1*			*3.3*	*3.7*	*300*	*2892*	*9.6*
NNE	*0.3*	*2.2*	*1.6*	*0.2*			*4.0*	*4.3*	*350*	*3671*	*10.5*
NE	*0.9*	*2.3*	*1.2*	*0.2*			*3.8*	*4.7*	*383*	*3408*	*8.9*
ENE	*0.7*	*2.3*	*0.1*				*2.4*	*3.1*	*254*	*1476*	*5.8*
E	*1.7*	*10.5*	*0.5*				*11.0*	*12.7*	*1042*	*6790*	*6.5*
ESE	*1.4*	*5.6*	*0.9*				*6.5*	*7.9*	*644*	*4443*	*6.9*
SE	*1.0*	*6.1*	*1.8*	*0.1*			*8.1*	*9.1*	*743*	*6108*	*8.2*
SSE	*0.4*	*1.3*	*1.0*	*0.1*			*2.4*	*2.8*	*229*	*2209*	*9.6*
S	*0.4*	*1.0*	*0.4*				*1.4*	*1.8*	*148*	*1070*	*7.2*
SSW	*0.3*	*0.7*	*0.4*				*1.1*	*1.4*	*115*	*964*	*8.4*
SW	*0.7*	*1.4*	*0.3*				*1.8*	*2.5*	*201*	*1308*	*6.5*
WSW	*0.5*	*1.6*	*0.4*				*1.9*	*2.4*	*196*	*1327*	*6.8*
W	*1.1*	*6.0*	*1.6*				*7.6*	*8.7*	*712*	*5493*	*7.7*
WNW	*0.7*	*6.7*	*1.8*				*8.5*	*9.3*	*757*	*6090*	*8.0*
NW	*0.6*	*4.0*	*0.7*				*4.7*	*5.4*	*439*	*3165*	*7.2*
NNW	*0.2*	*1.5*	*0.3*				*1.8*	*2.0*	*164*	*1207*	*7.4*
CALM								*18.3*	*1501*		
TOTALS	*11.4*	*54.9*	*14.5*	*0.8*			*70.2*	*100.0*	*8178*	*51621*	*6.3*

Air Weather Service - Directorate of Climatology
Data Control Division

Surface Winds

TABLE 2.3-10

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*

Santa Maria, California WBAS — *Station Name*

Feb — *Month*

Class

48 49 50 51 52 53 54 55 56 57 58

Years

Speed Dir.	*1-3 Knots*	*4-10 Knots*	*11-21 Knots*	*22-27 Knots*	*28-40 Knots*	*41 Knots and Over*	*Total 4 Knots and Over*	*Total No. of Observations %*	*Total No. of Observations Obs.*	*Sum of Speed*	*Mean Wind Speed, Knots*
N	*0.6*	*2.1*	*1.6*	*0.1*			*3.8*	*4.4*	*325*	*3152*	*9.7*
NNE	*0.4*	*1.4*	*1.5*	*0.2*			*3.1*	*3.5*	*259*	*2822*	*10.9*
NE	*0.9*	*2.2*	*1.0*				*3.3*	*4.2*	*312*	*2458*	*7.9*
ENE	*0.7*	*2.4*					*2.5*	*3.2*	*240*	*1419*	*5.9*
E	*1.3*	*9.6*	*0.5*				*10.2*	*11.5*	*857*	*5626*	*6.6*
ESE	*1.2*	*4.6*	*0.4*	*0.1*			*5.1*	*6.3*	*472*	*3078*	*6.5*
SE	*1.0*	*4.5*	*1.5*	*0.1*			*6.0*	*7.0*	*524*	*4300*	*8.2*
SSE	*0.3*	*1.1*	*1.0*	*0.1*			*2.1*	*2.5*	*183*	*1758*	*9.6*
S	*0.5*	*1.0*	*0.5*				*1.6*	*2.0*	*152*	*1140*	*7.5*
SSW	*0.3*	*0.9*	*0.4*				*1.2*	*1.5*	*112*	*0841*	*7.5*
SW	*0.5*	*1.7*	*0.4*				*2.2*	*2.7*	*201*	*1393*	*6.9*
WSW	*0.4*	*2.5*	*0.6*				*3.1*	*3.5*	*260*	*1951*	*7.5*
W	*0.7*	*6.9*	*2.9*	*0.1*			*9.8*	*10.5*	*787*	*6984*	*8.9*
WNW	*0.7*	*9.8*					*10.5*	*11.3*	*841*	*7341*	*8.7*
NW	*0.8*	*4.5*	*1.0*				*5.5*	*6.3*	*470*	*3511*	*7.5*
NWW	*0.3*	*5.5*	*6.3*				*2.0*	*2.3*	*170*	*1332*	*7.8*
CALM								*17.4*	*1297*		
TOTALS	*10.6*	*54.4*	*17.2*	*0.5*			*72.0*	*100.0*	*7462*	*49106*	*6.6*

Air Weather Service- Directorate of Climatology
Data Control Division

Surface Winds

TABLE 2.3-11

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*; *Santa Maria, California WBAS* — *Station Name*; *Mar* — *Month*; *Class*

48 49 50 51 52 53 54 55 56 57 58
Years

Speed Dir.	1-3 Knots	4-10 Knots	11-21 Knots	22-27 Knots	28-40 Knots	41 Knots and Over	Total 4 Knots and Over	Total No. of Observations %	Total No. of Observations Obs.	Sum of Speed	Mean Wind Speed, Knots
N	0.5	1.5	0.9				2.4	2.9	239	2069	8.7
NNE	0.4	1.4	1.6	0.1			3.0	3.4	281	2894	10.3
NE	0.8	1.4	0.7	0.1			2.2	3.0	249	2015	8.1
ENE	0.5	1.4	0.0				1.4	1.9	153	807	5.3
E	1.0	6.2	0.2				6.4	7.4	605	3667	6.1
ESE	0.8	4.2	0.5				4.7	5.5	448	3059	6.8
SE	0.9	3.8	1.5	0.2	0.1		5.5	6.4	524	4696	9.0
SSE	0.6	1.2	0.9	0.1	0.1		2.4	3.0	242	2502	10.3
S	0.4	0.8	0.4				1.3	1.7	140	1188	8.5
SSW	0.4	0.8	0.3	0.1			1.2	1.6	129	1029	8.0
SW	0.8	1.9	0.6				2.5	3.3	266	1898	7.1
WSW	0.4	2.9	1.0				4.0	4.4	359	2917	8.1
W	1.1	6.1	4.8	0.2			11.2	12.2	999	10067	10.1
WNW	0.9	8.6	7.4	0.1			16.1	17.0	1391	14436	10.3
NW	0.8	5.3	1.8				7.1	7.9	645	5282	8.2
NNW	0.3	1.3	0.3				1.6	1.8	148	1078	7.3
CALM								16.7	1365		
TOTALS	10.4	48.7	22.9	1.0	0.3		73.0	100.0	8183	59504	7.3

Air Weather Service - Directorate of Climatology
Data Control Division

Surface Winds

TABLE 2.3-12

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*
Santa Maria, California WBAS — *Station Name*
Apr — *Month*
Class

48 49 50 51 52 53 54 55 56 57 58
Years

Speed Dir.	*1-3 Knots*	*4-10 Knots*	*11-21 Knots*	*22-27 Knots*	*28-40 Knots*	*41 Knots and Over*	*Total 4 Knots and Over*	*Total No. of Observations %*	*Total No. of Observations Obs.*	*Sum of Speed*	*Mean Wind Speed, Knots*
N	*0.4*	*0.9*	*0.4*				*1.4*	*1.7*	*138*	*1061*	*7.7*
NNE	*0.2*	*0.7*	*0.7*				*1.5*	*1.7*	*133*	*1322*	*9.9*
NE	*0.9*	*0.9*	*0.2*				*1.1*	*2.0*	*156*	*822*	*5.3*
ENE	*0.4*	*0.4*	*0.0*				*0.4*	*0.9*	*68*	*282*	*4.1*
E	*1.1*	*3.3*	*0.1*				*3.4*	*4.5*	*356*	*1814*	*5.1*
ESE	*0.6*	*2.5*	*0.2*				*2.7*	*3.4*	*266*	*1564*	*5.9*
SE	*0.8*	*3.2*	*1.1*	*0.1*			*4.4*	*5.2*	*409*	*3269*	*8.0*
SSE	*0.5*	*1.2*	*0.6*				*1.9*	*2.4*	*188*	*1543*	*8.2*
S	*0.5*	*1.1*	*0.4*				*1.5*	*1.9*	*154*	*1118*	*7.3*
SSW	*0.5*	*0.8*	*0.3*				*1.1*	*1.6*	*123*	*870*	*7.1*
SW	*0.8*	*2.8*	*0.9*				*3.7*	*4.4*	*352*	*2651*	*7.5*
WSW	*0.7*	*3.2*	*1.3*				*4.5*	*5.1*	*408*	*3280*	*8.0*
W	*1.7*	*9.0*	*5.5*	*0.2*			*14.7*	*16.3*	*1294*	*12182*	*9.4*
WNW	*1.3*	*10.5*	*7.9*	*0.2*			*18.7*	*20.0*	*1583*	*15873*	*10.0*
NW	*1.0*	*5.1*	*1.3*				*6.4*	*7.4*	*587*	*4502*	*7.7*
NNW	*0.3*	*1.1*	*0.1*				*1.2*	*1.5*	*117*	*731*	*6.2*
CALM								*20.0*	*1588*		
TOTALS	*11.4*	*46.6*	*21.0*	*0.7*			*68.6*	*100.0*	*7920*	*52884*	*6.7*

Air Weather Service - Directorate of Climatology
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Surface Winds

TABLE 2.3-13

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*; *Santa Maria, California WBAS* — *Station Name*; *May* — *Month*; *Class*

48 49 50 51 52 53 54 55 56 57 58
Years

Speed Dir.	*1-3 Knots*	*4-10 Knots*	*11-21 Knots*	*22-27 Knots*	*28-40 Knots*	*41 Knots and Over*	*Total 4 Knots and Over*	*Total No. of Observations %*	*Total No. of Observations Obs.*	*Sum of Speed*	*Mean Wind Speed, Knots*
N	*0.4*	*0.5*	*0.3*				*0.8*	*1.2*	*102*	*763*	*7.5*
NNE	*0.2*	*0.5*	*0.2*				*0.7*	*0.9*	*75*	*509*	*6.8*
NE	*0.5*	*0.7*	*0.2*				*0.9*	*1.3*	*107*	*682*	*6.4*
ENE	*0.4*	*0.6*					*0.7*	*1.1*	*87*	*421*	*4.8*
E	*0.7*	*2.2*					*2.2*	*3.0*	*244*	*1298*	*5.3*
ESE	*0.7*	*1.4*	*0.1*				*1.4*	*2.1*	*173*	*898*	*5.2*
SE	*0.7*	*1.6*	*0.1*				*1.7*	*2.5*	*201*	*1128*	*5.6*
SSE	*0.3*	*0.6*	*0.1*				*0.7*	*1.0*	*83*	*508*	*6.1*
S	*0.7*	*0.9*	*0.2*				*1.1*	*1.8*	*146*	*850*	*5.8*
SSW	*0.5*	*1.1*	*0.2*				*1.2*	*1.7*	*139*	*820*	*5.9*
SW	*1.0*	*2.8*	*0.4*				*3.3*	*4.3*	*352*	*2071*	*5.9*
WSW	*1.1*	*4.4*	*2.0*				*6.5*	*7.5*	*615*	*5056*	*8.2*
W	*1.6*	*10.7*	*7.7*	*0.3*			*18.7*	*20.3*	*1664*	*16546*	*9.9*
WNW	*1.3*	*11.7*	*7.9*	*0.2*			*19.9*	*21.1*	*1730*	*16949*	*9.8*
NW	*1.0*	*4.3*	*1.8*				*6.1*	*7.1*	*581*	*4684*	*8.1*
NNW	*0.4*	*0.7*	*0.1*				*0.8*	*1.2*	*95*	*511*	*5.4*
CALM								*21.9*	*1789*		
TOTALS	*11.5*	*44.6*	*21.5*	*0.6*			*66.7*	*100.0*	*8183*	*53694*	*6.6*

Air Weather Service - Directorate of Climatology
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Surface Winds

TABLE 2.3-14

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*; *Santa Maria, California WBAS* — *Station Name*; *June* — *Month*; Class

48 49 50 51 52 53 54 55 56 57 58
Years

Speed Dir.	1-3 Knots	4-10 Knots	11-21 Knots	22-27 Knots	28-40 Knots	41 Knots and Over	Total 4 Knots and Over	Total No. of Observations %	Total No. of Observations Obs.	Sum of Speed	Mean Wind Speed, Knots
N	0.4	0.5	0.1				0.5	0.9	73	361	4.9
NNE	0.2	0.2	0.2				0.4	0.6	49	378	7.7
NE	0.5	0.4	0.1				0.5	1.0	83	455	5.5
ENE	0.3	0.2					0.2	0.5	43	160	3.7
E	1.0	1.3					1.4	2.3	185	780	4.2
ESE	0.4	0.6					0.6	1.0	78	326	4.2
SE	0.6	1.1					1.1	1.7	133	610	4.6
SSE	0.3	0.4					0.4	0.6	51	241	4.7
S	0.5	0.6					0.7	1.1	89	414	4.7
SSW	0.4	0.7	0.1				0.9	1.2	97	596	6.1
SW	1.4	2.7	0.4				3.1	4.5	357	2029	5.7
WSW	0.9	3.9	1.8				5.8	6.7	528	4395	8.3
W	2.1	12.3	8.0	0.1			20.4	22.5	1782	16856	9.5
WNW	1.7	13.5	10.0	0.2			23.6	25.3	2004	19743	9.9
NW	0.9	4.9	1.8				6.7	7.6	605	4861	8.0
NNW	0.3	0.3	0.1				0.4	0.7	52	290	5.6
CALM								21.6	1710		
TOTALS	11.8	43.9	22.6	0.3			66.6	100.0	7919	52495	6.6

Air Weather Service - Directorate of Climatology
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Surface Winds

TABLE 2.3-15

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*; *Santa Maria, California WBAS* — *Station Name*; *July* — *Month*; *Class*

48 49 50 51 52 53 54 55 56 57 58 — *Years*

Speed Dir.	1-3 Knots	4-10 Knots	11-21 Knots	22-27 Knots	28-40 Knots	41 Knots and Over	Total 4 Knots and Over	Total No. of Observations %	Total No. of Observations Obs.	Sum of Speed	Mean Wind Speed, Knots
N	0.5	0.6					0.6	1.1	89	352	4.0
NNE	0.3	0.4					0.4	0.7	58	246	4.2
NE	0.4	0.5					0.5	0.9	74	277	3.7
ENE	0.3	0.2					0.2	0.5	40	146	3.7
E	0.4	0.7					0.7	1.2	96	403	4.2
ESE	0.3	0.3					0.3	0.6	52	196	3.8
SE	0.3	0.7					0.7	1.0	84	370	4.4
SSE	0.1	0.3					0.3	0.5	38	175	4.6
S	0.5	0.5					0.5	1.0	83	314	3.8
SSW	0.5	0.5					0.5	1.0	82	334	4.1
SW	1.3	2.1	0.1				2.2	3.5	285	1410	4.9
WSW	1.6	4.3	0.6				4.9	6.5	533	3422	6.4
W	2.7	14.5	5.6				20.1	22.8	1863	15557	8.4
WNW	2.2	14.4	6.7				21.1	23.3	1906	16377	8.6
NW	1.2	5.2	1.5				6.7	7.9	646	4697	7.3
NNW	0.4	0.5					0.5	0.9	76	313	4.1
CALM								26.6	2177		
TOTALS	12.9	45.8	14.6				60.4	100.0	8182	44589	5.4

Air Weather Service - Directorate of Climatology
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Surface Winds

TABLE 2.3-16

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*
Santa Maria, California WBAS — *Station Name*
Aug — *Month*
Class
48 49 50 51 52 53 54 55 56 57
Years

Speed Dir.	*1-3 Knots*	*4-10 Knots*	*11-21 Knots*	*22-27 Knots*	*28-40 Knots*	*41 Knots and Over*	*Total 4 Knots and Over*	*Total No. of Observations %*	*Total No. of Observations Obs.*	*Sum of Speed*	*Mean Wind Speed, Knots*
N	*0.5*	*0.6*					*0.6*	*1.1*	*79*	*311*	*3.9*
NNE	*0.2*	*0.2*					*0.2*	*0.5*	*36*	*140*	*3.9*
NE	*0.5*	*0.4*					*0.4*	*0.9*	*64*	*228*	*3.6*
ENE	*0.3*	*0.5*					*0.5*	*0.7*	*55*	*235*	*4.3*
E	*0.4*	*0.7*					*0.7*	*1.1*	*83*	*354*	*4.3*
ESE	*0.3*	*0.6*					*0.6*	*0.9*	*69*	*287*	*4.2*
SE	*0.5*	*1.2*					*1.2*	*1.7*	*128*	*578*	*4.5*
SSE	*0.4*	*0.5*					*0.5*	*0.9*	*68*	*286*	*4.2*
S	*0.7*	*0.6*					*0.6*	*1.2*	*91*	*348*	*3.8*
SSW	*0.4*	*0.5*					*0.5*	*0.9*	*67*	*274*	*4.1*
SW	*1.5*	*3.2*	*0.1*				*3.3*	*4.8*	*356*	*1755*	*4.9*
WSW	*1.5*	*5.2*	*1.1*				*6.3*	*7.8*	*579*	*4012*	*6.9*
W	*2.1*	*14.9*	*5.5*				*20.4*	*22.5*	*1676*	*14120*	*8.4*
WNW	*1.1*	*12.5*	*4.8*				*17.3*	*18.4*	*1369*	*11893*	*8.7*
NW	*1.1*	*4.7*	*1.2*				*5.9*	*7.0*	*522*	*3765*	*7.2*
NNW	*0.4*	*0.4*					*0.4*	*0.8*	*60*	*251*	*4.2*
CALM								*28.7*	*2132*		
TOTALS	*11.8*	*46.7*	*12.8*				*59.5*	*100.0*	*7434*	*38837*	*5.2*

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Surface Winds

TABLE 2.3-17

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*
Santa Maria, California WBAS — *Station Name*
Sept — *Month*
Class
48 49 50 51 52 53 54 55 56 57 — *Years*

Speed Dir.	1-3 Knots	4-10 Knots	11-21 Knots	22-27 Knots	28-40 Knots	41 Knots and Over	Total 4 Knots and Over	Total No. of Observations %	Total No. of Observations Obs.	Sum of Speed	Mean Wind Speed, Knots
N	0.6	0.5	0.1				0.7	1.2	89	474	5.3
NNE	0.5	0.5	0.1				0.7	1.2	85	461	5.4
NE	0.7	0.8	0.1				0.9	1.6	118	574	4.9
ENE	0.3	0.7					0.8	1.1	77	379	4.9
E	0.9	2.3					2.4	3.3	239	1191	5.0
ESE	0.7	1.4					1.4	2.1	154	716	4.6
SE	1.0	1.6					1.7	2.6	189	874	4.6
SSE	0.3	0.6					0.6	1.0	69	320	4.6
S	0.6	0.8					0.8	1.4	101	436	4.3
SSW	0.5	0.5					0.5	1.0	71	309	4.4
SW	1.2	2.1	0.1				2.2	3.4	244	1240	5.1
WSW	1.3	4.4	0.9				5.3	6.6	473	3287	6.9
W	2.1	12.7	4.6	0.1			17.3	19.4	1394	11723	8.4
WNW	1.3	10.3	5.0	0.1			15.4	16.7	1202	10714	8.9
NW	1.1	4.3	0.9				5.2	6.3	452	3068	6.8
NNW	0.5	0.5					0.5	1.0	74	342	4.6
CALM								30.1	2166		
TOTALS	13.6	44.0	12.1	0.2			56.3	100.0	7197	36108	5.0

Air Weather Service - Directorate of Climatology
Data Control Division

Surface Winds

TABLE 2.3-18

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*

Santa Maria, California WBAS — *Station Name*

Oct — *Month*

Class

48 49 50 51 52 53 54 55 56 57
Years

Speed Dir.	*1-3 Knots*	*4-10 Knots*	*11-21 Knots*	*22-27 Knots*	*28-40 Knots*	*41 Knots and Over*	*Total 4 Knots and Over*	*Total No. of Observations %*	*Total No. of Observations Obs.*	*Sum of Speed*	*Mean Wind Speed, Knots*
N	*0.4*	*0.7*	*0.5*				*1.2*	*1.6*	*119*	*1046*	*8.8*
NNE	*0.4*	*0.9*	*0.6*	*0.1*			*1.7*	*2.1*	*157*	*1466*	*9.3*
NE	*1.1*	*1.4*	*0.7*	*0.1*			*2.2*	*3.3*	*247*	*1775*	*7.2*
ENE	*0.5*	*1.3*					*1.3*	*1.8*	*132*	*736*	*5.6*
E	*1.7*	*6.0*	*0.2*				*6.3*	*8.0*	*592*	*3348*	*5.7*
ESE	*1.2*	*3.4*	*0.1*				*3.5*	*4.7*	*347*	*1921*	*5.5*
SE	*0.9*	*3.3*	*0.3*				*3.6*	*4.5*	*335*	*2030*	*6.1*
SSE	*0.4*	*0.8*	*0.2*				*1.0*	*1.4*	*102*	*679*	*6.7*
S	*0.5*	*0.7*	*0.3*				*1.0*	*1.5*	*112*	*726*	*6.5*
SSW	*0.5*	*0.5*	*0.2*				*0.7*	*1.1*	*84*	*496*	*5.9*
SW	*1.1*	*1.8*	*0.2*				*1.9*	*3.0*	*223*	*1173*	*5.3*
WSW	*1.0*	*3.2*	*0.7*				*3.9*	*4.9*	*363*	*2503*	*6.9*
W	*2.1*	*9.1*	*3.7*				*12.8*	*15.0*	*1112*	*9125*	*8.2*
WNW	*1.3*	*8.6*	*4.8*	*0.2*			*13.6*	*14.9*	*1109*	*10269*	*9.3*
NW	*0.9*	*4.2*	*1.0*				*5.2*	*6.1*	*454*	*3204*	*7.1*
NNW	*0.3*	*0.6*	*0.1*				*0.7*	*1.1*	*79*	*470*	*5.9*
CALM								*25.0*	*1856*		
TOTALS	*14.3*	*46.5*	*13.7*	*0.5*	*0.0*		*60.7*	*100.0*	*7423*	*40967*	*5.5*

Air Weather Service - Directorate of Climatology
Data Control Division

Surface Winds

TABLE 2.3-19

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*
Santa Maria, California WBAS — *Station Name*
Nov — *Month*
Class
48 49 50 51 52 53 54 55 56 57 — *Years*

Speed Dir.	1-3 Knots	4-10 Knots	11-21 Knots	22-27 Knots	28-40 Knots	41 Knots and Over	Total 4 Knots and Over	Total No. of Observations %	Total No. of Observations Obs.	Sum of Speed	Mean Wind Speed, Knots
N	0.5	1.4	1.2	0.1			2.6	3.1	224	2109	9.4
NNE	0.5	1.7	1.7	0.3			3.7	4.2	302	3374	11.2
NE	0.8	1.8	0.8	0.4	0.2		3.2	4.0	288	2840	9.9
ENE	0.7	2.1					2.1	2.8	204	1125	5.5
E	2.1	10.2	0.6				10.8	13.0	933	6008	6.4
ESE	1.1	5.3	0.8				6.1	7.2	516	3491	6.8
SE	1.0	3.9	0.9	0.2			5.0	6.0	433	3400	7.9
SSE	0.5	1.0	0.5				1.5	2.1	148	1190	8.0
S	0.5	0.9	0.3				1.2	1.7	120	795	6.6
SSW	0.4	0.5	0.3				0.9	1.3	96	733	.6
SW	0.6	1.0	0.3				1.3	2.0	141	947	.7
WSW	0.6	2.1	0.3				2.4	3.0	219	1418	6.5
W	1.4	6.6	1.4				8.1	9.4	678	5104	7.5
WNW	1.1	7.6	3.3				10.9	12.1	868	7440	8.6
NW	0.7	3.9	0.7				4.6	5.3	379	2732	7.2
NNW	0.3	1.4	0.4				1.8	2.1	148	1127	7.6
CALM								20.7	1490		
TOTALS	13.0	51.4	13.7	0.9	0.2		66.3	100.0	7187	43833	6.1

Air Weather Service - Directorate of Climatology
Data Control Division

Surface Winds

TABLE 2.3-20

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS

23273 — *Station*; *Santa Maria, California WBAS* — *Station Name*; *Dec* — *Month*; *Class*

48 49 50 51 52 53 54 55 56 57
Years

Speed Dir.	1-3 Knots	4-10 Knots	11-21 Knots	22-27 Knots	28-40 Knots	41 Knots and Over	Total 4 Knots and Over	Total No. of Observations %	Total No. of Observations Obs.	Sum of Speed	Mean Wind Speed, Knots
N	0.5	2.0	1.6	0.1			3.8	4.3	318	3219	10.1
NNE	0.4	1.9	2.4	0.3	0.1		4.6	5.0	375	4354	11.6
NE	1.1	2.1	1.1	0.2			3.3	4.5	331	2702	8.2
ENE	1.0	2.6	0.2				2.8	3.8	284	1751	6.2
E	2.4	10.5	0.6				11.1	13.4	998	6370	6.4
ESE	1.3	5.6	1.1				6.7	8.0	595	4274	7.2
SE	0.9	4.5	2.1	0.3	0.1		7.1	8.0	592	5773	9.8
SSE	0.5	1.4	1.1	0.2	0.1		2.8	3.3	243	2524	10.4
S	0.5	0.8	0.3				1.1	1.6	119	944	7.9
SSW	0.4	0.6	0.2				0.8	1.2	90	582	6.5
SW	0.6	1.0	0.2				1.3	1.9	141	815	5.8
WSW	0.7	1.7	0.4				2.1	2.7	204	1332	6.5
W	1.1	4.4	1.0				5.4	6.5	485	3500	7.2
WNW	1.0	6.8	1.6				8.4	9.4	698	5358	7.7
NW	0.7	4.4	0.8				5.2	5.9	441	3279	7.4
NNW	0.4	1.8	0.4				2.2	2.6	192	1439	7.5
CALM								17.8	1326		
TOTALS	13.5	52.2	15.0	1.2	0.3		68.7	100.0	7432	48216	6.5

TABLE 2.3-21

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

EXTREMELY UNSTABLE (ΔT less than -1.9°C/100M)

DIABLO CANYON PERIOD OF RECORD JULY 1967-OCTOBER 1969

FREQUENCY TABLE

			Wind Speed, mph						
Direction	*Calm*	*2.0*	*5.1*	*9.6*	*15.1*	*21.1*	*39.6*	*Row Sums*	*Row Avg*
CALM	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*0.0*
22.50	*0*	*1*	*7*	*6*	*0*	*0*	*0*	*14*	*7.4*
45.00	*0*	*0*	*1*	*3*	*1*	*0*	*0*	*5*	*9.6*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*1*	*2*	*0*	*0*	*0*	*0*	*3*	*3.7*
112.50	*0*	*0*	*1*	*3*	*11*	*12*	*9*	*36*	*19.9*
135.00	*0*	*2*	*3*	*12*	*24*	*12*	*14*	*67*	*17.6*
157.50	*0*	*2*	*5*	*7*	*6*	*10*	*4*	*34*	*15.7*
180.00	*0*	*3*	*5*	*5*	*4*	*7*	*3*	*27*	*13.2*
202.50	*0*	*0*	*2*	*4*	*1*	*0*	*0*	*7*	*9.3*
225.00	*0*	*1*	*1*	*3*	*3*	*0*	*0*	*8*	*10.4*
247.50	*0*	*13*	*1*	*1*	*3*	*0*	*0*	*18*	*4.8*
270.00	*0*	*15*	*7*	*1*	*3*	*0*	*0*	*26*	*4.7*
292.50	*0*	*3*	*12*	*6*	*12*	*2*	*0*	*35*	*10.2*
315.00	*0*	*2*	*4*	*24*	*39*	*24*	*7*	*100*	*16.0*
337.50	*0*	*0*	*1*	*6*	*6*	*5*	*3*	*21*	*16.3*
360.00	*0*	*0*	*1*	*1*	*2*	*0*	*0*	*4*	*11.0*
Column Sums	*3*	*43*	*53*	*82*	*15*	*72*	*40*	*408*	*13.9*

TABLE 2.3-22
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
MODERATELY UNSTABLE (ΔT -1.9 to -1.7°C/100M)
DIABLO CANYON PERIOD OF RECORD JULY 1967-OCTOBER 1969

FREQUENCY TABLE

Direction	*Calm*	*2.0*	*Wind Speed, mph 5.1*	*9.6*	*15.1*	*21.1*	*39.6*	*Row Sums*	*Row Avg*
CALM	*5*	*0*	*0*	*0*	*0*	*0*	*0*	*5*	*0.0*
22.50	*0*	*0*	*1*	*1*	*0*	*0*	*0*	*2*	*8.0*
45.00	*0*	*0*	*0*	*2*	*0*	*0*	*0*	*2*	*10.0*
67.50	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*1*	*12.0*
90.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.50	*0*	*0*	*0*	*1*	*4*	*1*	*0*	*6*	*15.5*
135.00	*0*	*1*	*1*	*3*	*2*	*0*	*1*	*8*	*13.0*
157.50	*0*	*0*	*3*	*4*	*0*	*0*	*8*	*15*	*21.3*
180.00	*0*	*2*	*0*	*2*	*1*	*1*	*2*	*8*	*14.2*
202.50	*0*	*1*	*1*	*0*	*0*	*0*	*0*	*2*	*4.5*
225.00	*0*	*7*	*0*	*2*	*1*	*0*	*0*	*10*	*4.5*
247.50	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*2*	*2.5*
270.00	*0*	*3*	*5*	*0*	*0*	*0*	*0*	*8*	*3.7*
292.50	*0*	*0*	*2*	*5*	*6*	*0*	*0*	*13*	*11.8*
315.00	*0*	*2*	*3*	*5*	*12*	*4*	*1*	*27*	*13.9*
337.50	*0*	*0*	*2*	*0*	*2*	*1*	*0*	*5*	*12.8*
360.00	*0*	*0*	*1*	*1*	*0*	*0*	*0*	*2*	*9.0*
Column Sums	*5*	*18*	*19*	*27*	*28*	*7*	*12*	*116*	*11.9*

TABLE 2.3-23

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

SLIGHTLY UNSTABLE (ΔT -1.7 to -1.5°C/100M)

DIABLO CANYON PERIOD OF RECORD JULY 1967-OCTOBER 1969

FREQUENCY TABLE

			Wind Speed, mph					*Row*	*Row*
Direction	*Calm*	*2.0*	*5.1*	*9.6*	*15.1*	*21.1*	*39.6*	*Sums*	*Avg*
CALM	*6*	*0*	*0*	*0*	*0*	*0*	*0*	*6*	*0.0*
22.50	*0*	*0*	*0*	*1*	*1*	*0*	*0*	*2*	*13.0*
45.00	*0*	*1*	*0*	*1*	*0*	*0*	*0*	*2*	*6.5*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
135.00	*0*	*1*	*2*	*1*	*5*	*5*	*1*	*15*	*15.5*
157.50	*0*	*2*	*10*	*2*	*1*	*1*	*4*	*20*	*13.1*
180.00	*0*	*1*	*0*	*0*	*1*	*0*	*1*	*3*	*18.0*
202.50	*0*	*0*	*1*	*1*	*0*	*0*	*0*	*2*	*6.5*
225.00	*0*	*3*	*0*	*0*	*0*	*0*	*0*	*3*	*1.7*
247.50	*0*	*2*	*1*	*0*	*0*	*0*	*0*	*3*	*3.0*
270.00	*0*	*2*	*5*	*0*	*1*	*2*	*0*	*10*	*8.9*
292.50	*0*	*1*	*2*	*11*	*0*	*1*	*2*	*17*	*11.4*
315.00	*0*	*0*	*1*	*5*	*8*	*9*	*2*	*25*	*17.4*
337.50	*0*	*0*	*0*	*2*	*0*	*0*	*0*	*2*	*12.0*
360.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
Column Sums	*6*	*13*	*22*	*24*	*17*	*18*	*10*	*110*	*12.3*

TABLE 2.3-24
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
NEUTRAL (ΔT -1.5 to -0.5°C/100M)
DIABLO CANYON PERIOD OF RECORD JULY 1967-OCTOBER 1969

FREQUENCY TABLE

			Wind Speed, mph					*Row*	*Row*
Direction	*Calm*	*2.0*	*5.1*	*9.6*	*15.1*	*21.1*	*39.6*	*Sums*	*Avg*
CALM	*290*	*2*	*0*	*0*	*0*	*0*	*0*	*292*	*0.0*
22.50	*0*	*24*	*36*	*40*	*17*	*4*	*0*	*121*	*8.1*
45.00	*0*	*20*	*35*	*39*	*17*	*1*	*0*	*112*	*8.0*
67.50	*0*	*23*	*20*	*33*	*6*	*0*	*0*	*82*	*6.8*
90.00	*0*	*25*	*18*	*6*	*3*	*0*	*0*	*52*	*4.6*
112.50	*0*	*32*	*51*	*60*	*53*	*9*	*1*	*206*	*9.4*
135.00	*0*	*171*	*284*	*203*	*157*	*54*	*17*	*886*	*8.9*
157.50	*0*	*182*	*155*	*61*	*29*	*23*	*13*	*463*	*6.5*
180.00	*0*	*126*	*46*	*21*	*22*	*17*	*9*	*241*	*6.9*
202.50	*0*	*79*	*16*	*11*	*6*	*6*	*0*	*120*	*4.9*
225.00	*0*	*87*	*12*	*5*	*8*	*2*	*0*	*114*	*3.5*
247.50	*0*	*95*	*20*	*1*	*2*	*3*	*0*	*121*	*3.0*
270.00	*0*	*126*	*96*	*17*	*1*	*4*	*0*	*244*	*4.1*
292.50	*0*	*110*	*223*	*187*	*104*	*28*	*4*	*656*	*8.5*
315.00	*0*	*67*	*242*	*530*	*652*	*308*	*143*	*1942*	*14.2*
337.50	*0*	*42*	*97*	*210*	*160*	*98*	*80*	*687*	*13.9*
360.00	*0*	*41*	*5*	*63*	*53*	*6*	*0*	*218*	*8.7*
Column Sums	*290*	*1252*	*1406*	*1487*	*1290*	*563*	*269*	*6557*	*9.8*

TABLE 2.3-25

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

SLIGHTLY STABLE (ΔT -0.5 to 1.5°C/100M)

DIABLO CANYON PERIOD OF RECORD JULY 1967-OCTOBER 1969

FREQUENCY TABLE

Direction	*Calm*	*2.0*	*Wind Speed, mph 5.1*	*9.6*	*15.1*	*21.1*	*39.6*	*Row Sums*	*Row Avg*
CALM	*405*	*12*	*0*	*0*	*0*	*0*	*0*	*417*	*0.0*
22.50	*0*	*66*	*92*	*96*	*58*	*14*	*2*	*328*	*8.7*
45.00	*0*	*53*	*94*	*66*	*29*	*1*	*0*	*243*	*6.9*
67.50	*0*	*42*	*58*	*35*	*21*	*2*	*0*	*158*	*6.7*
90.00	*0*	*84*	*40*	*13*	*4*	*0*	*0*	*141*	*3.8*
112.50	*0*	*128*	*57*	*25*	*9*	*5*	*0*	*224*	*4.5*
135.00	*0*	*296*	*279*	*164*	*47*	*11*	*5*	*802*	*5.9*
157.50	*0*	*330*	*129*	*16*	*1*	*0*	*4*	*480*	*3.0*
180.00	*0*	*188*	*16*	*2*	*1*	*3*	*1*	*211*	*2.2*
202.50	*0*	*94*	*13*	*2*	*0*	*0*	*0*	*109*	*1.9*
225.00	*0*	*91*	*12*	*4*	*3*	*0*	*0*	*110*	*2.7*
247.50	*0*	*83*	*16*	*1*	*0*	*0*	*0*	*100*	*2.2*
270.00	*0*	*158*	*33*	*5*	*3*	*0*	*0*	*199*	*2.6*
292.50	*0*	*166*	*154*	*132*	*99*	*44*	*12*	*607*	*8.5*
315.00	*0*	*161*	*344*	*454*	*497*	*479*	*304*	*2239*	*14.9*
337.50	*0*	*97*	*136*	*159*	*97*	*62*	*35*	*586*	*10.7*
360.00	*0*	*99*	*123*	*130*	*78*	*20*	*4*	*454*	*8.5*
Column Sums	*405*	*2148*	*1596*	*1304*	*947*	*641*	*367*	*7408*	*8.6*

TABLE 2.3-26

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

MODERATELY STABLE (ΔT 1.5 to 4.0°C/100M)

DIABLO CANYON PERIOD OF RECORD JULY 1967-OCTOBER 1969

FREQUENCY TABLE

		Wind Speed, mph							
Direction	*Calm*	*2.0*	*5.1*	*9.6*	*15.1*	*21.1*	*39.6*	*Row Sums*	*Row Avg*
CALM	*117*	*1*	*0*	*0*	*0*	*0*	*0*	*118*	*0.0*
22.50	*0*	*9*	*9*	*5*	*6*	*2*	*0*	*31*	*8.0*
45.00	*0*	*12*	*10*	*3*	*3*	*0*	*0*	*28*	*5.1*
67.50	*0*	*12*	*6*	*4*	*1*	*1*	*0*	*24*	*5.6*
90.00	*0*	*20*	*12*	*2*	*0*	*0*	*0*	*34*	*3.0*
112.50	*0*	*33*	*16*	*5*	*0*	*0*	*0*	*54*	*3.4*
135.00	*0*	*54*	*52*	*25*	*2*	*0*	*0*	*133*	*4.6*
157.50	*0*	*68*	*17*	*1*	*0*	*0*	*0*	*86*	*2.3*
180.00	*0*	*35*	*6*	*0*	*0*	*0*	*0*	*41*	*1.8*
202.50	*0*	*20*	*0*	*1*	*0*	*0*	*0*	*21*	*1.8*
225.00	*0*	*18*	*3*	*0*	*0*	*0*	*0*	*21*	*2.0*
247.50	*0*	*30*	*2*	*0*	*0*	*0*	*0*	*32*	*1.7*
270.00	*0*	*34*	*4*	*1*	*0*	*0*	*0*	*39*	*2.5*
292.50	*0*	*38*	*28*	*28*	*8*	*4*	*3*	*109*	*7.2*
315.00	*0*	*43*	*65*	*114*	*167*	*179*	*170*	*738*	*17.3*
337.50	*0*	*20*	*39*	*25*	*15*	*13*	*0*	*112*	*8.7*
360.00	*0*	*20*	*14*	*11*	*7*	*3*	*0*	*55*	*6.9*
Column Sums	*117*	*467*	*283*	*225*	*209*	*202*	*173*	*1676*	*10.1*

TABLE 2.3-27

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

EXTREMELY STABLE (ΔT greater than 4.0°C/100M)

DIABLO CANYON PERIOD OF RECORD JULY 1967-OCTOBER 1969

FREQUENCY TABLE

			Wind Speed, mph					Row	Row
Direction	*Calm*	*2.0*	*5.1*	*9.6*	*15.1*	*21.1*	*39.6*	*Sums*	*Avg*
CALM	*46*	*0*	*0*	*0*	*0*	*0*	*0*	*46*	*0.0*
22.50	*0*	*9*	*8*	*6*	*0*	*0*	*0*	*23*	*5.2*
45.00	*0*	*8*	*13*	*3*	*0*	*0*	*0*	*24*	*4.6*
67.50	*0*	*11*	*7*	*1*	*0*	*0*	*0*	*19*	*3.5*
90.00	*0*	*13*	*10*	*1*	*0*	*0*	*0*	*24*	*3.7*
112.50	*0*	*14*	*6*	*1*	*0*	*0*	*0*	*21*	*3.3*
135.00	*0*	*36*	*11*	*2*	*0*	*0*	*0*	*49*	*2.9*
157.50	*0*	*23*	*7*	*1*	*0*	*0*	*0*	*31*	*2.8*
180.00	*0*	*29*	*2*	*0*	*0*	*0*	*0*	*31*	*1.5*
202.50	*0*	*13*	*1*	*0*	*0*	*0*	*0*	*14*	*1.7*
225.00	*0*	*12*	*1*	*0*	*0*	*0*	*0*	*13*	*1.6*
247.50	*0*	*13*	*1*	*0*	*0*	*0*	*0*	*14*	*2.2*
270.00	*0*	*22*	*6*	*2*	*0*	*0*	*0*	*30*	*3.0*
292.50	*0*	*12*	*19*	*14*	*4*	*3*	*0*	*52*	*7.4*
315.00	*0*	*19*	*32*	*73*	*87*	*94*	*95*	*400*	*17.7*
337.50	*0*	*16*	*16*	*12*	*9*	*6*	*0*	*59*	*8.5*
360.00	*0*	*9*	*12*	*5*	*2*	*0*	*0*	*28*	*5.7*
Column Sums	*46*	*259*	*152*	*121*	*102*	*103*	*95*	*878*	*10.3*

TABLE 2.3-28

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DISTRIBUTION OF WIND SPEED OBSERVATIONS BY STABILITY CLASS

Stability Class	*T, °C/100M*	*Number of Observations*
Extremely unstable	*Less than -1.9*	*3*
Moderately unstable	*-1.9 to -1.7*	*5*
Slightly unstable	*-1.7 to -1.5*	*6*
Neutral	*-1.5 to -0.5*	*290*
Slightly stable	*-0.5 to 1.5*	*405*
Moderately stable	*1.5 to 4.0*	*117*
Extremely stable	*Greater than 4.0*	*46*

(a) Observations for which the mean hourly wind speed was less than one mile per hour when stability is defined by vertical temperature gradient between the 25-foot levels at Station E period of record July 1, 1967 through October 31, 1969.

(b) Total hourly observations for period of record: 17,153.

TABLE 2.3-29
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
VERTICAL ANGLE STABILITY CLASS A

Direction, deg.	*Wind Speed, mph 1.5*	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*	*Row Sum*	*Row Avg.*
Calm	*2*	*0*	*0*	*0*	*0*	*0*	*2*	*0.0*
22.5	*106*	*185*	*63*	*14*	*1*	*0*	*369*	*5.6*
45.0	*127*	*152*	*71*	*12*	*1*	*0*	*363*	*5.3*
67.5	*77*	*69*	*44*	*9*	*0*	*0*	*199*	*5.3*
90.0	*101*	*47*	*16*	*7*	*2*	*0*	*173*	*4.1*
112.5	*97*	*25*	*17*	*11*	*4*	*0*	*144*	*3.9*
135.0	*178*	*111*	*27*	*10*	*3*	*0*	*329*	*4.2*
157.5	*185*	*168*	*22*	*1*	*0*	*0*	*376*	*3.9*
180.0	*209*	*64*	*5*	*1*	*0*	*0*	*279*	*3.0*
202.5	*117*	*19*	*1*	*0*	*0*	*0*	*137*	*2.2*
225.0	*83*	*10*	*1*	*1*	*0*	*0*	*95*	*2.0*
247.5	*90*	*15*	*2*	*1*	*0*	*0*	*108*	*2.2*
270.0	*126*	*23*	*9*	*1*	*0*	*0*	*159*	*2.7*
292.5	*164*	*98*	*60*	*18*	*5*	*3*	*348*	*5.6*
315.0	*108*	*166*	*126*	*64*	*13*	*1*	*478*	*7.7*
337.5	*79*	*126*	*119*	*66*	*15*	*3*	*408*	*8.2*
360.0	*91*	*215*	*146*	*32*	*4*	*0*	*488*	*6.8*
Column Sums	*1,940*	*1,493*	*729*	*238*	*48*	*7*	*4,455*	*5.7*

TABLE 2.3-30
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
VERTICAL ANGLE STABILITY CLASS B

Direction, deg.	*Wind Speed, mph* 1.5	5.5	10.0	15.5	21.5	37.5	*Row Sum*	*Row Avg.*
Calm	*2*	*0*	*0*	*0*	*0*	*0*	*2*	*0.0*
22.5	*32*	*43*	*27*	*12*	*4*	*1*	*119*	*7.1*
45.0	*44*	*55*	*28*	*3*	*0*	*0*	*130*	*5.5*
67.5	*33*	*20*	*18*	*9*	*0*	*0*	*80*	*5.9*
90.0	*46*	*18*	*8*	*2*	*1*	*1*	*76*	*4.4*
112.5	*52*	*19*	*32*	*27*	*6*	*0*	*136*	*7.8*
135.0	*107*	*152*	*104*	*57*	*11*	*1*	*432*	*7.4*
157.5	*94*	*127*	*52*	*10*	*2*	*3*	*288*	*5.6*
180.0	*59*	*47*	*6*	*0*	*0*	*0*	*112*	*3.6*
202.5	*24*	*7*	*0*	*0*	*0*	*0*	*31*	*2.4*
225.0	*19*	*8*	*1*	*0*	*0*	*0*	*28*	*2.5*
247.5	*23*	*6*	*1*	*0*	*0*	*0*	*30*	*2.4*
270.0	*48*	*7*	*2*	*0*	*0*	*0*	*57*	*2.5*
292.5	*74*	*90*	*47*	*33*	*16*	*3*	*263*	*7.6*
315.0	*52*	*143*	*156*	*110*	*65*	*19*	*545*	*11.1*
337.5	*43*	*81*	*102*	*98*	*58*	*8*	*390*	*11.5*
360.0	*32*	*92*	*64*	*21*	*7*	*0*	*216*	*7.6*
Column Sums	*784*	*915*	*648*	*382*	*170*	*36*	*2,935*	*7.9*

TABLE 2.3-31
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
VERTICAL ANGLE STABILITY CLASS C

Direction, deg.	*Wind Speed, mph*						*Row Sum*	*Row Avg.*
	1.5	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*		
Calm	*2*	*0*	*0*	*0*	*0*	*0*	*2*	*0.0*
22.5	*7*	*12*	*8*	*2*	*1*	*0*	*30*	*7.1*
45.0	*24*	*24*	*6*	*4*	*0*	*0*	*58*	*5.3*
67.5	*19*	*17*	*10*	*5*	*0*	*0*	*51*	*5.6*
90.0	*18*	*6*	*3*	*6*	*0*	*1*	*34*	*6.2*
112.5	*34*	*4*	*19*	*16*	*6*	*3*	*82*	*8.8*
135.0	*76*	*102*	*134*	*63*	*29*	*9*	*413*	*9.3*
157.5	*55*	*96*	*56*	*20*	*6*	*0*	*233*	*6.7*
180.0	*21*	*18*	*2*	*3*	*1*	*1*	*46*	*5.4*
202.5	*10*	*4*	*4*	*0*	*0*	*0*	*17*	*3.5*
225.0	*8*	*6*	*0*	*0*	*0*	*0*	*14*	*3.5*
247.5	*15*	*4*	*0*	*0*	*0*	*0*	*19*	*2.5*
270.0	*32*	*23*	*4*	*0*	*1*	*1*	*61*	*4.3*
292.5	*29*	*94*	*76*	*73*	*43*	*2*	*317*	*10.8*
315.0	*49*	*222*	*388*	*445*	*390*	*148*	*1,642*	*15.0*
337.5	*35*	*65*	*114*	*123*	*93*	*28*	*458*	*13.6*
360.0	*14*	*27*	*12*	*7*	*3*	*0*	*63*	*7.3*
Column Sums	*448*	*724*	*836*	*767*	*573*	*192*	*3,540*	*12.0*

TABLE 2.3-32

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
VERTICAL ANGLE STABILITY CLASS D

Direction, deg.	*Wind Speed, mph*						*Row Sum*	*Row Avg.*
	1.5	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*		
Calm	*2*	*0*	*0*	*0*	*0*	*0*	*2*	*0.0*
22.5	*1*	*5*	*0*	*0*	*0*	*0*	*6*	*4.5*
45.0	*16*	*4*	*1*	*0*	*0*	*0*	*21*	*3.1*
67.5	*9*	*5*	*4*	*5*	*1*	*0*	*24*	*9.7*
90.0	*15*	*4*	*3*	*0*	*1*	*0*	*23*	*5.4*
112.5	*31*	*5*	*2*	*2*	*0*	*0*	*40*	*4.5*
135.0	*63*	*40*	*15*	*8*	*4*	*5*	*135*	*5.9*
157.5	*30*	*17*	*12*	*5*	*2*	*0*	*66*	*5.7*
180.0	*8*	*4*	*1*	*2*	*1*	*0*	*16*	*6.1*
202.5	*7*	*1*	*0*	*0*	*0*	*0*	*8*	*1.6*
225.0	*4*	*4*	*0*	*1*	*0*	*0*	*9*	*5.2*
247.5	*6*	*5*	*1*	*0*	*0*	*0*	*12*	*3.7*
270.0	*22*	*6*	*4*	*2*	*3*	*0*	*37*	*5.5*
292.5	*14*	*43*	*55*	*55*	*40*	*12*	*219*	*12.7*
315.0	*31*	*181*	*369*	*556*	*463*	*271*	*1,871*	*16.5*
337.5	*16*	*33*	*69*	*85*	*63*	*50*	*316*	*15.6*
360.0	*3*	*11*	*9*	*0*	*0*	*0*	*23*	*6.5*
Column Sums	*278*	*368*	*545*	*721*	*578*	*338*	*2,828*	*14.5*

TABLE 2.3-33
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
VERTICAL ANGLE STABILITY CLASS E

Direction, deg.	*Wind Speed, mph 1.5*	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*	*Row Sum*	*Row Avg.*
Calm	*1*	*0*	*0*	*0*	*0*	*0*	*1*	*0.0*
22.5	*0*	*1*	*0*	*0*	*0*	*0*	*1*	*4.0*
45.0	*2*	*1*	*1*	*0*	*0*	*0*	*4*	*3.8*
67.5	*0*	*2*	*3*	*0*	*0*	*0*	*5*	*7.6*
90.0	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.5	*10*	*1*	*0*	*0*	*0*	*0*	*11*	*1.9*
135.0	*15*	*3*	*0*	*0*	*0*	*0*	*18*	*2.3*
157.5	*7*	*2*	*1*	*0*	*2*	*0*	*12*	*2.8*
180.0	*4*	*1*	*0*	*0*	*0*	*0*	*5*	*2.4*
202.5	*2*	*0*	*0*	*1*	*0*	*0*	*3*	*5.3*
225.0	*2*	*2*	*0*	*0*	*0*	*0*	*4*	*3.3*
247.5	*2*	*3*	*1*	*0*	*0*	*0*	*6*	*4.6*
270.0	*1*	*0*	*1*	*1*	*0*	*0*	*3*	*8.3*
292.5	*2*	*8*	*8*	*4*	*11*	*8*	*41*	*15.8*
315.0	*8*	*30*	*42*	*105*	*111*	*47*	*343*	*17.3*
337.5	*3*	*3*	*5*	*4*	*2*	*3*	*20*	*13.2*
360.0	*0*	*0*	*1*	*0*	*0*	*0*	*1*	*8.0*
Column Sums	*59*	*57*	*63*	*115*	*126*	*58*	*478*	*14.8*

TABLE 2.3-34

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
VERTICAL ANGLE STABILITY CLASS F AND G

Direction, deg.	*Wind Speed, mph*						*Row Avg.*	*Row Sum*
	1.5	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*		
Calm	*516*	*0*	*0*	*0*	*0*	*0*	*516*	*0.0*
22.5	*5*	*0*	*0*	*0*	*0*	*0*	*5*	*1.2*
45.0	*5*	*1*	*0*	*0*	*0*	*0*	*6*	*2.5*
67.5	*11*	*0*	*0*	*0*	*0*	*0*	*11*	*1.7*
90.0	*8*	*1*	*0*	*0*	*0*	*0*	*9*	*1.4*
112.5	*15*	*0*	*0*	*0*	*0*	*0*	*15*	*1.6*
135.0	*55*	*3*	*0*	*0*	*0*	*0*	*58*	*1.7*
157.5	*32*	*2*	*1*	*0*	*0*	*0*	*35*	*1.9*
180.0	*19*	*0*	*1*	*0*	*0*	*0*	*20*	*1.9*
202.5	*11*	*0*	*0*	*0*	*0*	*0*	*11*	*1.4*
225.0	*8*	*0*	*0*	*0*	*0*	*0*	*8*	*1.3*
247.5	*11*	*0*	*0*	*0*	*0*	*0*	*11*	*1.0*
270.0	*17*	*0*	*0*	*0*	*0*	*0*	*17*	*1.3*
292.5	*9*	*5*	*5*	*0*	*2*	*0*	*22*	*6.5*
315.0	*21*	*18*	*25*	*32*	*27*	*15*	*138*	*13.4*
337.5	*15*	*3*	*4*	*4*	*2*	*0*	*28*	*4.8*
360.0	*11*	*4*	*0*	*0*	*0*	*0*	*15*	*2.7*
Column Sums	*769*	*37*	*36*	*36*	*31*	*15*	*925*	*2.7*

TABLE 2.3-35
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
AZIMUTH ANGLE STABILITY CLASS A

Direction, deg.	*Wind Speed, mph 1.5*	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*	*Row Sum*	*Row Avg.*
Calm	*1*	*0*		*0*	*0*	*0*	*1*	*0.0*
22.5	*44*	*87*	*26*	*4*	*0*	*0*	*161*	*5.4*
45.0	*42*	*88*	*46*	*8*	*0*	*0*	*184*	*6.0*
67.5	*35*	*43*	*40*	*4*	*0*	*0*	*122*	*6.0*
90.0	*63*	*34*	*12*	*1*	*0*	*0*	*110*	*3.7*
112.5	*61*	*11*	*4*	*0*	*0*	*0*	*76*	*2.8*
135.0	*84*	*32*	*4*	*2*	*0*	*0*	*122*	*3.1*
157.5	*54*	*26*	*4*	*0*	*0*	*0*	*84*	*3.2*
180.0	*55*	*17*	*2*	*0*	*0*	*0*	*74*	*2.7*
202.5	*39*	*6*	*1*	*0*	*0*	*0*	*46*	*2.6*
225.0	*25*	*3*	*2*	*1*	*0*	*0*	*31*	*3.1*
247.5	*41*	*5*	*1*	*0*	*0*	*0*	*47*	*2.0*
270.0	*46*	*12*	*6*	*0*	*0*	*0*	*64*	*3.2*
292.5	*32*	*29*	*16*	*6*	*1*	*0*	*84*	*5.7*
315.0	*28*	*55*	*53*	*23*	*6*	*2*	*167*	*8.6*
337.5	*32*	*71*	*53*	*13*	*3*	*1*	*173*	*7.1*
360.0	*41*	*96*	*40*	*11*	*1*	*0*	*189*	*6.4*
Column Sums	*723*	*615*	*310*	*73*	*11*	*3*	*1,735*	*5.2*

TABLE 2.3-36

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
AZIMUTH ANGLE STABILITY CLASS B

Direction, deg.	*Wind Speed, mph*						*Row Sum*	*Row Avg.*
	1.5	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*		
Calm	*2*	*0*	*0*	*0*	*0*	*0*	*2*	*0.0*
22.5	*31*	*43*	*18*	*7*	*0*	*0*	*99*	*5.9*
45.0	*30*	*38*	*22*	*2*	*0*	*0*	*92*	*5.4*
67.5	*24*	*19*	*13*	*3*	*0*	*0*	*59*	*5.1*
90.0	*26*	*12*	*3*	*5*	*1*	*0*	*47*	*5.6*
112.5	*22*	*10*	*4*	*0*	*1*	*0*	*37*	*4.7*
135.0	*40*	*14*	*4*	*1*	*0*	*0*	*59*	*3.2*
157.5	*25*	*19*	*1*	*0*	*0*	*0*	*45*	*3.7*
180.0	*20*	*5*	*0*	*0*	*0*	*0*	*25*	*2.4*
202.5	*20*	*3*	*0*	*0*	*0*	*0*	*23*	*2.5*
225.0	*17*	*2*	*0*	*0*	*0*	*0*	*19*	*2.4*
247.5	*21*	*4*	*2*	*0*	*0*	*0*	*27*	*2.8*
270.0	*25*	*9*	*4*	*0*	*0*	*0*	*38*	*3.6*
292.5	*22*	*22*	*9*	*1*	*0*	*1*	*55*	*5.7*
315.0	*13*	*23*	*27*	*20*	*12*	*3*	*98*	*10.8*
337.5	*19*	*24*	*31*	*20*	*4*	*1*	*99*	*9.1*
360.0	*20*	*64*	*61*	*16*	*3*	*0*	*164*	*8.0*
Column Sums	*377*	*311*	*199*	*75*	*21*	*5*	*988*	*6.2*

TABLE 2.3-37

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STATION E 25-FOOT LEVEL

OCTOBER 1969 THROUGH MARCH 1971 AND

APRIL 1972 THROUGH SEPTEMBER 1972

AZIMUTH ANGLE STABILITY CLASS C

Direction, deg.	*Wind Speed, mph 1.5*	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*	*Row Sum*	*Row Avg.*
Calm	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
22.5	*34*	*58*	*35*	*8*	*3*	*0*	*138*	*6.5*
45.0	*44*	*53*	*27*	*5*	*1*	*0*	*130*	*5.6*
67.5	*24*	*24*	*11*	*6*	*1*	*0*	*66*	*5.6*
90.0	*21*	*12*	*7*	*3*	*2*	*0*	*45*	*5.4*
112.5	*43*	*12*	*6*	*5*	*1*	*0*	*67*	*4.2*
135.0	*79*	*43*	*19*	*8*	*1*	*0*	*150*	*4.8*
157.5	*54*	*43*	*11*	*2*	*0*	*0*	*110*	*4.3*
180.0	*39*	*9*	*1*	*0*	*0*	*0*	*49*	*2.6*
202.5	*28*	*5*	*0*	*0*	*0*	*0*	*33*	*1.9*
225.0	*19*	*6*	*1*	*0*	*0*	*0*	*26*	*2.7*
247.5	*29*	*3*	*1*	*0*	*0*	*0*	*33*	*2.3*
270.0	*34*	*6*	*2*	*1*	*0*	*0*	*44*	*2.9*
292.5	*49*	*36*	*23*	*11*	*5*	*0*	*124*	*6.4*
315.0	*36*	*55*	*78*	*56*	*36*	*3*	*270*	*11.2*
337.5	*26*	*50*	*65*	*59*	*24*	*7*	*229*	*11.1*
360.0	*30*	*78*	*75*	*18*	*2*	*4*	*203*	*8.9*
Column Sums	*589*	*93*	*363*	*182*	*76*	*14*	*1,717*	*7.2*

TABLE 2.3-38
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
AZIMUTH ANGLE STABILITY CLASS D

Direction, deg.	*Wind Speed, mph*						*Row Sum*	*Row Avg.*
	1.5	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*		
Calm	*1*	*0*	*0*	*0*	*0*	*0*	*1*	*0.0*
22.5	*34*	*44*	*17*	*9*	*3*	*1*	*108*	*6.4*
45.0	*55*	*54*	*22*	*5*	*0*	*0*	*136*	*5.1*
67.5	*34*	*16*	*16*	*10*	*0*	*0*	*76*	*6.0*
90.0	*46*	*23*	*9*	*6*	*1*	*1*	*86*	*5.6*
112.5	*56*	*17*	*35*	*24*	*7*	*1*	*140*	*7.9*
135.0	*126*	*178*	*122*	*65*	*15*	*6*	*512*	*7.5*
157.5	*106*	*148*	*45*	*9*	*3*	*1*	*312*	*5.2*
180.0	*70*	*36*	*6*	*2*	*1*	*0*	*115*	*3.7*
202.5	*27*	*7*	*0*	*0*	*0*	*0*	*34*	*2.3*
225.0	*30*	*8*	*2*	*0*	*0*	*0*	*40*	*2.6*
247.5	*23*	*8*	*0*	*0*	*0*	*0*	*31*	*2.3*
270.0	*53*	*9*	*4*	*0*	*1*	*1*	*68*	*3.4*
292.5	*73*	*81*	*62*	*43*	*32*	*10*	*301*	*9.2*
315.0	*69*	*171*	*222*	*209*	*138*	*47*	*856*	*12.6*
337.5	*35*	*83*	*116*	*139*	*109*	*25*	*507*	*13.4*
360.0	*39*	*62*	*53*	*15*	*8*	*0*	*177*	*7.4*
Column Sums	*877*	*945*	*731*	*536*	*318*	*93*	*3,500*	*9.0*

TABLE 2.3-39
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
AZIMUTH ANGLE STABILITY CLASS E

Direction, deg.	*Wind Speed, mph*						*Row Sum*	*Row Avg.*
	1.5	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*		
Calm	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
22.5	*11*	*13*	*4*	*1*	*0*	*0*	*29*	*5.2*
45.0	*44*	*32*	*4*	*2*	*0*	*0*	*82*	*4.0*
67.5	*28*	*19*	*17*	*7*	*0*	*0*	*71*	*5.8*
90.0	*30*	*8*	*2*	*0*	*0*	*1*	*41*	*3.9*
112.5	*47*	*10*	*11*	*8*	*2*	*1*	*79*	*5.6*
135.0	*120*	*116*	*96*	*56*	*25*	*7*	*420*	*8.0*
157.5	*105*	*136*	*69*	*18*	*6*	*2*	*336*	*6.1*
180.0	*64*	*41*	*4*	*3*	*1*	*1*	*114*	*4.0*
202.5	*20*	*5*	*2*	*1*	*0*	*0*	*28*	*3.3*
225.0	*24*	*10*	*1*	*0*	*0*	*0*	*35*	*3.0*
247.5	*22*	*8*	*2*	*0*	*0*	*0*	*32*	*2.9*
270.0	*47*	*23*	*5*	*2*	*2*	*0*	*79*	*4.2*
292.5	*72*	*129*	*106*	*90*	*54*	*9*	*460*	*10.2*
315.0	*83*	*319*	*549*	*696*	*608*	*292*	*2,547*	*15.5*
337.5	*46*	*63*	*126*	*120*	*101*	*61*	*517*	*14.3*
360.0	*20*	*29*	*13*	*5*	*0*	*0*	*67*	*6.0*
Column Sums	*783*	*961*	*1,011*	*1,009*	*799*	*374*	*4,937*	*12.1*

TABLE 2.3-40

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STATION E 25-FOOT LEVEL
OCTOBER 1969 THROUGH MARCH 1971 AND
APRIL 1972 THROUGH SEPTEMBER 1972
AZIMUTH ANGLE STABILITY CLASS F AND G

Direction, deg.	*Wind Speed, mph*						*Row Sum*	*Row Avg.*
	1.5	*5.5*	*10.0*	*15.5*	*21.5*	*37.5*		
Calm	*564*	*0*	*0*	*0*	*0*	*0*	*564*	*0.0*
22.5	*7*	*2*	*0*	*0*	*0*	*0*	*9*	*2.3*
45.0	*17*	*4*	*0*	*0*	*0*	*0*	*21*	*2.5*
67.5	*17*	*2*	*2*	*1*	*0*	*0*	*22*	*3.6*
90.0	*15*	*3*	*1*	*0*	*0*	*0*	*19*	*2.5*
112.5	*27*	*1*	*0*	*1*	*0*	*0*	*29*	*2.0*
135.0	*75*	*19*	*6*	*2*	*2*	*1*	*105*	*3.4*
157.5	*65*	*31*	*5*	*3*	*2*	*0*	*106*	*3.8*
180.0	*52*	*7*	*2*	*1*	*0*	*0*	*62*	*2.5*
202.5	*29*	*4*	*1*	*0*	*0*	*0*	*34*	*2.0*
225.0	*16*	*1*	*0*	*1*	*0*	*0*	*18*	*2.2*
247.5	*17*	*4*	*1*	*0*	*0*	*0*	*22*	*2.3*
270.0	*55*	*9*	*1*	*0*	*0*	*0*	*65*	*2.2*
292.5	*50*	*55*	*53*	*36*	*23*	*7*	*224*	*9.4*
315.0	*56*	*151*	*222*	*314*	*286*	*172*	*1,201*	*15.8*
337.5	*32*	*15*	*21*	*37*	*9*	*5*	*118*	*10.4*
360.0	*9*	*7*	*2*	*0*	*0*	*0*	*18*	*3.7*
Column Sums	*1,103*	*315*	*317*	*396*	*322*	*185*	*2,637*	*9.4*

TABLE 2.3-41

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

CUMULATIVE PERCENTAGE DISTRIBUTIONS OF χ/Q ESTIMATES BASED ON DISTANCE AND WIND SECTOR CENTERLINE FOR GROUND LEVEL RELEASES

10-meter wind data and stability categories based on measured Sigma A and Temperature Gradient (76M - 10M) values. For calculations with wind speed below 1.5 meters per second stability is based on Temperature Gradient only and building wake or a meander factor is considered - with wind speeds above 1.5 meters per second stability is based on measured Sigma A and Temperature Gradient with building wake only considered. X is downwind distance in meters, Y is sector centerline from north in degrees, and Z is terrain height defined as zero for Ground Level Releases. Data Period May 1973 through April 1975. In the following Tables Y=0.0 is equivalent to Y=360°=North.

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=315.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	*0.0*	*0.0*	*0.0*	*0.0*	*0.60140297E-06*	*0.17928305E-05*
50	*0.0*	*0.0*	*0.34090243E-06*	*0.11967086E-05*	*0.22880003E-05*	*0.36180809E-05*
75	*0.0*	*0.35322555E-05*	*0.47339599E-05*	*0.52474825E-05*	*0.51153211E-05*	*0.56741301E-05*
90	*0.46975747E-05*	*0.13407243E-04*	*0.12096141E-04*	*0.11476736E-04*	*0.96943622E-05*	*0.75202488E-05*
95	*0.26914247E-04*	*0.21392218E-04*	*0.18613035E-04*	*0.16908802E-04*	*0.13674124E-04*	*0.82745992E-05*
99	*0.79830948E-04*	*0.41694584E-04*	*0.31726566E-04*	*0.28974857E-04*	*0.22724547E-04*	*0.93198487E-05*
99.5	*0.10060299E-03*	*0.48705522E-04*	*0.38378115E-04*	*0.35206263E-04*	*0.25349524E-04*	*0.97140346E-05*
99.9	*0.17863358E-03*	*0.69454283E-04*	*0.52891977E-04*	*0.55085635E-04*	*0.29252842E-04*	*0.98666351E-05*
100	*0.42693969E-03*	*0.16204809E-03*	*0.91344118E-04*	*0.63421554E-04*	*0.31318254E-04*	*0.10198001E-04*

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=337.5 Z=0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	*0.0*	*0.0*	*0.0*	*0.0*	*0.27897920E-06*	*0.14245843E-05*
50	*0.0*	*0.0*	*0.39965435E-07*	*0.47623541E-06*	*0.11941902E-05*	*0.21688302E-05*
75	*0.0*	*0.11479096E-05*	*0.25813661E-05*	*0.28035602E-05*	*0.31818436E-05*	*0.30996152E-05*
90	*0.16196464E-06*	*0.73396404E-05*	*0.71391196E-05*	*0.69225625E-05*	*0.60822440E-05*	*0.39170363E-05*
95	*0.10839826E-04*	*0.13190673E-04*	*0.11428615E-04*	*0.10343385E-04*	*0.76751812E-05*	*0.42903375E-05*
99	*0.57332712E-04*	*0.28498354E-04*	*0.21073996E-04*	*0.16707505E-04*	*0.10494983E-04*	*0.51341722E-05*
99.5	*0.77042845E-04*	*0.34250028E-04*	*0.23407832E-04*	*0.18469131E-04*	*0.11948351E-04*	*0.52089890E-05*
99.9	*0.11422510E-03*	*0.46669331E-04*	*0.30434865E-04*	*0.26693204E-04*	*0.17508937E-04*	*0.54098209E-05*
100	*0.45017432E-03*	*0.59372076E-04*	*0.29615683E-04*	*0.30263240E-04*	*0.18352424E-04*	*0.55004302E-05*

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=0.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.20178135E-07	0.61033268E-06
50	0.0	0.0	0.0	0.84964356E-08	0.52331109E-06	0.96415260E-06
75	0.0	0.25302236E-08	0.70840883E-06	0.11574984E-05	0.13509989E-05	0.12979572E-05
90	0.0	0.30571773E-05	0.34360637E-05	0.30373176E-05	0.24284118E-05	0.16593158E-05
95	0.11744612E-06	0.66978700E-05	0.51172337E-05	0.42316142E-05	0.33221295E-05	0.19114732E-05
99	0.33281089E-04	0.14604380E-04	0.10118109E-04	0.86893342E-05	0.67918800E-05	0.23723878E-05
99.5	0.49149618E-04	0.18833016E-04	0.13381233E-04	0.12046017E-04	0.82666420E-05	0.24336141E-05
99.9	0.88619912E-04	0.34606783E-04	0.24519803E-04	0.19771018E-04	0.94038032E-05	0.25613817E-05
100	0.31923875E-03	0.49039605E-04	0.29722723E-04	0.24404493E-04	0.10373947E-04	0.25717727E-05

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=22.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.31590432E-08	0.33214155E-06
50	0.0	0.0	0.0	0.0	0.31713915E-06	0.54789928E-06
75	0.0	0.0	0.12785688E-06	0.61485019E-06	0.78384534E-06	0.75719402E-06
90	0.0	0.14533725E-05	0.21641408E-05	0.18840965E-05	0.15855258E-05	0.10827689E-05
95	0.0	0.41104977E-05	0.33112265E-05	0.28097411E-05	0.22921749E-05	9.12460659E-05
99	0.20790569E-04	0.10313162E-04	0.76756214E-05	0.57558864E-05	0.31460195E-05	0.15083806E-05
99.5	0.36712212E-04	0.13969571E-04	0.84455642E-05	0.69937705E-05	0.38429389E-05	0.15696178E-05
99.9	0.64066669E-04	0.20981301E-04	0.12264602E-04	0.12232087E-04	0.47792591E-05	0.16129306E-05
100	0.29356778E-03	0.36696263E-04	0.18348132E-04	0.14337682E-04	0.54107604E-05	0.16385302E-05

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=45.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.55598703E-09	0.35731915E-06
50	0.0	0.0	0.0	0.0	0.20440370E-06	0.49795892E-06
75	0.0	0.0	0.86261821E-07	0.39869042E-06	0.85617688E-06	0.81063536E-06
90	0.0	0.11350148E-05	0.24830606E-05	0.22180611E-05	0.16361364E-05	0.12692826E-05
95	0.0	0.49661339E-05	0.38527442E-05	0.31920190E-05	0.23277044E-05	0.14467960E-05
99	0.19482410E-04	0.11177684E-04	0.85418196E-05	0.70383176E-05	0.53034983E-05	0.17087514E-05
99.5	0.42459200E-04	0.15879719E-04	0.10553575E-04	0.93715735E-05	0.57840080E-05	0.20348043E-05
99.9	0.77170160E-04	0.28114708E-04	0.16107486E-04	0.15625614E-04	0.76384376E-05	0.21556871E-05
100	0.37501496E-03	0.46876870E-04	0.23438435E-04	0.15689511E-04	0.81559456E-05	0.21701553E-05

TABLE 2.3-41

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=67.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.19910218E-08	0.24889209E-06
50	0.0	0.0	0.0	0.0	0.14546737E-06	0.42911802E-06
75	0.0	0.0	0.10832360E-06	0.32727348E-06	0.79993595E-06	0.62177327E-06
90	0.0	0.88918227E-06	0.17428902E-05	0.17519760E-05	0.13282652E-05	0.91909624E-06
95	0.0	0.34773839E-05	0.31748004E-05	0.28340100E-05	0.18950996E-05	0.11182974E-05
99	0.16080114E-04	0.89836503E-05	0.65093709E-05	0.54437296E-05	0.31568488E-05	0.19424133E-05
99.5	0.32439624E-04	0.12748404E-04	0.83791401E-05	0.62988538E-05	0.35999619E-05	0.19563859E-05
99.9	0.63343803E-04	0.18939914E-04	0.11131005E-04	0.77977775E-05	0.47309759E-05	0.19899007E-05
100	0.16785040E-03	0.30303869E-04	0.11655334E-04	0.92206838E-05	0.59454760E-05	0.20108682E-05

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=90.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.98381292E-07	0.42774644E-06
50	0.0	0.0	0.67347941E-08	0.10075223E-06	0.47905326E-06	0.81535012E-06
75	0.0	0.11733863E-06	0.85482128E-06	0.11202137E-05	0.12998180E-05	0.12833762E-05
90	0.0	0.30206447E-05	0.28861887E-05	0.27604883E-05	0.22959002E-05	0.16845443E-05
95	0.47983724E-06	0.56365625E-05	0.45940978E-05	0.41290305E-05	0.30253241E-05	0.18356177E-05
99	0.30167124E-04	0.12510503E-04	0.89678560E-05	0.74601758E-05	0.54740649E-05	0.24251367E-05
99.5	0.43825232E-04	0.15991667E-04	0.11190264E-04	0.10325079E-04	0.61040009E-05	0.25050431E-05
99.9	0.80253856E-04	0.25524816E-04	0.16437087E-04	0.13011633E-04	0.64430151E-05	0.26079852E-05
100	0.26299339E-03	0.32874173E-04	0.25596077E-04	0.17605096E-04	0.77006334E-05	0.26970001E-05

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=112.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.21881338E-07	0.17739683E-06	0.80441509E-06	0.15274791E-05
50	0.0	0.15332762E-06	0.99273075E-06	0.15290261E-05	0.21965543E-05	0.28209042E-05
75	0.36544221E-08	0.36351485E-05	0.45084162E-05	0.49050886E-05	0.52850155E-05	0.55923738E-05
90	0.58355099E-05	0.11542677E-04	0.10774902E-04	0.99791041E-05	0.84557751E-05	0.71882914E-05
95	0.24372421E-04	0.19057174E-04	0.15440848E-04	0.13660998E-04	0.11346160E-04	0.84373014E-05
99	0.73329080E-04	0.35874895E-04	0.26128837E-04	0.22772845E-04	0.17065628E-04	0.94562383E-05
99.5	0.92018949E-04	0.41281746E-04	0.31428004E-04	0.29057730E-04	0.19443658E-04	0.98133150E-05
99.9	0.13031083E-03	0.60571503E-04	0.44662738E-04	0.35700417E-04	0.23957633E-04	0.10166443E-04
100	0.25177584E-03	0.87236898E-04	0.52296658E-04	0.39889244E-04	0.25460802E-04	0.10185076E-04

CUMULATIVE FREQUENCY DISTRIBUTION AT X=800.0 Y=135.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.15051785E-06	0.19566469E-05	0.29644816E-05	0.44178805E-05	0.58212872E-05
50	0.81038642E-08	0.53202129E-05	0.68629924E-05	0.74960581E-05	0.86957034E-05	0.92801483E-05
75	0.10795834E-04	0.14239811E-04	0.13835153E-04	0.13944897E-04	0.13847120E-04	0.13906842E-04
90	0.31399934E-04	0.25514790E-04	0.22496853E-04	0.20765699E-04	0.18985549E-04	0.15998783E-04
95	0.47333873E-04	0.34454075E-04	0.29741001E-04	0.27354195E-04	0.21924367E-04	0.17443468E-04
99	0.98935401E-04	0.62552077E-04	0.51852519E-04	0.41265914E-04	0.32405180E-04	0.20288542E-04
99.5	0.13996252E-03	0.73905539E-04	0.57608209E-04	0.50959148E-04	0.36743804E-04	0.21132306E-04
99.9	0.21938581E-03	0.92197675E-04	0.76897748E-04	0.72839248E-04	0.58351958E-04	0.22017281E-04
100	0.43604663E-03	0.12359285E-03	0.10618559E-03	0.90063026E-04	0.63509433E-04	0.23351851E-04

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=315.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.36168682E-07	0.10453664E-06
50	0.0	0.0	0.85387946E-08	0.58115610E-07	0.13548572E-06	0.22112152E-06
75	0.0	0.17811465E-06	0.27010481E-06	0.30452969E-06	0.31845224E-06	0.36362576E-06
90	0.13189924E-06	0.80447398E-06	0.75813131E-06	0.73916146E-06	0.64316288E-06	0.50780699E-06
95	0.14717771E-05	0.13776043E-05	0.12477758E-05	0.11084267E-05	0.88879460E-06	0.56026227E-06
99	0.54080638E-05	0.29498933E-05	0.22118938E-05	0.19417621E-05	0.16314389E-05	0.61426806E-06
99.5	0.72580106E-05	0.35909725E-05	0.27032129E-05	0.25552408E-05	0.19728277E-05	0.63870863E-06
99.9	0.15196728E-04	0.59458198E-05	0.44717808E-05	0.66192533E-05	0.26420630E-05	0.64619587E-06
100	0.84131505E-04	0.20947293E-04	0.10490432E-04	0.71668255E-05	0.29852199E-05	0.66191802E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=337.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.13080108E-07	0.80222492E-07
50	0.0	0.0	0.34313286E-09	0.19187748E-07	0.69095165E-07	0.12573850E-06
75	0.0	0.35439491E-07	0.13064300E-06	0.15438911E-06	0.18920201E-06	0.17924884E-06
90	0.10963741E-08	0.41085059E-06	0.41715919E-06	0.41353013E-06	0.36168058E-06	0.22895489E-06
95	0.43192472E-06	0.78051630E-06	0.69862722E-06	0.63962761E-06	0.45303062E-06	0.26817463E-06
99	0.36181909E-05	0.18028550E-05	0.12881756E-05	0.10581916E-05	0.65855136E-06	0.29816505E-06
99.5	0.51098368E-05	0.22534186E-05	0.15325004E-05	0.11887769E-05	0.76233380E-06	0.30169258E-06
99.9	0.90557323E-05	0.33098568E-05	0.18670871E-05	0.14873640E-05	0.91363347E-06	0.31337936E-06
100	0.21146378E-04	0.37607297E-05	0.22657759E-05	0.17264520E-05	0.96313761E-06	0.31662830E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=0.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.14577914E-09	0.35206888E-07
50	0.0	0.0	0.0	0.45826593E-10	0.29770831E-07	0.52756821E-07
75	0.0	0.58812052E-11	0.27133446E-07	0.58794626E-07	0.75742776E-07	0.73219780E-07
50	0.0	0.15007060E-06	0.19557928E-06	0.17316466E-06	0.12850018E-06	0.11007444E-06
95	0.59110117E-09	0.38010899E-06	0.29189255E-06	0.24359178E-06	0.19158728E-06	0.12307993E-06
99	0.17581433E-05	0.83792327E-06	0.62629374E-06	0.58788004E-06	0.49176458E-06	0.14301321E-06
99.5	0.29224684E-05	0.11764350E-05	0.91553710E-06	0.82102144E-06	0.56503490E-06	0.14409750E-06
99.9	0.56128920E-05	0.24570221E-05	0.21853366E-05	0.17620714E-05	0.10170143E-05	0.14915304E-06
100	0.42233936E-04	0.52862160E-05	0.26431080E-05	0.28504437E-05	0.10222102E-05	0.15006066E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=22.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.20389176E-10	0.19992385E-07
50	0.0	0.0	0.0	0.0	0.13813594E-07	0.28445811E-07
75	0.0	0.0	0.23833167E-08	0.24813552E-07	0.42410218E-07	0.40333958E-07
90	0.0	0.54455477E-07	0.11946088E-06	0.10623080E-06	0.94955624E-07	0.62961988E-07
95	0.0	0.22869460E-06	0.19328428E-06	0.16950753E-06	0.13235518E-06	0.75315427E-07
99	0.11487864E-05	0.60345269E-06	0.46176353E-06	0.36859063E-06	0.18517102E-06	0.90167873E-07
99.5	0.21258884E-05	0.90078481E-06	0.56635531E-06	0.42334409E-06	0.24530493E-06	0.90845560E-07
99.9	0.40991818E-05	0.12700320E-05	0.76666845E-06	0.98082091E-06	0.37735197E-06	0.92208381E-07
100	0.23539702E-04	0.29424627E-05	0.14712314E-05	0.11320553E-05	0.37735197E-06	0.93904873E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=45.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.14582606E-11	0.20480179E-07
50	0.0	0.0	0.0	0.0	0.10482022E-07	0.29226378E-07
75	0.0	0.0	0.10083996E-08	0.14940628E-07	0.50052737E-07	0.50985456E-07
90	0.0	0.43275435E-07	0.13510913E-06	0.12896214E-06	0.10230991E-06	0.85150248E-07
95	0.0	0.27654005E-06	0.24085580E-06	0.20941150E-06	0.14324081E-06	0.93926701E-07
99	0.10752683E-05	0.72607270E-06	0.58212339E-06	0.46406512E-06	0.39380984E-06	0.12303661E-06
99.5	0.25677864E-05	0.10686435E-05	0.78176242E-06	0.65926480E-06	0.44854397E-06	0.15118201E-06
99.9	0.53723543E-05	0.19507843E-05	0.17475313E-05	0.12004366E-05	0.52173317E-06	0.15981925E-06
100	0.28810478E-04	0.36013098E-05	0.18006549E-05	0.12010714E-05	0.56730175E-06	0.16089183E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=67.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.71000514E-11	0.14641117E-07
50	0.0	0.0	0.0	0.0	0.70953732E-08	0.25460412E-07
75	0.0	0.0	0.14370967E-08	0.15539950E-07	0.47672188E-07	0.39219451E-07
90	0.0	0.31356308E-07	0.95708401E-07	0.10693691E-06	0.83028453E-07	0.52725785E-07
95	0.0	0.19428228E-06	0.20763008E-06	0.16664444E-06	0.12739076E-06	0.63567370E-07
99	0.87763675E-06	0.55491716E-06	0.43887115E-06	0.35722360E-06	0.18691651E-06	0.12359015E-06
99.5	0.20100751E-05	0.87702165E-06	0.58959779E-06	0.42241618E-06	0.20926058E-06	0.12442842E-06
99.9	0.40991790E-05	0.14034076E-05	0.70586043E-06	0.50623231E-06	0.30232917E-06	0.12563163E-06
100	0.12149576E-04	0.24299152E-05	0.93458272E-06	0.58561466E-06	0.37802903E-06	0.12742345E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=90.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.40193058E-08	0.23817272E-07
50	0.0	0.0	0.25931188E-10	0.20316566E-08	0.25079416E-07	0.43462933E-07
75	0.0	0.12126509E-08	0.35333194E-07	0.55407174E-07	0.67701819E-07	0.66386406E-07
90	0.0	0.14632678E-06	0.15654877E-06	0.15234110E-06	0.12525743E-06	0.98119585E-07
95	0.42502215E-08	0.31009449E-06	0.26077959E-06	0.23628263E-06	0.18326324E-06	0.11449896E-06
99	0.16467056E-05	0.79867789E-06	0.58171133E-06	0.52813391E-06	0.34962306E-06	0.17958166E-06
99.5	0.26262996E-05	0.10492295E-05	0.89531187E-06	0.76633961E-06	0.43603438E-06	0.18571274E-06
99.9	0.58168962E-05	0.21671476E-05	0.17486946E-05	0.11915372E-05	0.50521476E-06	0.19400682E-06
100	0.28155948E-04	0.35194935E-05	0.19037416E-05	0.12691607E-05	0.66004691E-06	0.20071275E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=112.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.21045696E-09	0.42891095E-08	0.41060400E-07	0.84093926E-07
50	0.0	0.19965642E-08	0.40799645E-07	0.77697678E-07	0.12948186E-06	0.16824447E-06
75	0.95705752E-11	0.18900982E-06	0.26854855E-06	0.29308774E-06	0.31357575E-06	0.32824516E-06
90	0.18181407E-06	0.71684804E-06	0.64501506E-06	0.61001066E-06	0.51318074E-06	0.45536137E-06
95	0.13917124E-05	0.11540496E-05	0.95202239E-06	0.85374086E-06	0.71276997E-06	0.51387065E-06
99	0.49232312E-05	0.22464483E-05	0.19052277E-05	0.15245078E-05	0.10616695E-05	0.57821558E-06
99.5	0.62745294E-05	0.29965740E-05	0.22118547E-05	0.19582285E-05	0.12047130E-05	0.59775459E-06
99.9	0.10065412E-04	0.42593965E-05	0.29897665E-05	0.24965957E-05	0.15395262E-05	0.60724216E-06
100	0.18854073E-04	0.69515136E-05	0.40005962E-05	0.26940934E-05	0.16514177E-05	0.60842700E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=5000.0 Y=135.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.23127003E-08	0.10091179E-06	0.16987104E-06	0.27334886E-06	0.38332479E-06
50	0.21753807E-10	0.29918658E-06	0.41405730E-06	0.45959354E-06	0.55291048E-06	0.61919405E-06
75	0.54507149E-06	0.90911567E-06	0.91407458E-06	0.91384572E-06	0.93934290E-06	0.97202701E-06
90	0.20855923E-05	0.17987522E-05	0.15966352E-05	0.15276491E-05	0.14050647E-05	0.11763577E-05
95	0.23725582E-05	0.26130037E-05	0.23192615E-05	0.21618853E-05	0.16822378E-05	0.12873825E-05
99	0.82008863E-05	0.53806925E-05	0.41197482E-05	0.35819121E-05	0.27855021E-05	0.15215419E-05
99.5	0.12291127E-04	0.63633797E-05	0.50722783E-05	0.40628656E-05	0.34123441E-05	0.16112281E-05
99.9	0.21577056E-04	0.95259120E-05	0.79465844E-05	0.73275551E-05	0.51353773E-05	0.17033917E-05
100	0.48696151E-04	0.12974342E-04	0.11042428E-04	0.87179824E-05	0.56531680E-05	0.17843304E-05

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=315.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.11898855E-07	0.39420250E-07
50	0.0	0.0	0.16825294E-08	0.17398602E-07	0.48724825E-07	0.81325879E-07
75	0.0	0.57269261E-07	0.95579821E-07	0.10819360E-06	0.11580113E-06	0.13432509E-06
90	0.26942164E-07	0.29764158E-06	0.28247553E-06	0.26897686E-06	0.24290699E-06	0.19045433E-06
95	0.50944533E-06	0.51394477E-06	0.46507063E-06	0.40625190E-06	0.33735540E-06	0.21974654E-06
99	0.20018133E-05	0.11472730E-05	0.87053417E-06	0.76213655E-06	0.63080751E-06	0.24315244E-06
99.5	0.28199247E-05	0.14036650E-05	0.10350741E-05	0.95666292E-06	0.74433427E-06	0.24778973E-06
99.9	0.60016846E-05	0.23125722E-05	0.17085695E-05	0.31087411E-05	0.12042174E-05	0.25372725E-06
100	0.44052867E-04	0.98463388E-05	0.49264872E-05	0.33393026E-05	0.13460522E-05	0.25695738E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=337.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.38649119E-08	0.29699688E-07
50	0.0	0.0	0.30288896E-10	0.48866617E-08	0.23919647E-07	0.44517531E-07
75	0.0	0.79878504E-08	0.48146685E-07	0.55628789E-07	0.67815961E-07	0.64992946E-07
90	0.87539087E-10	0.14584339E-06	0.15432619E-06	0.15032344E-06	0.13241515E-06	0.83584041E-07
95	0.12040977E-06	0.28320778E-06	0.25935333E-06	0.23495539E-06	0.16971364E-06	0.97883003E-07
99	0.13245890E-05	0.67357894E-06	0.48515130E-06	0.40291360E-06	0.24880012E-06	0.10802484E-06
99.5	0.19078780E-05	0.87823923E-06	0.57994760E-06	0.44074397E-06	0.27561646E-06	0.11238512E-06
99.9	0.35605253E-05	0.13149829E-05	0.72390708E-06	0.52097437E-06	0.30930397E-06	0.11448327E-06
100	0.81129356E-05	0.14976467E-05	0.78242454E-06	0.62768413E-06	0.32477283E-06	0.11568238E-06

TABLE 2.3-41

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=0.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.16834784E-10	0.12309329E-07
50	0.0	0.0	0.0	0.31556008E-11	0.10926414E-07	0.19151265E-07
75	0.0	0.27285314E-12	0.70115966E-08	0.20003114E-07	0.27724038E-07	0.26369385E-07
90	0.0	0.49454080E-07	0.68042254E-07	0.63437994E-07	0.45896854E-07	0.41167368E-07
95	0.48697504E-10	0.13497800E-06	0.10816240E-06	0.87966214E-07	0.67900999E-07	0.47427534E-07
99	0.66222321E-06	0.31061472E-06	0.23853221E-06	0.20138287E-06	0.19189895E-06	0.63146729E-07
99.5	0.10830563E-05	0.42724957E-06	0.35048373E-06	0.30563172E-06	0.21208240E-06	0.63680375E-07
99.9	0.21694095E-05	0.14475672E-05	0.93568065E-06	0.86835882E-06	0.46961736E-06	0.64146434E-07
100	0.20840351E-04	0.26050766E-05	0.13025383E-05	0.13460503E-05	0.47182988E-06	0.64146434E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=22.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.14361038E-11	0.71856725E-08
50	0.0	0.0	0.0	0.0	0.40441996E-11	0.96102717E-08
75	0.0	0.0	0.40697401E-09	0.68615691E-08	0.14953013E-07	0.14444218E-07
90	0.0	0.14685845E-07	0.40945434E-07	0.39981616E-07	0.25217113E-07	0.23196083E-07
95	0.0	0.81890562E-07	0.67836766E-07	0.60708089E-07	0.48405600E-07	0.28668552E-07
99	0.38537263E-06	0.21330425E-06	0.17496620E-06	0.13972345E-06	0.71506918E-07	0.32824058E-07
99.5	0.75938635E-06	0.32788751E-06	0.22722116E-06	0.16397127E-06	0.89498371E-07	0.33046216E-07
99.9	0.15570795E-05	0.49191385E-06	0.29049704E-06	0.40790667E-06	0.15543850E-06	0.33252277E-07
100	0.97897600E-05	0.12237197E-05	0.61186000E-06	0.46631561E-06	0.15543850E-06	0.33908496E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=45.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.15478715E-12	0.75894029E-08
50	0.0	0.0	0.0	0.0	0.30787499E-08	0.10594668E-07
75	0.0	0.0	0.17251980E-09	0.45243382E-08	0.18642215E-07	0.18259620E-07
90	0.0	0.10589190E-07	0.49752124E-07	0.47352728E-07	0.39567627E-07	0.32490437E-07
95	0.0	0.10258418E-06	0.87888225E-07	0.79934239E-07	0.54511247E-07	0.35676820E-07
99	0.41110115E-06	0.28796683E-06	0.22915549E-06	0.18589975E-06	0.16457756E-06	0.48509975E-07
99.5	0.93040444E-06	0.42667341E-06	0.29673453E-06	0.25408576E-06	0.17955091E-06	0.59185670E-07
99.9	0.20388570E-05	0.75091657E-06	0.73016986E-06	0.49865224E-06	0.19861722E-06	0.62496042E-07
100	0.11967654E-04	0.14967463E-05	0.74837357E-06	0.49891571E-06	0.21501700E-06	0.62915490E-07

TABLE 2.3-41

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=67.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.48820513E-12	0.53997553E-08
50	0.0	0.0	0.0	0.0	0.21488484E-08	0.90656442E-08
75	0.0	0.0	0.19064900E-09	0.42332360E-08	0.16774479E-07	0.14740483E-07
90	0.0	0.88868433E-08	0.35620776E-07	0.38310301E-07	0.30575201E-07	0.19366762E-07
95	0.0	0.71241516E-07	0.74582317E-07	0.61896685E-07	0.48626674E-07	0.24230758E-07
99	0.29504389E-06	0.22101483E-06	0.16693326E-06	0.13171086E-06	0.73985177E-07	0.47917510E-07
99.5	0.72123976E-06	0.32533364E-06	0.22253283E-06	0.17043118E-06	0.80711118E-07	0.48377270E-07
99.9	0.17442262E-05	0.54720454E-06	0.29351366E-06	0.19567574E-06	0.10984843E-06	0.48791776E-07
100	0.50527960E-05	0.10105587E-05	0.38867660E-06	0.24060932E-06	0.13656671E-06	0.49360189E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=90.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.91895269E-09	0.89162064E-08
50	0.0	0.0	0.15489381E-11	0.33227221E-09	0.85072607E-08	0.14988771E-07
75	0.0	0.14541743E-09	0.10274171E-07	0.19407693E-07	0.24531005E-07	0.23121000E-07
90	0.0	0.49379487E-07	0.55943179E-07	0.53257811E-07	0.46220329E-07	0.35295201E-07
95	0.44333115E-09	0.11061496E-06	0.93854453E-07	0.86122611E-07	0.65709855E-07	0.42358931E-07
99	0.60299112E-06	0.31099250E-06	0.22322087E-06	0.20123827E-06	0.13368032E-06	0.69289285E-07
99.5	0.95648102E-06	0.41436692E-06	0.34033985E-06	0.30379016E-06	0.17566379E-06	0.71729801E-07
99.9	0.23944494E-05	0.80091729E-06	0.71727061E-06	0.51419346E-06	0.21365605E-06	0.74848742E-07
100	0.12227629E-04	0.15284531E-05	0.77249723E-06	0.51499813E-06	0.28325258E-06	0.77379980E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=112.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.20839219E-10	0.84166718E-09	0.14151624E-07	0.29900782E-07
50	0.0	0.27501934E-09	0.11402463E-07	0.25803622E-07	0.47297128E-07	0.60711443E-07
75	0.16949690E-12	0.60673813E-07	0.94820109E-07	0.10325118E-06	0.10866609E-06	0.11630510E-06
90	0.40460890E-07	0.26155215E-06	0.23049108E-06	0.21451825E-06	0.18499907E-06	0.16472660E-06
95	0.45990720E-06	0.41155283E-06	0.34330810E-06	0.30469738E-06	0.25186006E-06	0.18124632E-06
99	0.18238316E-05	0.83206919E-06	0.70830458E-06	0.56533167E-06	0.40792537E-06	0.19859812E-06
99.5	0.23300199E-05	0.10834447E-05	0.81554646E-06	0.70112458E-06	0.43298786E-06	0.20610111E-06
99.9	0.29353081E-05	0.15642336E-05	0.10322783E-05	0.92796711E-06	0.53611660E-06	0.20792345E-06
100	0.73103029E-05	0.27324531E-05	0.15486767E-05	0.10390831E-05	0.58725243E-06	0.20836592E-06

TABLE 2.3-41

CUMULATIVE FREQUENCY DISTRIBUTION AT X=10000.0 Y=135.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.30513836E-09	0.33975152E-07	0.60142440E-07	0.97421378E-07	0.14158559E-06
50	0.81213882E-12	0.10084892E-06	0.14449859E-06	0.15982766E-06	0.19696233E-06	0.22543361E-06
75	0.16013809E-06	0.32541402E-06	0.32830889E-06	0.32482870E-06	0.34691823E-06	0.35846648E-06
90	0.76552914E-06	0.66848929E-06	0.60408695E-06	0.57567422E-06	0.53463327E-06	0.45199931E-06
95	0.12743885E-05	0.99710542E-06	0.89382365E-06	0.83963278E-06	0.65709690E-06	0.48823017E-06
99	0.32882863E-05	0.21611031E-05	0.16481881E-05	0.14180096E-05	0.11066504E-05	0.58373649E-06
99.5	0.49012660E-05	0.25623904E-05	0.20536236E-05	0.16799531E-05	0.13855224E-05	0.61466212E-06
99.9	0.90633584E-05	0.39299375E-05	0.32929020E-05	0.30402252E-05	0.20607076E-05	0.64537051E-06
100	0.21114320E-04	0.53340282E-05	0.45244979E-05	0.35760759E-05	0.22838203E-05	0.69248154E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=315.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.65581034E-08	0.22620974E-07
50	0.0	0.0	0.55711591E-09	0.87253866E-08	0.28744893E-07	0.47982880E-07
75	0.0	0.28775133E-07	0.54719095E-07	0.61016749E-07	0.68279519E-07	0.77431821E-07
90	0.98195940E-08	0.16965191E-06	0.16625148E-06	0.15875236E-06	0.14214334E-06	0.11057045E-06
95	0.28281733E-06	0.30325634E-06	0.27776838E-06	0.24559421E-06	0.19655960E-06	0.12945674E-06
99	0.11925194E-05	0.69576959E-06	0.51861451E-06	0.47041817E-06	0.37303488E-06	0.15222821E-06
99.5	0.17336597E-05	0.83605255E-06	0.63974949E-06	0.57241328E-06	0.43054570E-06	0.15427327E-06
99.9	0.41135654E-05	0.13727631E-05	0.10024742E-05	0.20443877E-05	0.78021060E-06	0.15839174E-06
100	0.30345429E-04	0.64752967E-05	0.32388989E-05	0.21875321E-05	0.86791459E-06	0.16016929E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=337.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
250.0	0.0	0.0	0.0	0.0	.19011699E-08	0.16883281E-07
50	0.0	0.0	0.66232393E-11	0.20247073E-08	0.13712853E-07	0.25553373E-07
75	0.0	0.31021297E-08	0.26537951E-07	0.30617500E-07	0.38804675E-07	0.37484096E-07
90	0.17074051E-10	0.84400710E-07	0.87690921E-07	0.88357922E-07	0.76232027E-07	0.48131973E-07
95	0.55542273E-07	0.16197566E-06	0.15089341E-06	0.13481110E-06	0.10000292E-06	0.55359607E-07
99	0.77743528E-06	0.38396513E-06	0.27873079E-06	0.23427765E-06	0.14466826E-06	0.65524091E-07
99.5	0.11094689E-05	0.51570566E-06	0.34316957E-06	0.26858902E-06	0.16511478E-06	0.69627163E-07
99.9	0.21586957E-05	0.78843152E-06	0.43353373E-06	0.30150534E-06	0.17615287E-06	0.71047509E-07
100	0.50085073E-05	0.90445928E-06	0.45224823E-06	0.37201784E-06	0.18749381E-06	0.71783518E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=0.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.42491158E-11	0.68898416E-08
50	0.0	0.0	0.0	0.50700438E-12	0.60802101E-08	0.10994714E-07
75	0.0	0.0	0.29931513E-08	0.10471879E-07	0.15913940E-07	0.15212056E-07
90	0.0	0.25995199E-07	0.39465355E-07	0.37539614E-07	0.26602049E-07	0.23917156E-07
95	0.84520620E-11	0.78655887E-07	0.64125516E-07	0.50901349E-07	0.38762082E-07	0.27592829E-07
99	0.39688416E-06	0.18071910E-06	0.13130398E-06	0.12209216E-06	0.10809686E-06	0.39930477E-07
99.5	0.63648679E-06	0.24657982E-06	0.21058162E-06	0.17981279E-06	0.13211240E-06	0.40202647E-07
99.9	0.13129211E-05	0.89727888E-06	0.59065110E-06	0.57528712E-06	0.30167593E-06	0.40480511E-07
100	0.13806886E-04	0.17258608E-05	0.86293073E-06	0.87396558E-06	0.30306848E-06	0.40480511E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=22.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.33338339E-12	0.39631480E-08
50	0.0	0.0	0.0	0.0	0.18983932E-08	0.53384994E-08
75	0.0	0.0	0.13741124E-09	0.32824041E-08	0.85651628E-08	0.81658236E-08
90	0.0	0.67215353E-08	0.22862757E-07	0.21644198E-07	0.19387659E-07	0.13477994E-07
95	0.0	0.47744486E-07	0.40322814E-07	0.35388123E-07	0.26921331E-07	0.16593361E-07
99	0.20850109E-06	0.12234443E-06	0.10114360E-06	0.81633004E-07	0.41390166E-07	0.19006450E-07
99.5	0.43771365E-06	0.19947140E-06	0.13024169E-06	0.96822475E-07	0.51571217E-07	0.19195689E-07
99.9	0.91841656E-06	0.30954106E-06	0.16814755E-06	0.25093811E-06	0.95084317E-07	0.19331665E-07
100	0.60225157E-05	0.75281446E-06	0.37640723E-06	0.28525307E-06	0.95084317E-07	0.19398097E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=45.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.16775125E-13	0.43620254E-08
50	0.0	0.0	0.0	0.0	0.15074273E-08	0.62900263E-08
75	0.0	0.0	0.50292701E-10	0.18487309E-08	0.10394373E-07	0.10547602E-07
90	0.0	0.46893938E-08	0.29167751E-07	0.26986175E-07	0.22845800E-07	0.19048986E-07
95	0.0	0.59042485E-07	0.54270807E-07	0.46654009E-07	0.32093070E-07	0.21249946E-07
99	0.23026769E-06	0.16328897E-06	0.13279731E-06	0.13307749E-06	0.98863723E-07	0.29389479E-07
99.5	0.55310579E-06	0.24180156E-06	0.19961624E-06	0.15243188E-06	0.10709704E-06	0.35758887E-07
99.9	0.11425655E-05	0.44322462E-06	0.43867260E-06	0.31491277E-06	0.12175013E-06	0.37773642E-07
100	0.75579073E-05	0.94493657E-06	0.47246829E-06	0.31497882E-06	0.13047810E-06	0.38027157E-07

TABLE 2.3-41

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=67.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.84983778E-13	0.28847238E-08
50	0.0	0.0	0.0	0.0	0.10945815E-08	0.51356537E-08
75	0.0	0.0	0.51957716E-10	0.18548296E-08	0.95388017E-08	0.86745793E-08
90	0.0	0.39902375E-08	0.20557884E-07	0.22688319E-07	0.18057346E-07	0.11139001E-07
95	0.0	0.41215444E-07	0.40739160E-07	0.35761879E-07	0.28582093E-07	0.14339826E-07
99	0.15917016E-06	0.13336694E-06	0.99734848E-07	0.77640095E-07	0.45095966E-07	0.28247744E-07
99.5	0.42300820E-06	0.19946970E-06	0.12478461E-06	0.10174961E-06	0.48676057E-07	0.28512972E-07
99.9	0.10532685E-05	0.31382297E-06	0.18011775E-06	0.12007848E-06	0.62027539E-07	0.28752943E-07
100	0.31094064E-05	0.62168124E-06	0.23910815E-06	0.14801935E-06	0.76844231E-07	0.29126156E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=90.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.35814640E-09	0.50313389E-08
50	0.0	0.0	0.26058447E-12	0.10601167E-09	0.45774478E-08	0.82628588E-08
75	0.0	0.35607323E-10	0.48928221E-08	0.10372965E-07	0.13553148E-07	0.13117738E-07
90	0.0	0.27021031E-07	0.31015087E-07	0.31375979E-07	0.26601228E-07	0.20073045E-07
95	0.98749744E-10	0.61981723E-07	0.54284722E-07	0.49494322E-07	0.39624183E-07	0.24721672E-07
99	0.34081376E-06	0.17759987E-06	0.13384806E-06	0.12186308E-06	0.83738769E-07	0.40617124E-07
99.5	0.56139402E-06	0.26591306E-06	0.19706977E-06	0.18206487E-06	0.10600883E-06	0.42088498E-07
99.9	0.13590184E-05	0.48480365E-06	0.43750231E-06	0.31885628E-06	0.13196990E-06	0.43901814E-07
100	0.76525512E-05	0.95656833E-06	0.48143238E-06	0.32095488E-06	0.17561098E-06	0.45360050E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=112.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.43523128E-11	0.30470293E-09	0.75992297E-08	0.16716541E-07
50	0.0	0.77833850E-10	0.54824341E-08	0.13232260E-07	0.27178555E-07	0.34113487E-07
75	0.0	0.32367581E-07	0.53171512E-07	0.58579150E-07	0.60095658E-07	0.64531093E-07
90	0.15921973E-07	0.14831653E-06	0.12985015E-06	0.12489033E-06	0.10569761E-06	0.94182724E-07
95	0.24518067E-06	0.23630218E-06	0.19737212E-06	0.16936474E-06	0.14695985E-06	0.10216166E-06
99	0.10542435E-05	0.48661377E-06	0.40624525E-06	0.32735522E-06	0.23301607E-06	0.11407087E-06
99.5	0.13866784E-05	0.62256959E-06	0.47548781E-06	0.39148244E-06	0.25524099E-06	0.11504034E-06
99.9	0.23214416E-05	0.91088100E-06	0.58397745E-06	0.54756902E-06	0.30177517E-06	0.11607568E-06
100	0.44572580E-05	0.16203585E-05	0.91777423E-06	0.61470507E-06	0.32979307E-06	0.11660666E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=15000.0 Y=135.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.87701235E-10	0.17875784E-07	0.32972068E-07	0.54499544E-07	0.83042266E-07
50	0.0	0.54354430E-07	0.80337145E-07	0.89459093E-07	0.11152611E-06	0.13161014E-06
75	0.76664151E-07	0.18519063E-06	0.18656362E-06	0.18567346E-06	0.19885351E-06	0.20508207E-06
90	0.43765573E-06	0.38521569E-06	0.35380822E-06	0.33945889E-06	0.31262346E-06	0.26365655E-06
95	0.74108164E-06	0.58376895E-06	0.53680361E-06	0.49867924E-06	0.38944358E-06	0.28592308E-06
99	0.20399293E-05	0.12813935E-05	0.98928103E-06	0.86699043E-06	0.64731728E-06	0.34321846E-06
99.5	0.28955837E-05	0.15893529E-05	0.12666242E-05	0.10356380E-05	0.83330207E-06	0.35980611E-06
99.9	0.57216357E-05	0.24207111E-05	0.20257066E-05	0.18715227E-05	0.12421297E-05	0.37859621E-06
100	0.13350488E-04	0.32579665E-05	0.27657179E-05	0.21882661E-05	0.13833542E-05	0.40881116E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=315.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.9	0.0	0.25466331E-08	0.95368655E-08
50	0.0	0.0	0.78097778E-10	0.29290086E-08	0.12006758E-07	0.21992719E-07
75	0.0	0.96733572E-08	0.23271738E-07	0.26817059E-07	0.29294508E-07	0.33200383E-07
90	0.15804347E-08	0.75784897E-07	0.72687101E-07	0.69492899E-07	0.62654692E-07	0.50567294E-07
95	0.11228110E-06	0.13580825E-06	0.12496923E-06	0.11077958E-06	0.87188369E-07	0.57074697E-07
99	0.54333287E-06	0.31370473E-06	0.23337026E-06	0.20854372E-06	0.16181275E-06	0.73323690E-07
99.5	0.78534606E-06	0.38627832E-06	0.29357693E-06	0.25960179E-06	0.18710909E-06	0.74192769E-07
99.9	0.18420833E-05	0.59907313E-06	0.44757218E-06	0.10596832E-05	0.39342717E-06	0.77013965E-07
100	0.16618098E-04	0.33369779E-05	0.16687000E-05	0.11220336E-05	0.43589006E-06	0.77496850E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=337.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.57549632E-09	0.73884365E-08
50	0.0	0.0	0.36937684E-12	0.42537796E-09	0.53889941E-08	0.10797148E-07
75	0.0	0.60633898E-09	0.98081117E-08	0.13246350E-07	0.16726691E-07	0.15961593E-07
90	0.53020040E-12	0.36850878E-07	0.36645520E-07	0.38873999E-07	0.32473420E-07	0.19701353E-07
95	0.14082605E-07	0.69344082E-07	0.68281850E-07	0.57674050E-07	0.43507271E-07	0.22800123E-07
99	0.35425074E-06	0.16567549E-06	0.12153515E-06	0.10311425E-06	0.63890070E-07	0.31202003E-07
99.5	0.49062709E-06	0.21010817E-06	0.15162880E-06	0.11906582E-06	0.68105351E-07	0.32523928E-07
99.9	0.93845620E-06	0.35708922E-06	0.20588476E-06	0.15175669E-06	0.90669801E-07	0.33244039E-07
100	0.23853527E-05	0.45305342E-06	0.22763510E-06	0.16396825E-06	0.99481440E-07	0.33542680E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=0.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.29609935E-12	0.28636971E-08
50	0.0	0.0	0.0	0.11113838E-13	0.22228508E-08	0.47122803E-08
75	0.0	0.0	0.73223183E-09	0.38157530E-08	0.69859922E-08	0.66229759E-07
90	0.0	0.97641788E-08	0.17463666E-07	0.17415971E-07	0.11571441E-07	0.10530172E-07
95	0.15624204E-12	0.34692391E-07	0.29171744E-07	0.23136387E-07	0.16517987E-07	0.12725344E-07
99	0.16071755E-06	0.76794834E-07	0.58218461E-07	0.51091696E-07	0.47019551E-07	0.18705244E-07
99.5	0.29896370E-06	0.10925226E-06	0.93230540E-07	0.79488757E-07	0.63624952E-07	0.18805757E-07
99.9	0.58652580E-06	0.42542558E-06	0.28551841E-06	0.28332755E-06	0.14418623E-06	0.18922940E-07
100	0.67998617E-05	0.84998271E-06	0.42499136E-06	0.42281243E-06	0.14469254E-06	0.18922940E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=22.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.10799511E-13	0.15164612E-08
50	0.0	0.0	0.0	0.0	0.61131900E-09	0.21830511E-08
75	0.0	0.0	0.16979002E-10	0.87244656E-09	0.35564787E-08	0.36691099E-08
90	0.0	0.17925390E-08	0.95135775E-08	0.92867367E-08	0.84610576E-08	0.63178405E-08
95	0.0	0.19747674E-07	0.18311582E-07	0.16318879E-07	0.12306064E-07	0.74280209E-08
99	0.73414014E-07	0.58875209E-07	0.44931362E-07	0.37825529E-07	0.19342966E-07	0.87324601E-08
99.5	0.19305151E-06	0.85239321E-07	0.57500131E-07	0.45481329E-07	0.23543205E-07	0.88065910E-08
99.9	0.40763098E-06	0.14512125E-07	0.78058292E-07	0.11679180E-06	0.43894588E-07	0.88819903E-08
100	0.28030036E-05	0.35037544E-06	0.17518772E-06	0.13168375E-06	0.43894588E-07	0.89204555E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=45.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.0	0.18662873E-08
50	0.0	0.0	0.0	0.0	0.50042726E-09	0.26730709E-08
75	0.0	0.0	0.39705583E-11	0.52659033E-09	0.46017661E-08	0.47644235E-08
90	0.0	0.10701231E-08	0.11990824E-07	0.11826288E-07	0.10011917E-07	0.81641041E-08
95	0.0	0.24349113E-07	0.24542345E-07	0.20046127E-07	0.13839816E-07	0.92468966E-08
99	0.92524488E-07	0.69798716E-07	0.60351681E-07	0.59177616E-07	0.43500155E-07	0.13539605E-07
99.5	0.23834008E-06	0.11319975E-06	0.89329035E-07	0.70118176E-07	0.51050378E-07	0.16306434E-07
99.9	0.53826830E-06	0.28328691E-06	0.19303008E-06	0.15226681E-06	0.54461015E-07	0.17222273E-07
100	0.36544034E-05	0.45681497E-06	0.22840749E-06	0.15227164E-06	0.61999003E-07	0.17337861E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=67.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.22644992E-14	0.11720056E-08
50	0.0	0.0	0.0	0.0	0.31417380E-09	0.22692874E-08
75	0.0	0.0	0.52800845E-11	0.48673421E-09	0.40366999E-08	0.38441001E-08
90	0.0	0.88995789E-09	0.85814769E-08	0.10402204E-07	0.83399527E-08	0.47788618E-08
95	0.0	0.17683718E-07	0.17903890E-07	0.14717511E-07	0.11889053E-07	0.60918310E-08
99	0.54966797E-07	0.61008564E-07	0.43119574E-07	0.35202913E-07	0.19701574E-07	0.12019374E-07
99.5	0.18337704E-06	0.85349200E-07	0.53488929E-07	0.43651355E-07	0.22257193E-07	0.12152224E-07
99.9	0.49097372E-06	0.14134537E-06	0.80181849E-07	0.53454563E-07	0.25143208E-07	0.12246886E-07
100	0.14467178E-05	0.28934352E-06	0.11128594E-06	0.68891268E-07	0.31165513E-07	0.12445035E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=90.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.65864397E-10	0.20825124E-08
50	0.0	0.0	0.92840334E-14	0.11592745E-10	0.16247081E-08	0.35264047E-08
75	0.0	0.25062209E-11	0.12690611E-08	0.36838277E-08	0.57753837E-08	0.57722005E-08
90	0.0	0.98424167E-08	0.14377200E-07	0.13429144E-07	0.12304604E-07	0.88840082E-08
95	0.59097033E-11	0.28230950E-07	0.25187923E-07	0.21970269E-07	0.19115102E-07	0.10852848E-07
99	0.13526767E-06	0.80749828E-07	0.62610525E-07	0.57959785E-07	0.40544993E-07	0.17481465E-07
99.5	0.25345207E-06	0.11674047E-06	0.94287941E-07	0.81522671E-07	0.47361077E-07	0.17962108E-07
99.9	0.62218726E-06	0.22123038E-06	0.19813035E-06	0.14556815E-06	0.59094461E-07	0.18709208E-07
100	0.34936356E-05	0.43670445E-06	0.21909176E-06	0.14606115E-06	0.78980747E-07	0.19330866E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=112.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.23345361E-12	0.47088083E-10	0.28057887E-08	0.67437043E-08
50	0.0	0.62331269E-11	0.15318589E-08	0.47521667E-08	0.10813505E-07	0.14239223E-07
75	0.0	0.11210062E-07	0.22545485E-07	0.23727203E-07	0.25251463E-07	0.28560905E-07
90	0.30338845E-08	0.61439380E-07	0.58503737E-07	0.54185911E-07	0.46454740E-07	0.40374253E-07
95	0.90963283E-07	0.10561797E-06	0.86726743E-07	0.76200081E-07	0.62735467E-07	0.44272010E-07
99	0.47112485E-06	0.22302675E-06	0.16909689E-06	0.14090898E-06	0.99676811E-07	0.50122829E-07
99.5	0.65351367E-06	0.27533167E-06	0.20922118E-06	0.17070170E-06	0.11543676E-06	0.51748586E-07
99.9	0.10784406E-05	0.41844237E-06	0.29186162E-06	0.24557761E-06	0.13325729E-06	0.52903065E-07
100	0.20587149E-05	0.70244937E-06	0.40353405E-06	0.26973731E-06	0.14793858E-06	0.53056681E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=30000.0 Y=135.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.69041387E-11	0.64947194E-08	0.12591528E-07	0.23224793E-07	0.36272571E-07
50	0.0	0.20490724E-07	0.33088554E-07	0.36662065E-07	0.46559546E-07	0.58065218E-07
75	0.22570859E-07	0.77671871E-07	0.77909647E-07	0.78995015E-07	0.85990962E-07	0.85851411E-07
90	0.18494472E-06	0.16740989E-06	0.15365777E-06	0.14811320E-06	0.13546395E-06	0.11276023E-06
95	0.33302257E-06	0.26129362E-06	0.23807456E-06	0.22218791E-06	0.16813664E-06	0.12399533E-06
99	0.94607157E-06	0.56286763E-06	0.45282661E-06	0.38698556E-06	0.27706278E-06	0.14644928E-06
99.5	0.13263107E-05	0.73711476E-06	0.56172013E-06	0.48058166E-06	0.37332501E-06	0.15398774E-06
99.9	0.27695505E-05	0.11265029E-05	0.93776180E-06	0.85681131E-06	0.55677998E-06	0.16290767E-06
100	0.65669201E-05	0.14959496E-05	0.12713581E-05	0.10003M147E-05	0.62457548E-06	0.17522251E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=315.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.16415163E-08	0.70380430E-08
50	0.0	0.0	0.29444877E-10	0.19349189E-08	0.84524601E-08	0.16231006E-07
75	0.0	0.60881220E-08	0.16645327E-07	0.19264924E-07	0.20944906E-07	0.24019435E-07
90	0.71701356E-09	0.53886090E-07	0.53000878E-07	0.51506767E-07	0.45976762E-07	0.37226414E-07
95	0.75505227E-07	0.99917543E-07	0.91774098E-07	0.81905512E-07	0.63249729E-07	0.41935728E-07
99	0.41088538E-06	0.22936251E-06	0.17727916E-06	0.15149800E-06	0.11761983E-06	0.55074278E-07
99.5	0.58249861E-06	0.28886063E-06	0.21878833E-06	0.18809868E-06	0.13698002E-06	0.55732723E-07
99.9	0.13457156E-05	0.43757666E-06	0.32631584E-06	0.82002043E-06	0.30040792E-06	0.58093370E-07
100	0.12992401E-04	0.25675909E-05	0.12838909E-05	0.86207729E-06	0.33248313E-06	0.58379729E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=337.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.35253844E-09	0.53102625E-08
50	0.0	0.0	0.67349663E-13	0.23781399E-09	0.38566021E-08	0.76761992E-08
75	0.0	0.29737235E-09	0.68120087E-08	0.97082982E-08	0.12000356E-07	0.11549659E-07
90	0.0	0.26685257E-07	0.26478013E-07	0.29063639E-07	0.24013083E-07	0.13988611E-07
95	0.76828286E-08	0.51009202E-07	0.48923273E-07	0.42713317E-07	0.31614430E-07	0.15853630E-07
99	0.25945445E-06	0.12263331E-06	0.88253955E-07	0.72231558E-07	0.46019963E-07	0.23189518E-07
99.5	0.36299582E-06	0.15003980E-06	0.10998303E-06	0.91423658E-07	0.50830963E-07	0.24025013E-07
99.9	0.69772511E-06	0.27427109E-06	0.15174987E-06	0.11625650E-06	0.69469593E-07	0.24556485E-07
100	0.17996481E-05	0.34739230E-06	0.17438481E-06	0.12516523E-06	0.76494473E-07	0.24756925E-07

TABLE 2.3-41

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=0.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.69631855E-13	0.20553141E-08
50	0.0	0.0	0.0	0.0	0.14375043E-08	0.34248908E-08
75	0.0	0.0	0.38991144E-09	0.25732849E-08	0.51838285E-08	0.49844573E-08
90	0.0	0.63576451E-08	0.12781506E-07	0.12009970E-07	0.85428482E-08	0.77559221E-08
95	0.0	0.24914229E-07	0.21519909E-07	0.17115667E-07	0.11925533E-07	0.95558512E-08
99	0.11585513E-06	0.58398037E-07	0.43353321E-07	0.38138676E-07	0.35706218E-07	0.13780717E-07
99.5	0.22897450E-06	0.80479367E-07	0.68184363E-07	0.57399269E-07	0.48447543E-07	0.13859413E-07
99.9	0.43573579E-06	0.31790933E-06	0.21758177E-06	0.21185264E-06	0.10697067E-06	0.13931686E-07
100	0.50844637E-05	0.63555797E-06	0.31777898E-06	0.31517305E-06	0.10728007E-06	0.13931686E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=22.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.22825323E-14	0.10253214E-08
50	0.0	0.0	0.0	0.0	0.37899350E-09	0.15423209E-08
75	0.0	0.0	0.60948772E-11	0.50212967E-09	0.25850413E-08	0.26817426E-08
90	0.0	0.94948893E-09	0.64822387E-08	0.66115007E-08	0.59713088E-08	0.46137707E-08
95	0.0	0.13425790E-07	0.13770709E-07	0.11709076E-07	0.89902592E-08	0.53256137E-08
99	0.47268532E-07	0.42771248E-07	0.31585852E-07	0.26871376E-07	0.14729572E-07	0.65359025E-08
99.5	0.14044599E-06	0.62980973E-07	0.42434817E-07	0.32666609E-07	0.18163774E-07	0.65801409E-08
99.9	0.32420206E-06	0.10505386E-06	0.62342622E-07	0.86487489E-07	0.32380285E-07	0.66406116E-08
100	0.20757006E-05	0.25946258E-06	0.12973129E-06	0.97140855E-07	0.32380285E-07	0.66714563E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=45.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.0	0.13420420E-08
50	0.0	0.0	0.0	0.0	0.30277159E-09	0.19575030E-08
75	0.0	0.0	0.98163491E-12	0.26609581E-09	0.33844989E-08	0.35684173E-08
90	0.0	0.54799099E-09	0.85229992E-08	0.87782972E-08	0.71423401E-08	0.58347283E-08
95	0.0	0.17286126E-07	0.17707460E-07	0.14583417E-07	0.11001159E-07	0.67578902E-08
99	0.60002037E-07	0.51943729E-07	0.43389754E-07	0.41945697E-07	0.31346310E-07	0.10047788E-07
99.5	0.16618321E-06	0.83851432E-07	0.64742324E-07	0.49712447E-07	0.37315683E-07	0.12012599E-07
99.9	0.38219673E-06	0.23010818E-06	0.13909863E-06	0.11604084E-06	0.39791168E-07	0.12678129E-07
100	0.27849810E-05	0.34812706E-06	0.17406353E-06	0.11604232E-06	0.46856055E-07	0.12763220E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=67.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.0	0.0	0.0	0.86270013E-09
50	0.0	0.0	0.0	0.0	0.18723927E-09	0.16437189E-08
75	0.0	0.0	0.19616964E-11	0.29583536E-09	0.29029823E-08	0.27648739E-08
90	0.0	0.45677395E-09	0.62707031E-08	0.75733055E-08	0.63489232E-08	0.35549321E-08
95	0.0	0.12763330E-07	0.13008794E-07	0.11139939E-07	0.89749221E-08	0.43838959E-08
99	0.33933272E-07	0.47509751E-07	0.33027465E-07	0.24448063E-07	0.15027211E-07	0.84558280E-08
99.5	0.13824439E-06	0.66054895E-07	0.40431871E-07	0.30825113E-07	0.16482073E-07	0.85466070E-08
99.9	0.38007801E-06	0.10414516E-06	0.57283035E-07	0.38188688E-07	0.17925203E-07	0.86144318E-08
100	0.10713347E-05	0.21426695E-06	0.82410338E-07	0.51015938E-07	0.21639782E-07	0.87671630E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=90.0 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.	0	0.36115860E-10	0.15164872E-08
50	0.0	0.0	0.0	0.41449916E-11	0.10705856E-08	0.26077296E-08
75	0.0	0.82237873E-12	0.68779538E-09	0.23202409E-08	0.42293387E-08	0.43136446E-08
90	0.0	0.65096906E-08	0.10405316E-07	0.10173373E-07	0.89387164E-08	0.67975172E-08
95	0.15404657E-11	0.20744508E-07	0.19049246E-07	0.16678687E-07	0.13891455E-07	0.80735063E-08
99	0.93648168E-07	0.59597937E-07	0.5060003M3E-07	0.41623515E-07	0.30180381E-07	0.12550590E-07
99.5	0.18856923E-06	0.83812040E-07	0.69579073E-07	0.59586302E-07	0.34338292E-07	0.12818862E-07
99.9	0.44919136E-06	0.16302067E-06	0.14433573E-06	0.10652877E-06	0.42909726E-07	0.13341559E-07
100	0.25566906E-05	0.31958632E-06	0.16018430E-06	0.10678951E-06	0.57358410E-07	0.13782877E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=112.5 Z=0.0

Percentage of Total Hours	*Hourly (17127)*	*8 Hours (17140)*	*16 Hours (16978)*	*24 Hours (16827)*	*3 Days (17161)*	*26 Days (16606)*
25	0.0	0.0	0.44786206E-13	0.20067781E-10	0.18704158E-08	0.47645052E-08
50	0.0	0.20901163E-11	0.88423890E-09	0.31391185E-08	0.74166522E-08	0.10151794E-07
75	0.0	0.72699855E-08	0.16055758E-07	0.16961692E-07	0.18201654E-07	0.21012170E-07
90	0.13907424E-08	0.44147285E-07	0.42939924E-07	0.39192841E-07	0.34247254E-07	0.29138306E-07
95	0.62572951E-07	0.77944890E-07	0.62158051E-07	0.56820568E-07	0.46285223E-07	0.32769321E-07
99	0.35544366E-06	0.16516822E-06	0.12869509E-06	0.10627093E-06	0.72404021E-07	0.37315800E-07
99.5	0.48561060E-06	0.20236121E-06	0.15044947E-06	0.12279213E-06	0.86895113E-07	0.39183174E-07
99.9	0.79982300E-06	0.30243359E-06	0.23379363E-06	0.18339102E-06	0.10336390E-06	0.40233235E-07
100	0.15243104E-05	0.50295489E-06	0.29130939E-06	0.19718789E-06	0.11713684E-06	0.40354642E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=40000.0 Y=135.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.17996013E-11	0.42544315E-08	0.87951726E-08	0.16500621E-07	0.26431923E-07
50	0.0	0.13923973E-07	0.23451772E-07	0.26243036E-07	0.33586602E-07	0.42776964E-07
75	0.12926265E-07	0.55918868E-07	0.56889608E-07	0.57493668E-07	0.62766333E-07	0.61176479E-07
90	0.13196137E-06	0.12335147E-06	0.11182908E-06	0.11028703E-06	0.97954683E-07	0.81658641E-07
95	0.24321042E-06	0.19214144E-06	0.17277318E-06	0.16163261E-06	0.12189474E-06	0.89847731E-07
99	0.69058160E-06	0.40855002E-06	0.32181708E-06	0.27994167E-06	0.20150475E-06	0.10477578E-06
99.5	0.10288722E-05	0.54148290E-06	0.39110370E-06	0.34589146E-06	0.27409010E-06	0.11023269E-06
99.9	0.19892714E-05	0.83666066E-06	0.69441830E-06	0.63590898E-06	0.40677452E-06	0.11642396E-06
100	0.49683067E-05	0.11077846E-05	0.94137056E-06	0.74459365E-06	0.45793308E-06	0.12506968E-06

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=315.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.11853969E-08	0.55911684E-08
50	0.0	0.0	0.15915338E-10	0.13169581E-08	0.67191372E-08	0.13015494E-07
75	0.0	0.43038213E-08	0.12962797E-07	0.15104355E-07	0.16195525E-07	0.18793767E-07
90	0.36273518E-09	0.42316998E-07	0.42017792E-07	0.40966444E-07	0.36742584E-07	0.29288746E-07
95	0.54992793E-07	0.78129574E-07	0.72207968E-07	0.64581457E-07	0.49703644E-07	0.32882163E-07
99	0.33280520E-06	0.18264325E-06	0.14367447E-06	0.12006387E-06	0.90980166E-07	0.44202082E-07
99.5	0.48250172E-06	0.23287839E-06	0.17397065E-06	0.15041292E-06	0.10630970E-06	0.44734783E-07
99.9	0.10621479E-05	0.34794130E-06	0.25547547E-06	0.67242036E-06	0.24399679E-06	0.46763812E-07
100	0.10739011E-04	0.20961907E-05	0.10481454E-05	0.70316611E-06	0.26973709E-06	0.46990777E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=337.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.23571856E-09	0.41648924E-08
50	0.0	0.0	0.19380348E-13	0.14101728E-09	0.30366298E-08	0.60264966E-08
75	0.0	0.17223564E-09	0.51954352E-08	0.76911952E-08	0.91056904E-08	0.90638999E-08
90	0.0	0.21044961E-07	0.20916513E-07	0.22435927E-07	0.18708000E-07	0.11039180E-07
95	0.45941526E-08	0.40792976E-07	0.38187956E-07	0.33429160E-07	0.24837654E-07	0.12232128E-07
99	0.20600692E-06	0.97148813E-07	0.70691158E-07	0.58054486E-07	0.36737926E-07	0.18491644E-07
99.5	0.28410670E-06	0.11614532E-06	0.87081730E-07	0.74278603E-07	0.39955427E-07	0.19061513E-07
99.9	0.55124275E-06	0.22283587E-06	0.11997895E-06	0.94546067E-07	0.56433741E-07	0.19482982E-07
100	0.14447642E-05	0.28267436E-06	0.14182086E-06	0.10229849E-06	0.62306071E-07	0.19628473E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=0.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.25092474E-13	0.16122919E-08
50	0.0	0.0	0.0	0.0	0.99717168E-09	0.26935338E-08
75	0.0	0.0	0.22834719E-09	0.18305966E-08	0.41064112E-08	0.39980179E-08
90	0.0	0.46071484E-08	0.10087042E-07	0.96617967E-08	0.68796489E-08	0.61201533E-08
95	0.0	0.20100636E-07	0.16803586E-07	0.14196448E-07	0.98225712E-08	0.76537745E-08
99	0.87091394E-07	0.45476163E-07	0.36103128E-07	0.31477288E-07	0.28805363E-07	0.10817931E-07
99.5	0.17823288E-06	0.65993390E-07	0.54441589E-07	0.45532108E-07	0.39213191E-07	0.10876999E-07
99.9	0.36152659E-06	0.25359185E-06	0.17618959E-06	0.16722169E-06	0.84218016E-07	0.10931323E-07
100	0.40133209E-05	0.50166511E-06	0.25083256E-06	0.24891347E-06	0.84423675E-07	0.10931323E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=22.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.0	0.78266593E-09
50	0.0	0.0	0.0	0.0	0.27549363E-09	0.12099282E-08
75	0.0	0.0	0.29529669E-11	0.33172798E-09	0.19754711E-08	0.20782787E-08
90	0.0	0.62962968E-09	0.48998245E-08	0.52175260E-08	0.45992010E-08	0.36191163E-08
95	0.0	0.10249266E-07	0.10755432E-07	0.94190682E-08	0.71207644E-08	0.41645407E-08
99	0.36101284E-07	0.35021920E-07	0.26912769E-07	0.21362300E-07	0.12348206E-07	0.52444129E-08
99.5	0.11135671E-06	0.50203244E-07	0.33474695E-07	0.25565598E-07	0.15020778E-07	0.52745222E-08
99.9	0.26841957E-06	0.82788972E-07	0.52334890E-07	0.68378199E-07	0.25531119E-07	0.53263918E-08
100	0.16410777E-05	0.20513471E-06	0.10256736E-06	0.76593324E-07	0.25531119E-07	0.53520317E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=45.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.0	0.10340857E-08
50	0.0	0.0	0.0	0.0	0.18030499E-09	0.15494794E-08
75	0.0	0.0	0.42945606E-12	0.15061261E-09	0.25657800E-08	0.29090854E-08
90	0.0	0.33783154E-09	0.64839725E-08	0.69931403E-08	0.54554761E-08	0.45059920E-08
95	0.0	0.13322733E-07	0.13732663E-07	0.11582031E-07	0.86609830E-08	0.52724012E-08
99	0.43783377E-07	0.41510184E-07	0.33729030E-07	0.32147092E-07	0.24144676E-07	0.79870048E-08
99.5	0.13243022E-06	0.66692735E-07	0.49707701E-07	0.38130608E-07	0.28835643E-07	0.94942649E-08
99.9	0.30703234E-06	0.19617551E-06	0.10707288E-06	0.93966776E-07	0.31763602E-07	0.10014510E-07
100	0.22552031E-05	0.28190198E-06	0.14095099E-06	0.93967287E-07	0.37749661E-07	0.10081720E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=67.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.0	0.66957306E-09
50	0.0	0.0	0.0	0.0	0.13316517E-09	0.12845931E-08
75	0.0	0.0	0.85038216E-12	0.16582083E-09	0.22065068E-08	0.21248860E-08
90	0.0	0.25389424E-09	0.50534226E-08	0.57119536E-08	0.50176823E-08	0.28658880E-08
95	0.0	0.10465790E-07	0.10157930E-07	0.91188816E-08	0.68588584E-08	0.34008540E-08
99	0.24164102E-07	0.35183987E-07	0.27026164E-07	0.18310264E-07	0.11509790E-07	0.64450134E-08
99.5	0.11171124E-06	0.54052329E-07	0.32624158E-07	0.23696042E-07	0.13030974E-07	0.65142629E-08
99.9	0.28228010E-06	0.82283577E-07	0.44146546E-07	0.29431028E-07	0.14633770E-07	0.65637700E-08
100	0.84701344E-06	0.16940265E-06	0.65154836E-07	0.40333973E-07	0.16320641E-07	0.66900334E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=90.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.20694460E-10	0.11800114E-08
50	0.0	0.0	0.0	0.19688175E-11	0.81600304E-09	0.20301589E-08
75	0.0	0.31775851E-12	0.43454973E-09	0.16164319E-08	0.33696921E-08	0.34307661E-08
90	0.0	0.45849120E-08	0.82456673E-08	0.81490867E-08	0.73634006E-08	0.54987304E-08
95	0.51647667E-12	0.16686656E-07	0.15317362E-07	0.13467044E-07	0.11251270E-07	0.63576735E-08
99	0.73126216E-07	0.48637965E-07	0.42723254E-07	0.32386758E-07	0.24012792E-07	0.97243422E-08
99.5	0.14855880E-06	0.67772135E-07	0.55989315E-07	0.47435265E-07	0.26773638E-07	0.98806865E-08
99.9	0.36986239E-06	0.14183593E-06	0.11295282E-06	0.83600185E-07	0.33485254E-07	0.10276274E-07
100	0.20064053E-05	0.25080067E-06	0.12563481E-06	0.83756504E-07	0.44745281E-07	0.10615800E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=112.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.12215150E-13	0.94269731E-11	0.13790900E-08	0.36257559E-08
50	0.0	0.84960749E-12	0.57637051E-09	0.22458901E-08	0.57519642E-08	0.77996631E-08
75	0.0	0.50542823E-08	0.12315439E-07	0.13372876E-07	0.14208720E-07	0.16725675E-07
90	0.75359941E-09	0.34573283E-07	0.33278660E-07	0.30816604E-07	0.27703496E-07	0.22581052E-07
95	0.44954490E-07	0.63112225E-07	0.49922416E-07	0.45039464E-07	0.36442820E-07	0.25874247E-07
99	0.29372399E-06	0.13212582E-06	0.10093214E-06	0.83105817E-07	0.58743339E-07	0.29899567E-07
99.5	0.39168447E-06	0.16215336E-06	0.11737382E-06	0.97298368E-07	0.68320730E-07	0.31828201E-07
99.9	0.64866003E-06	0.23529321E-06	0.19623712E-06	0.14293482E-06	0.86031491E-07	0.32638635E-07
100	0.12040582E-05	0.39247425E-06	0.22610521E-06	0.16602985E-06	0.97728844E-07	0.32739788E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=50000.0 Y=135.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.61075624E-12	0.31693310E-08	0.66972738E-08	0.12690837E-07	0.20674896E-07
50	0.0	0.10099292E-07	0.18149407E-07	0.20214408E-07	0.26503898E-07	0.34343568E-07
75	0.83025924E-08	0.44163883E-07	0.44727006E-07	0.45825875E-07	0.49546831E-07	0.47610992E-07
90	0.10267865E-06	0.97962243E-07	0.87843659E-07	0.87005276E-07	0.77128107E-07	0.63993582E-07
95	0.19357014E-06	0.15113994E-06	0.13635895E-06	0.12813746E-06	0.95651558E-07	0.70772842E-07
99	0.54038247E-06	0.32589605E-06	0.24782901E-06	0.22050733E-06	0.16026121E-06	0.81001417E-07
99.5	0.80859462E-06	0.42909994E-06	0.30845001E-06	0.27604972E-06	0.21563494E-06	0.85226077E-07
99.9	0.16250297E-05	0.66202301E-06	0.54818537E-06	0.50672486E-06	0.31821128E-06	0.89998935E-07
100	0.40223113E-05	0.87409626E-06	0.74308213E-06	0.58785832E-06	0.35921062E-06	0.96486076E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=315.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.65276673E-09	0.35078707E-08
50	0.0	0.0	0.33894190E-11	0.60718031E-09	0.38736765E-08	0.80197466E-08
75	0.0	0.19328388E-08	0.77655038E-08	0.92039798E-08	0.10344905E-07	0.11389400E-07
90	0.76484916E-10	0.25294739E-07	0.25548477E-07	0.25730539E-07	0.22523533E-07	0.17330667E-07
95	0.29226076E-07	0.48009852E-07	0.43391363E-07	0.39309654E-07	0.30696153E-07	0.21243380E-07
99	0.20973710E-06	0.11531552E-06	0.87721560E-07	0.75226922E-07	0.55266543E-07	0.27757252E-07
99.5	0.30590235E-06	0.14711543E-06	0.10695692E-06	0.91145296E-07	0.67181190E-07	0.28096817E-07
99.9	0.63627107E-06	0.21613107E-06	0.15217483E-06	0.43817931E-06	0.15639898E-06	0.29515526E-07
100	0.70768247E-05	0.13542603E-05	0.67714234E-06	0.45366562E-06	0.17241052E-06	0.29666275E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=337.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.84785207E-10	0.24457543E-08
50	0.0	0.0	0.0	0.45899451E-10	0.17995252E-08	0.35901322E-08
75	0.0	0.51442711E-10	0.28513145E-08	0.44887614E-08	0.54845017E-08	0.56187446E-08
90	0.0	0.12769597E-07	0.12972219E-07	0.13275660E-07	0.10979658E-07	0.66874719E-08
95	0.14491313E-08	0.25121921E-07	0.22533687E-07	0.20588466E-07	0.15167060E-07	0.73721367E-08
99	0.12983469E-06	0.61765377E-07	0.44980368E-07	0.35164355E-07	0.23213261E-07	0.11513386E-07
99.5	0.18876881E-06	0.73988758E-07	0.51687838E-07	0.46414165E-07	0.24687512E-07	0.11739687E-07
99.9	0.32741599E-06	0.13922465E-06	0.73254171E-07	0.61163576E-07	0.36286373E-07	0.12001777E-07
100	0.90657738E-06	0.18304536E-06	0.91745505E-07	0.66791301E-07	0.40278195E-07	0.12073233E-07

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=0.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.25106469E-14	0.99453712E-09
50	0.0	0.0	0.0	0.0	0.55796257E-09	0.16581954E-08
75	0.0	0.0	0.80589202E-10	0.95763264E-09	0.24900506E-08	0.25746785E-08
90	0.0	0.22760132E-08	0.61041199E-08	0.57902909E-08	0.43640469E-08	0.38284007E-08
95	0.0	0.12208240E-07	0.10959212E-07	0.91982102E-08	0.62144672E-08	0.48259530E-08
99	0.48402377E-07	0.30818953E-07	0.21944107E-07	0.20212426E-07	0.19731385E-07	0.65269639E-08
99.5	0.11177519E-06	0.42664013E-07	0.32363843E-07	0.32549750E-07	0.25111248E-07	0.65584551E-08
99.9	0.24386242E-06	0.15219257E-06	0.11290774E-06	0.10185670E-06	0.50956118E-07	0.65897545E-08
100	0.24445608E-05	0.30557010E-06	0.15278505E-06	0.15143064E-06	0.51036523E-07	0.65897545E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=22.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.0	0.46133164E-09
50	0.0	0.0	0.0	0.0	0.12066736E-09	0.72181616E-09
75	0.0	0.0	0.52365095E-12	0.12807970E-09	0.12061769E-08	0.12459991E-08
90	0.0	0.22165453E-09	0.29164720E-08	0.31495748E-08	0.29592928E-08	0.22402589E-08
95	0.0	0.59576664E-08	0.67835089E-08	0.59894063E-08	0.43192188E-08	0.26721245E-08
99	0.17530951E-07	0.22263201E-07	0.17530020E-07	0.13612464E-07	0.84006615E-08	0.33540584E-08
99.5	0.65391646E-07	0.31685744E-07	0.21958471E-07	0.17399760E-07	0.99603028E-08	0.33648779E-08
99.9	0.16862316E-06	0.52199283E-07	0.35745270E-07	0.41626812E-07	0.15459236E-07	0.34284178E-08
100	0.99904355E-06	0.12488044E-06	0.62440222E-07	0.46377711E-07	0.15459236E-07	0.34394771E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=45.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.0	0.62765548E-09
50	0.0	0.0	0.0	0.0	0.86242069E-10	0.94237307E-09
75	0.0	0.0	0.60965772E-13	0.47255977E-10	0.15263830E-08	0.18479362E-08
90	0.0	0.10838444E-09	0.36246495E-08	0.43227182E-08	0.32060408E-08	0.26872247E-08
95	0.0	0.74232460E-08	0.83683602E-08	0.71442834E-08	0.56041856E-08	0.31772152E-08
99	0.23824935E-07	0.25591824E-07	0.20618280E-07	0.19569001E-07	0.15346156E-07	0.49528595E-08
99.5	0.82678980E-07	0.39745835E-07	0.29984275E-07	0.22488898E-07	0.16998818E-07	0.58194978E-08
99.9	0.19101225E-06	0.12275189E-06	0.69057705E-07	0.60217360E-07	0.20355181E-07	0.61314793E-08
100	0.14452171E-05	0.18065225E-06	0.90326125E-07	0.60217417E-07	0.24044109E-07	0.61726304E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=67.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.0	0.40123016E-09
50	0.0	0.0	0.0	0.0	0.57695071E-10	0.76099349E-09
75	0.0	0.0	0.11640369E-12	0.46190177E-10	0.12886678E-08	0.12265651E-08
90	0.0	0.74503903E-10	0.28157352E-08	0.34115928E-08	0.29993801E-08	0.18697315E-08
95	0.0	0.57772347E-08	0.62005761E-08	0.55078466E-08	0.41141384E-08	0.20978645E-08
99	0.11210879E-07	0.23970365E-07	0.16480179E-07	0.12894198E-07	0.64184746E-08	0.36281811E-08
99.5	0.69407463E-07	0.31309682E-07	0.20505123E-07	0.14411793E-07	0.79329112E-08	0.36715551E-08
99.9	0.19176292E-06	0.50278885E-07	0.25450035E-07	0.17403586E-07	0.90481507E-08	0.37003107E-08
100	0.51563939E-06	0.10312783E-06	0.39664567E-07	0.24554254E-07	0.95206083E-08	0.37798848E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=90.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours(16978)	24 Hours(16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.0	0.59401772E-11	0.70902839E-09
50	0.0	0.0	0.0	0.26056636E-12	0.40447090E-09	0.12827850E-08
75	0.0	0.31595447E-13	0.16143946E-09	0.78973983E-09	0.20683550E-08	0.21955537E-08
90	0.0	0.21497186E-08	0.51419100E-08	0.51890368E-08	0.45642992E-08	0.33887582E-08
95	0.16535089E-13	0.10429602E-07	0.94783310E-08	0.87783860E-08	0.73252231E-08	0.39429153E-08
99	0.45823214E-07	0.33394400E-07	0.24858196E-07	0.21363114E-07	0.14849093E-07	0.56996932E-08
99.5	0.93907090E-07	0.46579807E-07	0.37967766E-07	0.33527250E-07	0.15856369E-07	0.57991549E-08
99.9	0.24400498E-06	0.10003M176E-06	0.67518158E-07	0.50156849E-07	0.19876644E-07	0.59569629E-08
100	0.12037644E-05	0.15047056E-06	0.75310766E-07	0.50207177E-07	0.26520990E-07	0.61537762E-08

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=112.5 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	24 Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.0	0.0	0.17013136E-11	0.72735729E-09	0.21114108E-08
50	0.0	0.90145935E-13	0.24937985E-09	0.10941141E-08	0.33791445E-08	0.45784425E-08
75	0.0	0.23630458E-08	0.70595156E-08	0.79780342E-08	0.87566576E-08	0.10210552E-07
90	0.18571251E-09	0.20381883E-07	0.20710111E-07	0.18896735E-07	0.17511347E-07	0.13531970E-07
95	0.21296035E-07	0.38957580E-07	0.31680546E-07	0.28699560E-07	0.22742029E-07	0.16043234E-07
99	0.18808896E-06	0.83608597E-07	0.64716914E-07	0.50944852E-07	0.37962000E-07	0.18823801E-07
99.5	0.25296754E-06	0.10035802E-06	0.73881438E-07	0.61447224E-07	0.41299103E-07	0.20404279E-07
99.9	0.39284362E-06	0.15931448E-06	0.12458219E-06	0.88562729E-07	0.57374056E-07	0.20854820E-07
100	0.72630843E-06	0.26562009E-06	0.13284415E-06	0.11288694E-06	0.65481743E-07	0.20917575E-07

TABLE 2.3-41

CUMULATIVE FREQUENCY DISTRIBUTION AT X=80000.0 Y=135.0 Z=0.0

Percentage of Total Hours	Hourly (17127)	8 Hours (17140)	16 Hours (16978)	Hours (16827)	3 Days (17161)	26 Days (16606)
25	0.0	0.53608065E-13	0.15507566E-08	0.37072401E-08	0.72642301E-08	0.12430696E-07
50	0.0	0.54108469E-08	0.10682420E-07	0.12110306E-07	0.16393336E-07	0.21119209E-07
75	0.31305785E-08	0.26878141E-07	0.27722947E-07	0.28005950E-07	0.30296825E-07	0.29032226E-07
90	0.61701087E-07	0.60302057E-07	0.54364037E-07	0.52630334E-07	0.46747747E-07	0.38486551E-07
95	0.11980205E-06	0.91934908E-07	0.84140481E-07	0.78212679E-07	0.58057847E-07	0.43278874E-07
99	0.33317684E-06	0.19935442E-06	0.14976899E-06	0.13110741E-06	0.99965803E-07	0.47624940E-07
99.5	0.48037498E-06	0.25995200E-06	0.18830934E-06	0.17129037E-06	0.13088629E-06	0.50088705E-07
99.9	0.10322974E-05	0.40344401E-06	0.33194232E-06	0.30887401E-06	0.18952687E-06	0.52885735E-07
100	0.25595009E-05	0.53274880E-06	0.45236368E-06	0.35789134E-06	0.21528973E-06	0.56458632E-07

TABLE 2.3-42

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STABILITY BASED ON VERTICAL TEMPERATURE GRADIENT MAY 1973-APRIL 1974 EXTREMELY UNSTABLE

(ΔT < -1.9°C/100M)

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*						*Row Sums*	*Row Avg.*
	1.8	*5.1*	*9.6*	*15.1*	*21.1*	*39.6*		
CALM	*1*	*0*	*0*	*0*	*0*	*0*	*1*	*11.3*
22.50	*6*	*6*	*5*	*0*	*0*	*0*	*17*	*5.1*
45.00	*4*	*6*	*1*	*1*	*0*	*0*	*12*	*4.8*
67.50	*8*	*18*	*0*	*1*	*1*	*0*	*28*	*4.9*
90.00	*8*	*10*	*4*	*2*	*0*	*0*	*24*	*5.6*
112.50	*3*	*11*	*2*	*4*	*5*	*1*	*26*	*10.3*
135.00	*7*	*10*	*3*	*7*	*1*	*0*	*28*	*8.2*
157.50	*4*	*5*	*0*	*1*	*0*	*0*	*10*	*4.9*
180.00	*4*	*6*	*0*	*0*	*0*	*0*	*10*	*3.5*
202.50	*1*	*7*	*3*	*1*	*0*	*0*	*12*	*6.4*
225.00	*3*	*4*	*5*	*12*	*1*	*0*	*25*	*11.3*
247.50	*1*	*2*	*0*	*1*	*2*	*0*	*6*	*11.4*
270.00	*6*	*3*	*1*	*0*	*0*	*0*	*10*	*3.9*
292.50	*9*	*14*	*11*	*2*	*6*	*1*	*43*	*8.6*
315.00	*17*	*22*	*21*	*38*	*2*	*18*	*138*	*13.9*
337.50	*8*	*17*	*13*	*20*	*1*	*7*	*76*	*12.5*
360.00	*7*	*10*	*15*	*2*	*0*	*0*	*34*	*7.1*
Column Sums	*96*	*51*	*85*	*92*	*49*	*27*	*500*	*9.9*

TABLE 2.3-43

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STABILITY BASED ON VERTICAL TEMPERATURE GRADIENT MAY 1973-APRIL 1974 MODERATELY UNSTABLE (ΔT -1.9° to -1.7°C/100M)

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.8	5.1	9.6	15.1	21.1	39.6	*Row Sums*	*Row Avg.*
CALM	0	0	0	0	0	0	0	0.0
22.50	1	0	1	0	0	0	2	5.3
45.00	0	0	0	0	0	0	0	0.0
67.50	4	1	1	0	0	0	6	3.9
90.00	1	1	5	1	0	0	8	8.6
112.50	1	0	3	1	0	0	5	8.8
135.00	2	3	3	5	0	0	13	9.9
157.50	4	5	1	0	0	0	10	4.5
180.00	1	1	0	0	0	0	2	3.6
202.50	1	1	0	0	0	0	2	3.9
225.00	1	1	0	0	0	0	2	3.3
247.50	1	0	1	0	0	0	2	5.3
270.00	0	2	1	0	0	0	3	5.9
292.50	2	2	2	3	0	0	9	8.6
315.00	4	8	6	6	4	0	28	10.1
337.50	1	0	3	5	2	3	14	16.8
360.00	1	3	6	1	0	0	11	8.7
Column Sums	25	28	33	22	6	3	117	9.1

TABLE 2.3-44

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STABILITY BASED ON VERTICAL TEMPERATURE GRADIENT MAY 1973-APRIL 1974 SLIGHTLY UNSTABLE

(ΔT -1.7 to -1.5°C/100M)

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*						*Row Sums*	*Row Avg.*
	1.8	*5.1*	*9.6*	*15.1*	*21.1*	*39.6*		
CALM	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
22.50	*2*	*1*	*2*	*0*	*0*	*0*	*5*	*6.0*
45.00	*2*	*1*	*3*	*0*	*0*	*0*	*6*	*6.1*
67.50	*1*	*2*	*1*	*0*	*0*	*0*	*4*	*4.4*
90.00	*1*	*0*	*1*	*0*	*0*	*0*	*2*	*4.8*
112.50	*1*	*2*	*0*	*0*	*1*	*1*	*5*	*12.6*
135.00	*1*	*8*	*6*	*11*	*0*	*0*	*26*	*10.1*
157.50	*2*	*8*	*2*	*0*	*1*	*0*	*13*	*6.7*
180.00	*1*	*5*	*0*	*0*	*2*	*0*	*8*	*7.7*
202.50	*1*	*3*	*0*	*0*	*0*	*0*	*4*	*3.4*
225.00	*0*	*2*	*0*	*0*	*0*	*0*	*2*	*4.1*
247.50	*2*	*0*	*0*	*0*	*0*	*0*	*2*	*2.3*
270.00	*1*	*2*	*0*	*0*	*0*	*0*	*3*	*4.2*
292.50	*4*	*12*	*7*	*1*	*0*	*0*	*24*	*6.1*
315.00	*1*	*4*	*4*	*2*	*1*	*0*	*12*	*10.0*
337.50	*1*	*3*	*8*	*13*	*4*	*4*	*33*	*15.4*
360.00	*0*	*2*	*2*	*1*	*0*	*0*	*5*	*8.5*
Column Sums	*21*	*55*	*36*	*28*	*9*	*5*	*154*	*9.2*

TABLE 2.3-45

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STABILITY BASED ON VERTICAL TEMPERATURE GRADIENT MAY 1973-APRIL 1974 NEUTRAL

(ΔT -1.5 to -0.5°C/100M)

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph						Row Sums	Row Avg.
	1.8	5.1	9.6	15.1	21.1	39.6		
CALM	2	0	0	0	0	0	2	1.4
22.50	8	31	24	4	0	1	68	6.9
45.00	12	22	19	10	0	0	63	7.1
67.50	15	12	14	3	0	1	45	6.4
90.00	12	22	8	5	1	0	48	6.3
112.50	8	37	32	33	12	3	125	10.8
135.00	22	83	73	39	16	7	240	9.3
157.50	27	107	20	12	10	11	187	8.2
180.00	20	54	5	1	0	0	80	4.2
202.50	15	23	3	2	1	0	44	4.9
225.00	23	12	4	7	2	0	48	6.0
247.50	13	15	3	0	1	0	32	4.3
270.00	22	32	4	1	0	0	59	4.1
292.50	28	124	71	27	4	1	255	7.2
315.00	18	106	222	230	209	145	930	15.7
337.50	9	44	69	65	61	35	283	14.9
360.00	17	50	42	19	2	0	130	7.6
Column Sums	271	774	613	458	319	204	2639	11.2

TABLE 2.3-46

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STABILITY BASED ON VERTICAL TEMPERATURE GRADIENT MAY 1973-APRIL 1974 SLIGHTLY STABLE

(ΔT -0.5 to 1.5°C/100M)

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph						Row Sums	Row Avg.
	1.8	5.1	9.6	15.1	21.1	39.6		
CALM	8	0	0	0	0	0	8	4.9
22.50	39	125	44	7	0	0	215	5.4
45.00	52	92	48	16	3	0	211	6.0
67.50	48	39	25	20	4	0	136	6.6
90.00	56	64	25	6	2	0	153	5.1
112.50	41	95	49	29	19	1	234	8.0
135.00	34	167	109	37	5	2	354	7.5
157.50	27	99	23	8	3	1	161	6.1
180.00	25	26	5	0	0	0	56	4.0
202.50	15	10	4	0	0	0	29	4.1
225.00	21	16	3	3	3	1	47	6.1
247.50	19	16	1	2	1	0	39	4.5
270.00	19	16	6	1	0	0	42	4.6
292.50	28	116	53	39	13	5	254	8.2
315.00	48	203	202	298	275	185	1211	15.3
337.50	29	120	128	113	30	10	430	10.5
360.00	33	128	101	32	2	0	296	7.3
Column Sums	537	1336	827	611	360	205	3876	9.8

TABLE 2.3-47

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STABILITY BASED ON VERTICAL TEMPERATURE GRADIENT MAY 1973-APRIL 1974 MODERATELY STABLE

(ΔT +1.5 to +4.0°C/100M)

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph						Row Sums	Row Avg.
	1.8	5.1	9.6	15.1	21.1	39.6		
CALM	0	0	0	0	0	0	0	0.0
22.50	11	15	2	0	0	0	28	4.2
45.00	14	13	7	2	2	0	38	5.9
67.50	14	7	2	0	0	0	23	3.4
90.00	24	13	1	0	0	0	38	3.3
112.50	18	26	1	0	0	0	45	3.6
135.00	15	33	22	1	0	0	71	5.8
157.50	9	20	4	0	0	0	33	5.1
180.00	9	9	0	0	0	0	18	3.8
202.50	4	2	0	0	0	0	6	2.9
225.00	3	2	0	1	0	0	6	5.2
247.50	4	3	1	0	0	0	8	4.2
270.00	2	0	3	0	0	0	5	6.8
292.50	7	20	12	14	15	9	77	13.2
315.00	13	38	72	78	81	68	350	16.6
337.50	8	23	15	12	3	0	61	8.7
360.00	4	14	4	0	0	0	22	5.4
Column Sums	159	238	146	108	101	77	829	10.8

TABLE 2.3-48

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - STABILITY BASED ON VERTICAL TEMPERATURE GRADIENT MAY 1973-APRIL 1974 EXTREMELY STABLE (ΔT GREATER THAN 4.0°C/100M)

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.8	5.1	9.6	15.1	21.1	39.6	Row Sums	Row Avg.
CALM	0	0	0	0	0	0	0	0.0
22.50	4	1	0	0	0	0	5	3.3
45.00	2	2	1	0	0	0	5	4.8
67.50	1	0	0	0	0	0	1	2.9
90.00	3	3	0	0	0	0	6	3.3
112.50	3	8	0	0	0	0	11	3.7
135.00	7	18	4	1	0	0	30	4.9
157.50	7	7	0	0	0	0	14	3.5
180.00	2	1	0	0	0	1	4	8.6
202.50	5	0	0	1	0	0	6	3.5
225.00	3	0	0	0	0	0	3	2.0
247.50	1	2	0	0	0	0	3	3.7
270.00	0	3	0	1	0	0	4	6.7
292.50	0	10	6	5	4	6	31	13.3
315.00	6	45	40	30	27	28	176	14.0
337.50	3	7	2	1	2	0	15	8.0
360.00	2	0	1	0	0	0	3	4.6
Column Sums	49	107	54	39	33	35	317	10.7

TABLE 2.3-49

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A ANNUAL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	4	5	2	0	0	0	0	11	8.9
45.00	0	1	1	3	0	0	0	0	5	11.7
67.50	0	3	1	1	0	0	0	0	5	7.4
90.00	0	1	7	1	0	0	0	0	9	10.5
112.50	0	3	2	5	5	2	0	0	17	15.4
135.00	1	9	6	9	4	1	0	0	30	12.3
157.50	1	10	1	2	0	0	0	0	14	7.2
180.00	1	6	1	1	0	1	0	0	10	7.7
202.50	0	2	0	1	0	1	0	0	4	12.6
225.00	1	3	2	1	0	0	0	0	7	6.6
247.50	0	3	0	1	0	0	0	0	4	7.8
270.00	1	2	1	1	0	0	0	0	5	7.0
292.50	1	15	2	1	3	2	0	0	24	9.3
315.00	2	11	14	20	11	24	0	0	82	17.6
337.50	2	5	10	12	13	7	0	0	49	15.5
360.00	1	6	9	3	4	0	0	0	23	10.6
Column Sums	11	84	62	64	40	8	0	0	299	13.2

Hours of Calm = 0
Sums of this table: row totals = 299 and column totals = 299

TABLE 2.3-50

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS B ANNUAL

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	1	1	2	1	0	0	0	0	5	7.7
45.00	0	1	0	0	1	0	0	0	2	13.0
67.50	1	0	2	0	0	0	0	0	3	8.5
90.00	0	2	5	1	0	0	0	0	8	8.7
112.50	0	0	6	1	0	0	0	0	7	10.7
135.00	2	4	8	6	0	1	0	0	21	10.7
157.50	4	9	6	0	0	2	0	0	21	7.8
180.00	2	1	3	2	0	0	0	0	8	8.5
202.50	1	4	0	0	0	0	0	0	5	3.8
225.00	1	2	2	0	0	0	0	0	5	6.2
247.50	2	3	1	0	0	0	0	0	6	4.4
270.00	1	4	1	0	1	0	0	0	7	6.8
292.50	3	11	6	2	0	0	0	0	22	6.7
315.00	4	10	12	13	9	9	0	0	57	14.4
337.50	1	0	3	7	6	4	0	0	21	18.1
360.00	0	3	8	1	1	0	0	0	13	10.1
Column Sums	23	55	65	34	18	16	0	0	211	10.9

Hours of Calm = 3

Sums of this table: row totals = 211 and column totals = 211

TABLE 2.3-51

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C ANNUAL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph								Row Sums	Row Avg.
	1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1		
22.50	1	1	2	1	0	0	0	0	5	8.5
45.00	1	1	3	0	0	0	0	0	5	6.7
67.50	1	0	1	0	0	0	0	0	2	4.9
90.00	1	1	1	0	0	0	0	0	3	5.1
112.50	1	2	0	1	3	1	0	0	8	14.4
135.00	1	8	0	12	0	0	0	0	31	10.2
157.50	3	15	7	2	5	0	0	0	32	8.6
180.00	2	10	1	0	2	1	0	0	16	7.8
202.50	1	3	0	0	0	0	0	0	4	3.4
225.00	2	4	0	0	0	0	0	0	6	3.7
247.50	4	2	0	0	0	0	0	0	6	3.1
270.00	1	5	1	0	0	0	0	0	7	5.3
292.50	4	14	11	3	0	0	0	0	32	7.0
315.00	1	9	15	29	27	17	2	0	100	17.9
337.50	1	1	8	29	9	6	0	0	54	17.0
360.00	0	3	3	2	0	0	0	0	8	9.0
Column Sums	25	79	63	79	46	25	2	0	319	12.6

Hours of Calm = 0
Sums of this table: row totals = 319 and column totals = 319

TABLE 2.3-52

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS D ANNUAL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	18	79	62	14	0	1	0	0	174	7.1
45.00	22	62	41	14	1	0	0	0	140	6.8
67.50	18	32	22	6	0	0	0	0	78	6.0
90.00	23	48	13	8	1	0	0	0	93	5.8
112.50	23	130	97	61	27	9	0	0	347	9.7
135.00	37	237	167	88	41	40	0	0	610	10.0
157.50	46	215	56	26	15	21	3	0	382	8.1
180.00	32	105	16	6	0	0	0	0	159	4.7
202.50	40	48	8	2	1	0	0	0	99	4.4
225.00	50	29	4	5	1	0	0	0	89	4.2
247.50	25	34	6	1	0	0	0	0	66	4.2
270.00	57	78	15	3	1	0	0	0	154	4.4
292.50	62	290	200	81	13	5	0	0	651	7.8
315.00	41	247	532	652	501	319	6	0	2298	15.6
337.50	22	143	230	202	156	77	3	0	833	13.9
360.00	31	113	101	36	3	0	0	0	284	7.6
Column Sums	547	1890	1570	1205	761	472	12	0	6457	11.3

Hours of Calm = 5
Sums of this table: row totals = 6457 and column totals = 6457

TABLE 2.3-53

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E ANNUAL

FREQUENCY TABLE

Mean Wind Direction				*Mean Wind Speed, mph*					*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*77*	*270*	*82*	*16*	*1*	*0*	*0*	*0*	*446*	*5.5*
45.00	*123*	*207*	*76*	*20*	*3*	*0*	*0*	*0*	*429*	*5.3*
67.50	*127*	*114*	*53*	*37*	*4*	*1*	*0*	*0*	*336*	*5.8*
90.00	*127*	*130*	*28*	*8*	*2*	*0*	*0*	*0*	*295*	*4.4*
112.50	*107*	*188*	*74*	*41*	*27*	*5*	*0*	*0*	*442*	*7.1*
135.00	*66*	*281*	*150*	*46*	*5*	*10*		*0*	*559*	*7.3*
157.50	*46*	*139*	*31*	*10*	*3*	*2*	*0*	*0*	*231*	*5.8*
180.00	*41*	*39*	*5*	*1*	*0*	*0*	*0*	*0*	*86*	*3.8*
202.50	*26*	*22*	*6*	*1*	*0*	*0*	*0*	*0*	*55*	*4.1*
225.00	*37*	*27*	*9*	*12*	*3*	*1*	*0*	*0*	*89*	*6.4*
247.50	*25*	*24*	*3*	*3*	*3*	*0*	*0*	*0*	*58*	*5.2*
270.00	*44*	*28*	*13*	*3*	*1*	*0*	*0*	*0*	*89*	*4.8*
292.50	*70*	*216*	*121*	*81*	*42*	*18*	*0*	*0*	*548*	*9.0*
315.00	*85*	*358*	*441*	*611*	*502*	*353*	*14*	*0*	*2364*	*15.4*
337.50	*68*	*253*	*210*	*169*	*52*	*11*	*1*	*0*	*764*	*9.6*
360.00	*78*	*266*	*171*	*44*	*3*	*1*	*0*	*0*	*563*	*6.8*
Column Sums	*1147*	*2562*	*1473*	*1103*	*651*	*402*	*16*	*0*	*7354*	*9.6*

Hours of Calm = 12
Sums of this table: row totals = 7354 and column totals = 7354

TABLE 2.3-54

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F ANNUAL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sum	Row Avg.
22.50	22	32	9	0	0	0	0	0	63	4.6
45.00	23	24	14	2	2	0	0	0	65	5.5
67.50	28	20	3	0	1	0	0	0	52	3.9
90.00	46	24	1	1	0	0	0	0	72	3.4
112.50	41	58	6	0	0	0	0	0	105	4.0
135.00	26	66	32	1	0	0	2	0	127	6.0
157.50	19	32	4	0	0	0	0	0	55	4.5
180.00	11	14	0	0	0	0	0	0	25	3.8
202.50	11	3	0	0	0	0	0	0	14	2.6
225.00	7	9	1	6	3	0	0	0	26	8.1
247.50	5	9	3	1	1	0	0	0	19	5.8
270.00	9	3	4	0	0	0	0	0	16	4.6
292.50	14	35	29	21	22	18	0	0	139	12.6
315.00	30	83	121	147	158	176	16	0	731	17.7
337.50	16	47	30	27	10	0	0	0	130	9.1
360.00	11	29	11	0	1	0	0	0	52	5.6
Column Sums	319	488	268	206	198	194	18	0	1691	11.4

Hours of Calm = 0
Sums of this table: row totals = 1691 and column totals = 1691

TABLE 2.3-55

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS G ANNUAL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	4	2	0	0	0	0	0	0	6	3.4
45.00	6	5	1	1	0	0	0	0	13	4.7
67.50	3	3	0	0	0	0	0	0	6	3.0
90.00	7	6	0	0	0	0	0	0	13	3.3
112.50	14	21	3	1	0	0	0	0	39	4.4
135.00	22	39	8	1	0	0	0	0	70	4.6
157.50	12	13	0	0	0	0	0	0	25	3.4
180.00	5	3	0	1	0	1	0	0	10	6.6
202.50	5	0	0	1	0	0	0	0	6	3.5
225.00	8	3	1	2	0	0	0	0	14	5.3
247.50	4	9	0	0	0	0	0	0	13	4.2
270.00	5	4	0	1	0	0	0	0	10	4.8
292.50	3	15	21	10	5	8	0	0	62	12.0
315.00	19	75	62	61	52	69	10	0	348	15.5
337.50	3	17	8	5	2	2	0	0	37	9.3
360.00	7	2	2	0	0	0	0	0	11	4.2
Column Sums	127	217	106	84	59	80	10	0	683	11.0

Hours of Calm = 0

Sums of this table: row totals = 683 and column totals = 683

TABLE 2.3-56

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A JAN.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	2	1	2	0	0	0	0	5	10.7
45.00	0	0	0	3	0	0	0	0	3	14.7
67.50	0	0	1	0	0	0	0	0	1	9.0
90.00	0	0	1	0	0	0	0	0	1	11.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	1	2	2	0	1	0	0	6	14.3
157.50	0	1	0	0	0	0	0	0	1	5.0
180.00	0	0	0	0	0	1	0	0	1	25.0
202.50	0	0	0	0	0	1	0	0	1	28.0
225.00	0	0	2	0	0	0	0	0	2	9.5
247.50	0	0	0	1	0	0	0	0	1	17.1
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	0	2	0	0	0	0	0	2	8.0
315.00	0	1	6	2	1	2	0	0	12	15.3
337.50	0	0	1	0	0	0	0	0	1	9.0
360.00	0	0	0	1	4	0	0	0	5	20.0
Column Sums	0	5	16	11	5	5	0	0	42	14.4

Hours of Calm = 0
Sums of this table: row totals = 42 and column totals = 42

TABLE 2.3-57

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B JAN.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	1	1	0	0	0	0	2	12.0
45.00	0	1	0	0	1	0	0	0	2	13.0
67.50	0	0	1	0	0	0	0	0	1	11.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	1	0	0	1	0	0	2	20.7
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	1	0	0	0	0	0	1	8.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	2	0	0	0	0	0	2	10.5
247.50	1	0	0	0	0	0	0	0	1	3.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	0	0	5	1	2	0	0	8	18.5
337.50	0	0	0	2	0	0	0	0	2	13.0
360.00	0	0	2	0	1	0	0	0	3	12.7
Column Sums	1	1	8	8	3	3	0	0	24	14.4

Hours of Calm = 0
Sums of this table: row totals = 24 and column totals = 24

TABLE 2.3-58

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C JAN.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	1	0	0	0	0	1	14.2
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	0	2	0	1	0	0	0	3	14.2
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	1	0	0	0	0	1	16.2
Column Sums	0	0	2	2	1	0	0	0	5	14.6

Hours of Calm = 0
Sums of this table: row totals = 5 and column totals = 5

TABLE 2.3-59

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D JAN.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	3	7	11	6	0	0	0	0	27	9.0
45.00	0	12	5	5	0	0	0	0	22	8.0
67.50	4	4	1	2	0	0	0	0	11	6.3
90.00	1	5	1	5	1	0	0	0	13	10.2
112.50	3	6	15	19	3	0	0	0	46	11.3
135.00	1	12	14	17	7	14	0	0	65	15.7
157.50	1	11	6	7	1	8	3	0	37	16.1
180.00	0	5	0	0	0	0	0	0	5	4.2
202.50	1	10		0	0	0	0	0	11	4.4
225.00	4	1	0	0	0	0	0	0	5	3.1
247.50	1	1	3	0	0	0	0	0	5	7.3
270.00	1	6	1	1	0	0	0	0	9	5.8
292.50	1	5	10	3	0	1	0	0	20	10.0
315.00	0	1	19	46	29	9	0	0	104	16.7
337.50	1	3	12	9	9	13	3	0	50	18.7
360.00	1	4	7	3	1	0	0	0	16	9.9
Column Sums	23	93	105	123	51	45	6	0	446	13.4

Hours of Calm = 0
Sums of this table: row totals = 446 and column totals = 446

TABLE 2.3-60

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E JAN.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	10	45	11	1	0	0	0	0	67	5.5
45.00	14	23	10	2	0	0	0	0	49	5.3
67.50	11	18	13	5	2	0	0	0	49	7.1
90.00	9	19	7	2	1	0	0	0	38	5.9
112.50	12	24	18	10	5	0	0	0	69	8.1
135.00	3	36	38	11	2	1	1	0	92	9.0
157.50	5	7	4	6	0	1	0	0	23	9.5
180.00	4	1	3	1	0	0	0	0	9	6.5
202.50	2	1	2	0	0	0	0	0	5	5.4
225.00	4	1	1	0	0	0	0	0	6	3.3
247.50	1	2	1	1	0	0	0	0	5	6.7
270.00	4	1	3	1	0	0	0	0	9	6.6
292.50	2	4	3	2	5	0	0	0	16	11.8
315.00	3	17	18	46	21	2	0	0	107	13.5
337.50	5	13	29	13	1	0	0	0	61	9.2
360.00	4	38	24	2	0	0	0	0	68	6.5
Column Sums	93	250	185	103	37	4	1	0	673	8.4

Hours of Calm = 0
Sums of this table: row totals = 673 and column totals = 673

TABLE 2.3-61

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F JAN.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	5	11	5	0	0	0	0	0	21	5.2
45.00	5	3	4	0	1	0	0	0	13	5.7
67.50	4	2	1	0	0	0	0	0	7	4.3
90.00	8	6	0	0	0	0	0	0	14	3.6
112.50	7	17	1	0	0	0	0	0	25	4.6
135.00	3	11	7	0	0	0	0	0	21	6.1
157.50	5	6	0	0	0	0	0	0	11	3.6
180.00	0	3	0	0	0	0	0	0	3	4.2
202.50	3	0	0	0	0	0	0	0	3	2.3
225.00	2	4	0	0	0	0	0	0	6	4.1
247.50	1	3	2	0	0	0	0	0	6	4.7
270.00	3	2	0	0	0	0	0	0	5	3.4
292.50	1	6	5	0	0	0	0	0	12	6.0
315.00	3	14	8	8	2	0	0	0	35	9.3
337.50	6	6	2	0	0	0	0	0	14	4.5
360.00	1	5	0	0	0	0	0	0	6	4.1
Column Sums	57	99	35	8	3	0	0	0	202	5.5

Hours of Calm = 0
Sums of this table: row totals = 202 and column totals = 202

TABLE 2.3-62

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G JAN.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	2	0	0	0	0	0	0	0	2	2.5
67.50	0	1	0	0	0	0	0	0	1	4.0
90.00	0	1	0	0	0	0	0	0	1	4.0
112.50	3	4	0	0	0	0	0	0	7	3.7
135.00	6	6	3	0	0	0	0	0	15	4.8
157.50	2	2	0	0	0	0	0	0	4	3.3
180.00	2	1	0	1	0	0	0	0	4	6.4
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	1	2	0	0	0	0	0	0	3	3.9
247.50	2	6	0	0	0	0	0	0	8	4.5
270.00	1	1	0	0	0	0	0	0	2	5.0
292.50	1	0	5	1	0	0	0	0	7	9.8
315.00	5	9	4	3	1	0	0	0	22	7.8
337.50	0	1	0	0	0	0	0	0	1	5.0
360.00	2	0	1	0	0	0	0	0	3	5.0
Column Sums	27	34	13	5	1	0	0	0	80	5.9

Hours of Calm = 0
Sums of this table: row totals = 80 and column totals = 80

TABLE 2.3-63

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A FEB.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
45.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
135.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
157.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
180.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
202.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
225.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
247.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
270.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
292.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
315.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
337.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
360.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
Column Sums	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*

Hours of Calm = 0
Sums of this table: row totals = 0 and column totals = 0

TABLE 2.3-64

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B FEB.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	1	0	0	0	0	0	1	11.5
157.50	0	0	1	0	0	1	0	0	2	19.7
180.00	1	0	0	0	0	0	0	0	1	2.7
202.50	0	1	0	0	0	0	0	0	1	3.7
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	1	0	0	0	0	0	0	0	1	2.7
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	0	0	0	0	0	0	0	0	0.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	2	1	2	0	0	1	0	0	6	10.0

Hours of Calm = 0
Sums of this table: row totals = 6 and column totals = 6

TABLE 2.3-65

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C FEB.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	1	0	0	0	1	21.2
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	2	0	0	0	0	0	0	2	5.6
180.00	0	1	0	0	0	0	0	0	1	4.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	1	0	0	0	0	0	0	1	3.6
247.50	1	0	0	0	0	0	0	0	1	2.6
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	0	0	0	1	0	0	0	1	23.8
337.50	0	0	0	1	0	0	0	0	1	17.2
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	1	4	0	1	2	0	0	0	8	10.4

Hours of Calm = 0
Sums of this table: row totals = 8 and column totals = 8

TABLE 2.3-66

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D FEB.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	2	7	12	2	0	0	0	0	23	7.6
45.00	0	3	8	4	0	0	0	0	15	9.9
67.50	0	1	3	1	0	0	0	0	5	9.5
90.00	2	4	0	1	0	0	0	0	7	5.6
112.50	0	11	3	4	6	0	0	0	24	10.9
135.00	0	14	25	16	7	9	0	0	71	12.8
157.50	2	27	18	5	2	8	0	0	62	10.6
180.00	4	11	9	3	0	0	0	0	27	6.8
202.50	1	4	2	0	0	0	0	0	7	5.4
225.00	4	5	0	1	0	0	0	0	10	4.4
247.50	1	3	0	0	0	0	0	0	4	3.8
270.00	1	2	3	1	0	0	0	0	7	7.5
292.50	5	11	1	0	0	0	0	0	17	4.1
315.00	0	13	12	32	22	8	0	0	87	15.1
337.50	0	4	24	34	19	33	0	0	114	18.6
360.00	4	12	13	8	0	0	0	0	37	8.4
Column Sums	26	132	133	112	56	58	0	0	517	12.3

Hours of Calm = 0
Sums of this table: row totals = 517 and column totals = 517

TABLE 2.3-67

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS E FEB.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	8	42	16	1	0	0	0	0	67	5.4
45.00	21	29	19	4	1	0	0	0	74	5.8
67.50	19	19	7	7	0	0	0	0	52	5.5
90.00	27	24	4	0	0	0	0	0	55	3.7
112.50	20	24	4	1	4	0	0	0	53	5.4
135.00	6	10	2	7	1	0	0	0	26	7.9
157.50	0	10	4	1	1	0	0	0	16	7.4
180.00	1	0	0	0	0	0	0	0	1	1.7
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	1	1	1	1	0	0	0	0	4	8.1
247.50	1	2	0	0	0	0	0	0	3	3.2
270.00	1	2	0	0	1	0	0	0	4	7.3
292.50	3	2	3	1	3	0	0	0	12	10.0
315.00	3	13	22	30	35	4	0	0	107	14.6
337.50	4	17	23	26	10	1	0	0	81	11.4
360.00	8	26	44	8	0	0	0	0	86	8.2
Column Sums	123	221	149	87	56	5	0	0	641	8.2

Hours of Calm = 0
Sums of this table: row totals = 641 and column totals = 641

TABLE 2.3-68

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F FEB.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	5	1	0	0	0	0	0	6	4.5
45.00	1	4	1	2	1	0	0	0	9	8.9
67.50	2	3	0	0	0	0	0	0	5	3.5
90.00	7	4	0	0	0	0	0	0	11	2.8
112.50	5	1	1	0	0	0	0	0	7	3.2
135.00	4	3	0	0	0	0	0	0	7	3.4
157.50	0	2	0	0	0	0	0	0	2	5.8
180.00	1	0	0	0	0	0	0	0	1	2.2
202.50	1	0	0	0	0	0	0	0	1	2.9
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	2	1	0	0	0	0	0	0	3	3.1
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	1	1	0	0	0	0	0	0	2	3.0
315.00	1	3	7	9	9	1	0	0	30	14.7
337.50	0	8	3	1	0	0	0	0	12	6.9
360.00	0	2	0	0	0	0	0	0	2	4.8
Column Sums	25	37	13	12	10	1	0	0	98	7.8

Hours of Calm = 0
Sums of this table: row totals = 98 and column totals = 98

TABLE 2.3-69

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G FEB.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
45.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.50	*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*3.0*
135.00	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*4.0*
157.50	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*2.8*
180.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
202.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
225.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0.0*
247.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
270.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
292.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
315.00	*0*	*3*	*4*	*0*	*3*	*0*	*0*	*0*	*10*	*11.8*
337.50	*0*	*6*	*2*	*0*	*0*	*0*	*0*	*0*	*8*	*6.2*
360.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
Column Sums	*2*	*12*	*6*	*0*	*3*	*0*	*0*	*0*	*23*	*8.1*

Hours of Calm = 0
Sums of this table: row totals = 23 and column totals = 23

TABLE 2.3-70

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A MARCH

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	1	0	0	0	0	0	0	1	6.1
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	1	0	0	0	0	0	0	1	6.5
135.00	0	1	0	0	3	0	0	0	4	17.8
157.50	0	1	1	1	0	0	0	0	3	10.7
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	1	0	0	0	0	0	0	1	3.8
292.50	0	1	0	0	0	0	0	0	1	7.0
315.00	0	0	0	0	0	0	0	0	0	0.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	1	0	0	0	0	0	0	1	3.5
Column Sums	0	7	1	1	3	0	0	0	12	10.9

Hours of Calm = 0
Sums of this table: row totals = 12 and column totals = 12

TABLE 2.3-71

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B MARCH

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	1	0	0	0	0	0	0	1	3.9
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	1	0	0	0	0	0	0	1	3.2
112.50	0	0	2	0	0	0	0	0	2	10.8
135.00	0	0	0	1	0	0	0	0	1	12.2
157.50	0	1	1	0	0	1	0	0	3	12.8
180.00	0	0	1	2	0	0	0	0	3	14.4
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	1	0	0	0	0	0	0	1	4.8
270.00	0	1	0	0	0	0	0	0	1	3.1
292.50	0	1	1	0	0	0	0	0	2	7.7
315.00	0	0	2	2	3	4	0	0	11	21.4
337.50	0	0	0	0	4	1	0	0	5	23.6
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	0	6	7	5	7	6	0	0	31	16.1

Hours of Calm = 0
Sums of this table: row totals = 31 and column totals = 31

TABLE 2.3-72
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C MARCH

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	1	0	0	0	0	0	0	0	1	2.8
112.50	0	0	0	1	1		0	0	2	15.5
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	1	3	3	1	4	0	0	0	12	11.8
180.00	1	3	1	0	0	1	0	0	6	8.6
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	1	0	0	0	0	0	0	1	4.6
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	1	0	0	0	0	0	0	1	5.5
292.50	0	0	2	1	0	0	0	0	3	11.3
315.00	0	5	2	15	17	13	2	0	54	20.2
337.50	0	0	0	14	4	2	0	0	20	18.2
360.00	0	1	0	0	0	0	0	0	1	5.9
Column Sums	3	14	8	32	26	16	2	0	101	17.2

Hours of Calm = 0
Sums of this table: row totals = 101 and column totals = 101

TABLE 2.3-73

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS D MARCH

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*1*	*7*	*3*	*0*	*0*	*0*	*0*	*0*	*11*	*5.7*
45.00	*3*	*9*	*9*	*0*	*0*	*0*	*0*	*0*	*21*	*6.4*
67.50	*1*	*2*	*0*	*1*	*0*	*0*	*0*	*0*	*4*	*7.3*
90.00	*2*	*3*	*3*	*0*	*0*	*0*	*0*	*0*	*8*	*5.9*
112.50	*1*	*6*	*11*	*9*	*9*	*1*	*0*	*0*	*37*	*13.2*
135.00	*1*	*13*	*30*	*24*	*20*	*11*	*0*	*0*	*99*	*14.6*
157.50	*1*	*20*	*7*	*5*	*9*	*1*	*0*	*0*	*43*	*10.5*
180.00	*1*	*10*	*2*	*1*	*0*	*0*	*0*	*0*	*14*	*5.6*
202.50	*4*	*4*	*1*	*1*	*0*	*0*	*0*	*0*	*10*	*5.1*
225.00	*5*	*4*	*0*	*0*	*0*	*0*	*0*	*0*	*9*	*2.9*
247.50	*4*	*1*	*2*	*1*	*0*	*0*	*0*	*0*	*8*	*6.4*
270.00	*1*	*4*	*2*	*1*	*0*	*0*	*0*	*0*	*8*	*6.5*
292.50	*4*	*24*	*13*	*4*	*3*	*1*	*0*	*0*	*49*	*8.0*
315.00	*5*	*25*	*42*	*78*	*97*	*28*	*0*	*0*	*275*	*16.3*
337.50	*4*	*15*	*50*	*48*	*53*	*7*	*0*	*0*	*177*	*14.7*
360.00	*1*	*23*	*8*	*1*	*0*	*0*	*0*	*0*	*33*	*6.7*
Column Sums	*39*	*170*	*183*	*174*	*191*	*9*	*0*	*0*	*806*	*13.2*

Hours of Calm = 0
Sums of this table: row totals = 806 and column totals = 806

TABLE 2.3-74

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS E MARCH

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	3	26	7	2	0	0	0	0	38	5.4
45.00	9	24	10	3	0	0	0	0	46	5.7
67.50	5	6	4	3	0	0	0	0	18	6.6
90.00	4	10	3	2	0	0	0	0	19	6.3
112.50	5	16	6	12	7	0	0	0	46	10.0
135.00	6	35	22	9	2	4	0	0	78	9.1
157.50	4	18	5	1	2	0	0	0	30	6.7
180.00	2	2	0	0	0	0	0	0	4	3.1
202.50	4	1	1	0	0	0	0	0	6	4.2
225.00	3	1	0	0	0	0	0	0	4	2.9
247.50	1	1	0	0	0	0	0	0	2	3.7
270.00	2	1	2	0	0	0	0	0	5	5.2
292.50	1	10	8	2	0	0	0	0	21	6.7
315.00	3	19	14	22	19	4	0	0	81	13.4
337.50	1	10	20	17	6	1	0	0	55	11.8
360.00	0	20	13	7	0	0	0	0	40	8.1
Column Sums	53	200	115	80	36	9	0	0	493	8.8

Hours of Calm = 0
Sums of this table: row totals = 493 and column totals = 493

TABLE 2.3-75

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F MARCH

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	1	2	0	0	0	0	0	3	9.7
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	1	1	0	0	0	0	0	0	2	3.0
112.50	0	1	0	0	0	0	0	0	1	3.3
135.00	0	0	1	0	0	0	0	0	1	8.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	1	0	0	0	0	0	0	0	1	2.4
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	3	0	2	3	0	0	0	8	13.2
315.00	1	3	2	2	7	0	0	0	15	14.4
337.50	0	2	0	0	0	0	0	0	2	6.1
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	3	11	5	4	10	0	0	0	33	11.6

Hours of Calm = 0
Sums of this table: row totals = 33 and column totals = 33

TABLE 2.3-76

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS G MARCH

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	0	3	1	1	0	0	0	5	12.6
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	0	0	3	1	1	0	0	0	5	12.6

Hours of Calm = 0

Sums of this table: row totals = 5 and column totals = 5

TABLE 2.3-77

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A APRIL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	1	0	0	0	0	0	0	1	6.0
157.50	0	5	0	0	0	0	0	0	5	5.5
180.00	0	4	1	0	0	0	0	0	5	5.6
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	1	0	0	0	0	0	0	1	5.1
247.50	0	2	0	0	0	0	0	0	2	5.0
270.00	1	1	0	0	0	0	0	0	2	3.1
292.50	0	2	0	1	0	0	0	0	3	7.7
315.00	0	1	2		0	0	0	0	3	9.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	1	17	3	1	0	0	0	0	22	6.0

Hours of Calm = 0
Sums of this table: row totals = 22 and column totals = 22

TABLE 2.3-78

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B APRIL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	3	1	0	0	0	0	0	4	5.8
157.50	0	3	4	0	0	0	0	0	7	7.1
180.00	0	0	1	0	0	0	0	0	1	7.1
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	1	0	0	0	0	0	0	1	4.0
292.50	1	4	2	0	0	0	0	0	7	5.8
315.00	1	4	6	2	2	2	0	0	17	12.5
337.50	0	0	0	0	1	1	0	0	2	24.5
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	2	15	14	2	3	3	0	0	39	9.9

Hours of Calm = 0
Sums of this table: row totals = 39 and column totals = 39

TABLE 2.3-79

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS C APRIL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	1	0	0	0	0	0	0	1	5.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	1	2	0	0	0	0	0	3	8.6
157.50	0	1	1	1	0	0	0	0	3	7.9
180.00	0	2	0	0	0	0	0	0	2	5.6
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	2	0	0	0	0	0	0	0	2	2.9
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	1	1	0	0	0	0	0	2	7.9
292.50	1	2	2	0	0	0	0	0	5	7.4
315.00	0	0	7	12	6	4	0	0	29	17.0
337.50	0	0	0	0	1	0	0	0	1	19.2
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	3	8	13	13	7	4	0	0	48	13.3

Hours of Calm = 0
Sums of this table: row totals = 48 and column totals = 48

TABLE 2.3-80

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS D APRIL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	14	4	1	0	0	0	0	19	6.2
45.00	1	4	2	0	0	0	0	0	7	5.3
67.50	4	0	3	0	0	0	0	0	7	4.9
90.00	1	2	0	0	0	0	0	0	3	3.7
112.50	1	10	23	0	0	0	0	0	34	8.5
135.00	2	17	7	1	0	0	0	0	27	6.5
157.50	4	9	5	3	0	0	0	0	21	6.6
180.00	1	4	1	2	0	0	0	0	8	7.3
202.50	2	3	0	0	0	0	0	0	5	3.4
225.00	1	2	1	0	0	0	0	0	4	5.5
247.50	1	2	0	0	0	0	0	0	3	4.2
270.00	3	1	2	0	1	0	0	0	7	7.2
292.50	4	13	12	6	0	0	0	0	35	7.8
315.00	1	17	61	71	66	69	0	0	285	17.5
337.50	3	24	63	39	25	9	0	0	163	12.9
360.00	4	13	21	1	0	0	0	0	39	7.2
Column Sums	33	135	205	124	92	78	0	0	667	12.9

Hours of Calm = 0

Sums of this table: row totals = 667 and column totals = 667

TABLE 2.3-81

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E APRIL

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*7*	*21*	*10*	*0*	*0*	*0*	*0*	*0*	*38*	*5.5*
45.00	*13*	*14*	*3*	*4*	*0*	*0*	*0*	*0*	*34*	*5.3*
67.50	*7*	*4*	*2*	*1*	*0*	*0*	*0*	*0*	*14*	*5.0*
90.00	*7*	*6*	*1*	*0*	*0*	*0*	*0*	*0*	*14*	*3.8*
112.50	*7*	*13*	*4*	*3*	*0*	*0*	*0*	*0*	*27*	*5.7*
135.00	*6*	*5*	*6*	*1*	*0*	*0*	*0*	*0*	*18*	*6.1*
157.50	*1*	*3*	*1*	*0*	*0*	*0*	*0*	*0*	*5*	*4.4*
180.00	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*3.0*
202.50	*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*3.5*
225.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*4.8*
247.50	*0*	*1*	*0*	*1*	*0*	*0*	*0*	*0*	*2*	*9.5*
270.00	*2*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*3*	*7.3*
292.50	*0*	*1*	*7*	*9*	*1*	*0*	*0*	*0*	*18*	*12.9*
315.00	*3*	*7*	*19*	*38*	*48*	*42*	*0*	*0*	*157*	*18.7*
337.50	*2*	*12*	*15*	*23*	*11*	*6*	*0*	*0*	*69*	*13.6*
360.00	*14*	*20*	*28*	*5*	*0*	*0*	*0*	*0*	*67*	*6.8*
Column Sums	*73*	*109*	*96*	*86*	*60*	*48*	*0*	*0*	*472*	*11.5*

Hours of Calm = 1
Sums of this table: row totals = 472 and column totals = 472

TABLE 2.3-82

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F APRIL

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	2	2	0	0	0	0	0	0	4	4.6
45.00	3	3	3	0	0	0	0	0	9	5.2
67.50	6	4	0	0	0	0	0	0	10	3.2
90.00	5	5	0	0	0	0	0	0	10	3.7
112.50	3	0	0	0	0	0	0	0	3	2.7
135.00	3	1	1	0	0	0	0	0	5	5.0
157.50	2	1	0	0	0	0	0	0	3	3.4
180.00	3	1	0	0	0	0	0	0	4	3.4
202.50	1	1	0	0	0	0	0	0	2	3.0
225.00	1	0	0	0	0	0	0	0	1	2.9
247.50	0	1	0	0	0	0	0	0	1	5.2
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	1	2	2	2	0	0	0	7	12.7
315.00	3	3	12	9	22	15	0	0	64	18.2
337.50	1	3	3	1	0	0	0	0	8	7.4
360.00	0	3	1	0	0	0	0	0	4	6.3
Column Sums	33	29	22	12	24	15	0	0	135	11.4

Hours of Calm = 0
Sums of this table: row totals = 135 and column totals = 135

TABLE 2.3-83

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G APRIL

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	2	0	0	0	0	0	0	0	2	2.4
45.00	0	0	1	0	0	0	0	0	1	8.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	2	2	0	0	0	0	0	0	4	3.5
112.50	0	1	0	0	0	0	0	0	1	3.6
135.00	0	1	0	0	0	0	0	0	1	4.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	1	0	0	0	0	0	0	0	1	1.6
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	3	1	0	0	0	0	0	4	5.9
315.00	0	8	8	3	10	2	0	0	31	13.6
337.50	0	1	2	0	0	0	0	0	3	9.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	5	16	12	3	10	2	0	0	48	10.6

Hours of Calm = 0
Sums of this table: row totals = 48 and column totals = 48

TABLE 2.3-84

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A MAY

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	1	0	0	0	0	0	0	0	1	3.0
315.00	1	4	0	0	0	0	0	0	5	4.8
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	2	4	0	0	0	0	0	0	6	4.5

Hours of Calm = 0
Sums of this table: row totals = 6 and column totals = 6

TABLE 2.3-85

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B MAY

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	1	0	0	0	0	0	0	1	4.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	1	0	0	0	0	0	0	1	3.8
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	2	0	0	0	0	0	0	2	4.1
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	0	0	0	0	0	0	0	0	0.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	0	4	0	0	0	0	0	0	4	4.0

Hours of Calm = 0
Sums of this table: row totals = 4 and column totals = 4

TABLE 2.3-86

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C MAY

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
45.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
135.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
157.50	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*6.5*
180.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*4.4*
202.50	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*3.1*
225.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*3.8*
247.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
270.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*5.4*
292.50	*0*	*2*	*1*	*0*	*0*	*0*	*0*	*0*	*3*	*5.6*
315.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
337.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
360.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
Column Sums	*0*	*7*	*1*	*0*	*0*	*0*	*0*	*0*	*8*	*5.0*

Hours of Calm = 0
Sums of this table: row totals = 8 and column totals = 8

TABLE 2.3-87

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D MAY

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	3	2	0	0	0	0	0	5	6.1
45.00	3	1	0	0	0	0	0	0	4	2.6
67.50	0	7	0	0	0	0	0	0	7	3.6
90.00	3	3	1	0	0	0	0	0	7	4.4
112.50	2	15	2	0	0	0	0	0	19	5.3
135.00	8	25	5	0	0	0	0	0	38	4.8
157.50	9	12	1	0	0	0	0	0	22	3.8
180.00	3	13	0	0	0	0	0	0	16	3.7
202.50	4	3	0	0	0	0	0	0	7	3.0
225.00	6	1	0	0	0	0	0	0	7	2.7
247.50	4	5	0	0	0	0	0	0	9	3.4
270.00	9	12	1	0	0	0	0	0	22	3.5
292.50	8	32	25	6	0	0	0	0	71	6.9
315.00	2	23	72	94	79	80	2	0	352	17.7
337.50	1	15	22	8	18	11	0	0	75	15.0
360.00	2	5	2	0	0	0	0	0	9	4.7
Column Sums	64	175	133	108	97	91	2	0	670	12.8

Hours of Calm = 0
Sums of this table: row totals = 670 and column totals = 670

TABLE 2.3-88

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS E MAY

FREQUENCY TABLE

Mean Wind Direction				*Mean Wind Speed, mph*					*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*4*	*11*	*5*	*0*	*0*	*0*	*0*	*0*	*20*	*5.2*
45.00	*5*	*3*	*1*	*0*	*0*	*0*	*0*	*0*	*9*	*4.1*
67.50	*4*	*2*	*1*	*0*	*0*	*0*	*0*	*0*	*7*	*4.1*
90.00	*2*	*3*	*1*	*0*	*0*	*0*	*0*	*0*	*6*	*5.0*
112.50	*1*	*12*	*5*	*1*	*0*	*0*	*0*	*0*	*19*	*6.3*
135.00	*6*	*22*	*1*	*1*	*0*	*0*	*0*	*0*	*30*	*4.6*
157.50	*3*	*7*	*2*	*0*	*0*	*0*	*0*	*0*	*12*	*4.8*
180.00	*5*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*7*	*2.9*
202.50	*3*	*4*	*0*	*0*	*0*	*0*	*0*	*0*	*7*	*4.2*
225.00	*5*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*8*	*2.9*
247.50	*6*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*8*	*2.8*
270.00	*6*	*3*	*1*	*0*	*0*	*0*	*0*	*0*	*10*	*3.9*
292.50	*7*	*32*	*2*	*10*	*6*	*1*	*0*	*0*	*58*	*8.3*
315.00	*13*	*42*	*47*	*45*	*47*	*56*	*0*	*0*	*250*	*15.7*
337.50	*5*	*27*	*23*	*15*	*9*	*1*	*0*	*0*	*80*	*9.8*
360.00	*6*	*28*	*8*	*1*	*0*	*0*	*0*	*0*	*43*	*5.6*
Column Sums	*81*	*203*	*97*	*73*	*62*	*58*	*0*	*0*	*574*	*10.6*

Hours of Calm = 0
Sums of this table: row totals = 574 and column totals = 574

TABLE 2.3-89

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F MAY

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	1	1	0	0	0	0	0	0	2	3.9
45.00	0	0	1	0	0	0	0	0	1	7.1
67.50	0	1	0	0	0	0	0	0	1	3.9
90.00	1	1	0	0	0	0	0	0	2	3.1
112.50	0	1	0	0	0	0	0	0	1	6.3
135.00	0	4	3	0	0	0	0	0	7	6.6
157.50	0	0	1	0	0	0	0	0	1	7.5
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	1	0	1	0	0	0	0	2	9.3
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	2	0	0	0	0	0	2	10.3
292.50	1	3	1	5	4	2	0	0	16	15.2
315.00	2	6	10	15	14	37	0	0	84	20.6
337.50	0	1	1	4	1	0	0	0	7	13.7
360.00	1	1	0	0	0	0	0	0	2	3.1
Column Sums	6	20	19	25	19	39	0	0	128	17.2

Hours of Calm = 0
Sums of this table: row totals = 128 and column totals = 128

TABLE 2.3-90

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G MAY

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	1	0	0	0	0	0	0	0	1	2.6
45.00	0	1	0	0	0	0	0	0	1	4.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	1	0	0	0	0	0	0	0	1	2.6
112.50	1	3	3	1	0	0	0	0	8	7.3
135.00	2	3	2	0	0	0	0	0	7	5.3
157.50	1	0	0	0	0	0	0	0	1	2.5
180.00	0	0	0	0	0	1	0	0	1	24.4
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	1	0	0	0	0	0	0	0	1	3.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	1	0	0	0	0	0	0	0	1	2.7
292.50	0	2	2	1	0	1	0	0	6	10.5
315.00	3	9	15	8	7	19	0	0	61	16.5
337.50	0	2	1	1	0	2	0	0	6	14.7
360.00	0	1	0	0	0	0	0	0	1	5.8
Column Sums	11	21	23	11	7	23	0	0	96	13.5

Hours of Calm = 0
Sums of this table: row totals = 96 and column totals = 96

TABLE 2.3-91

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A JUNE

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	1	0	0	0	0	0	0	1	4.0
90.00	0	1	1	0	0	0	0	0	2	9.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	3	1	0	0	0	0	0	4	6.2
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	1	0	0	0	0	0	0	1	5.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	2	0	0	0	0	0	0	2	4.0
315.00	0	1	1	0	0	0	0	0	2	8.0
337.50	1	1	0	0	2	0	0	0	4	12.5
360.00	0	1	0	0	0	0	0	0	1	5.0
Column Sums	1	11	3	0	2	0	0	0	17	7.7

Hours of Calm = 0
Sums of this table: row totals = 17 and column totals = 17

TABLE 2.3-92

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B JUNE

FREQUENCY TABLE

Mean Wind Direction	*1.5*	*5.1*	*9.6*	*Mean Wind Speed, mph 15.1*	*21.1*	*29.6*	*40.1*	*50.1*	*Row Sums*	*Row Avg.*
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	2	0	0	0	0	0	0	2	4.2
315.00	0	1	1	0	0	0	0	0	2	9.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	0	3	1	0	0	0	0	0	4	6.6

Hours of Calm = 0
Sums of this table: row totals = 4 and column totals = 4

TABLE 2.3-93

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C JUNE

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	2	0	0	0	0	0	0	2	4.2
202.50	0	1	0	0	0	0	0	0	1	3.7
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	0	0	0	0	0	0	0	0	0.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	0	3	0	0	0	0	0	0	3	4.1

Hours of Calm = 0
Sums of this table: row totals = 3 and column totals = 3

TABLE 2.3-94

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS D JUNE

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*3.6*
45.00	*0*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*4.5*
67.50	*2*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*2.8*
90.00	*1*	*3*	*1*	*1*	*0*	*0*	*0*	*0*	*6*	*7.1*
112.50	*0*	*7*	*11*	*2*	*0*	*0*	*0*	*0*	*20*	*8.5*
135.00	*4*	*19*	*10*	*3*	*0*	*0*	*0*	*0*	*36*	*6.3*
157.50	*6*	*17*	*3*	*0*	*0*	*0*	*0*	*0*	*26*	*4.6*
180.00	*3*	*6*	*0*	*0*	*0*	*0*	*0*	*0*	*9*	*3.5*
202.50	*2*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*3.2*
225.00	*4*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*7*	*3.1*
247.50	*3*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*5*	*3.2*
270.00	*8*	*8*	*0*	*0*	*0*	*0*	*0*	*0*	*16*	*3.4*
292.50	*3*	*18*	*19*	*0*	*0*	*0*	*0*	*0*	*40*	*6.9*
315.00	*8*	*29*	*62*	*73*	*47*	*37*	*0*	*0*	*256*	*15.3*
337.50	*2*	*10*	*8*	*13*	*11*	*3*	*0*	*0*	*47*	*13.5*
360.00	*1*	*7*	*1*	*0*	*0*	*0*	*0*	*0*	*9*	*5.0*
Column Sum	*47*	*136*	*115*	*92*	*58*	*40*	*0*	*0*	*488*	*11.5*

Hours of Calm = 0

Sums of this table: row totals = 488 and column totals = 488

TABLE 2.3-95

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E JUNE

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	4	5	4	0	0	0	0	0	13	5.2
45.00	4	1	0	0	0	0	0	0	5	2.6
67.50	3	0	0	0	0	0	0	0	3	2.3
90.00	4	2	0	0	0	0	0	0	6	2.8
112.50	4	12	10	3	0	0	0	0	29	6.7
135.00	4	16	8	1	0	0	0	0	29	5.9
157.50	4	13	3	0	0	0	0	0	20	5.0
180.00	4	4	0	0	0	0	0	0	8	3.4
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	1	2	0	0	0	0	0	0	3	3.7
247.50	3	0	0	0	0	0	0	0	3	2.4
270.00	4	0	0	0	0	0	0	0	4	2.4
292.50	7	22	11	4	2	1	0	0	47	7.7
315.00	7	29	46	87	60	66	7	0	302	17.8
337.50	10	19	10	6	2	0	0	0	47	7.4
360.00	4	21	1	1	0	1	0	0	28	5.6
Column Sums	67	1 46	93	107	64	68	7	0	547	12.6

Hours of Calm = 0
Sums of this table: row totals = 547 and column totals = 547

TABLE 2.3-96

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F JUNE

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	1	0	0	0	0	0	0	0	1	3.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	1		0	0	0	0	0	1	4.3
112.50	0	3	2	0	0	0	0	0	5	6.7
135.00	1	3	3	0	0	0	0	0	7	6.2
157.50	0	0	1	0	0	0	0	0	1	10.1
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	1	0	0	0	0	0	0	1	3.7
292.50	0	0	2	2	1	0	0	0	5	14.2
315.00	1	8	3	21	23	24	6	0	86	21.2
337.50	2	2	3	5	6	0	0	0	18	13.1
360.00	1	0	2	0	0	0	0	0	3	7.0
Column Sums	6	18	16	28	30	24	6	0	128	17.6

Hours of Calm = 0
Sums of this table: row totals = 128 and column totals = 128

TABLE 2.3-97

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G JUNE

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
45.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*4.7*
112.50	*1*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*3.1*
135.00	*2*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*5*	*4.1*
157.50	*3*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*5*	*3.7*
180.00	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1.8*
202.50	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*1.6*
225.00	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1.1*
247.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
270.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
292.50	*0*	*1*	*3*	*4*	*0*	*1*	*0*	*0*	*9*	*14.2*
315.00	*1*	*15*	*11*	*18*	*13*	*30*	*7*	*0*	*95*	*19.7*
337.50	*2*	*1*	*2*	*1*	*1*	*0*	*0*	*0*	*7*	*9.3*
360.00	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*2.4*
Column Sums	*15*	*25*	*16*	*23*	*14*	*31*	*7*	*0*	*131*	*16.2*

Hours of Calm = 0
Sums of this table: row totals = 131 and column totals = 131

TABLE 2.3-98

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A JULY

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	2	0	0	0	0	0	0	2	5.1
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	1	0	0	0	0	0	0	1	4.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	2	0	0	3	0	0	0	5	14.9
315.00	0	0	3	10	7	11	0	0	31	20.8
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	0	5	3	10	10	11	0	0	39	18.8

Hours of Calm = 0
Sums of this table: row totals = 39 and column totals = 39

TABLE 2.3-99

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B JULY

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph								Row Sums	Row Avg.
	1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1		
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	1	0	0	0	0	0	1	12.0
135.00	1	0	2	0	0	0	0	0	3	6.8
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	1	0	0	0	0	0	0	1	4.0
225.00	1	0	0	0	0	0	0	0	1	2.9
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0		0	0	0.0
292.50	0	3	1	0	0	0	0	0	4	6.5
315.00	0	0	0	0	0	0	0	0	0	0.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	2	4	4	0	0	0	0	0	10	6.5

Hours of Calm = 0
Sums of this table: row totals = 10 and column totals = 10

TABLE 2.3-100

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C JULY

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	1	0	0	0	0	0	0	0	1	2.5
135.00	0	0	1	0	0	0	0	0	1	7.1
157.50	0	1	0	0	0	0	0	0	1	4.6
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	1	0	0	0	0	0	0	0	1	2.6
270.00	1	1	0	0	0	0	0	0	2	3.6
292.50	1	3	1	0	0	0	0	0	5	5.2
315.00	0	1	0	0	1	0	0	0	2	10.7
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	4	6	2	0	1	0	0	0	13	5.5

Hours of Calm = 0
Sums of this table: row totals = 13 and column totals = 13

TABLE 2.3-101

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D JULY

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	3	6	0	0	0	0	0	0	9	3.4
45.00	4	0	0	0	0	0	0	0	4	2.4
67.50	1	1	0	0	0	0	0	0	2	3.9
90.00	1	3	0	0	0	0	0	0	4	4.3
112.50	2	22	8	5	0	0	0	0	37	7.1
135.00	6	21	17	2	0	0	0	0	46	6.6
157.50	7	29	4	0	0	0	0	0	40	5.0
180.00	7	10	0	0	0	0	0	0	17	3.3
202.50	3	2	0	0	0	0	0	0	5	2.5
225.00	9	5	1	0	0	0	0	0	15	3.5
247.50	3	5	0	0	0	0	0	0	8	3.2
270.00	6	8	0	0	0	0	0	0	14	3.4
292.50	9	46	23	14	0	0	0	0	92	7.5
315.00	7	55	84	49	56	39	3	0	293	14.4
337.50	4	18	8	3	0	0	0	0	33	6.8
360.00	7	8	0	0	0	0	0	0	15	3.5
Column Sums	79	239	145	73	56	39	3	0	634	9.8

Hours of Calm = 0
Sums of this table: row totals = 634 and column totals = 634

TABLE 2.3-102

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E JULY

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	1	2	0	0	0	0	0	0	3	3.8
45.00	1	1	0	0	0	0	0	0	2	3.2
67.50	1	0	0	0	0	0	0	0	1	2.1
90.00	5	2	0	0	0	0	0	0	7	2.7
112.50	3	7	3	0	0	0	0	0	13	5.8
135.00	6	15	9	2	0	0	0	0	32	5.9
157.50	4	15	2	0	0	0	0	0	21	4.7
180.00	6	6	0	0	0	0	0	0	12	3.3
202.50	3	2	1	0	0	0	0	0	6	3.9
225.00	3	2	0	0	0	0	0	0	5	2.7
247.50	2	4	0	0	0	0	0	0	6	3.3
270.00	7	4	2	0	0	0	0	0	13	3.6
292.50	15	24	25	15	2	2	0	0	83	8.2
315.00	15	59	83	86	80	74	5	0	402	15.9
337.50	7	20	11	7	0	0	0	0	45	7.3
360.00	5	6	3	0	0	0	0	0	14	4.9
Column Sums	84	169	139	110	82	76	5	0	665	12.1

Hours of Calm = 0
Sums of this table: row totals = 665 and column totals = 665

TABLE 2.3-103

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F JULY

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
45.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.50	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*1*	*9.3*
135.00	*1*	*5*	*2*	*0*	*0*	*0*	*0*	*0*	*8*	*5.7*
157.50	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*6.8*
180.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
202.50	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*2.7*
225.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
247.50	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1.9*
270.00	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*2.5*
292.50	*1*	*3*	*4*	*1*	*0*	*4*	*0*	*0*	*13*	*14.0*
315.00	*2*	*6*	*3*	*12*	*8*	*31*	*4*	*0*	*66*	*22.0*
337.50	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*1*	*17.0*
360.00	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*1*	*19.0*
Column Sums	*7*	*15*	*10*	*14*	*9*	*35*	*4*	*0*	*94*	*18.5*

Hours of Calm = 0
Sums of this table: row totals = 94 and column totals = 94

TABLE 2.3-104

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G JULY

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
45.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*3.1*
112.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
135.00	*0*	*2*	*1*	*0*	*0*	*0*	*0*	*0*	*3*	*6.5*
157.50	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*4.6*
180.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*6.4*
202.50	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*1*	*12.2*
225.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
247.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
270.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
292.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
315.00	*0*	*1*	*1*	*0*	*2*	*3*	*1*	*0*	*8*	*23.0*
337.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
360.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
Column Sums	*0*	*7*	*2*	*1*	*2*	*3*	*1*	*0*	*16*	*14.7*

Hours of Calm = 0
Sums of this table: row totals = 16 and column totals = 16

TABLE 2.3-105

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS A AUG.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
45.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
67.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
90.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
135.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
157.50	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*5.8*
180.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
202.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
225.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*4.2*
247.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
270.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
292.50	*0*	*5*	*0*	*0*	*0*	*0*	*0*	*0*	*5*	*4.4*
315.00	*1*	*2*	*0*	*0*	*0*	*1*	*0*	*0*	*4*	*9.7*
337.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
360.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
Column Sums	*1*	*9*	*0*	*0*	*0*	*1*	*0*	*0*	*11*	*6.4*

Hours of Calm = 0
Sums of this table: row totals = 11 and column totals = 11

TABLE 2.3-106

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B AUG.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	1	0	0	0	0	0	0	1	3.7
225.00	0	1	0	0	0	0	0	0	1	3.5
247.50	0	2	0	0	0	0	0	0	2	4.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	1	0	0	0	0	0	0	0	1	2.5
315.00	0	1	0	0	0	0	0	0	1	5.4
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	1	5	0	0	0	0	0	0	6	3.8

Hours of Calm = 0
Sums of this table: row totals = 6 and column totals = 6

TABLE 2.3-107

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C AUG.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	1	0	0	0	0	0	1	7.9
157.50	0	0	1	0	0	0	0	0	1	7.7
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	2	0	0	0	0	0	0	2	4.4
270.00	0	1	0	0	0	0	0	0	1	3.2
292.50	0	1	2	1	0	0	0	0	4	9.6
315.00	0	0	0	0	0	0	0	0	0	0.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	0	4	4	1	0	0	0	0	9	7.3

Hours of Calm = 0
Sums of this table: row totals = 9 and column totals = 9

TABLE 2.3-108

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D AUG.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	3	4	0	0	0	0	0	0	7	3.1
45.00	2	3	0	0	0	0	0	0	5	3.2
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	1	1	0	0	0	0	0	0	2	3.3
112.50	3	3	0	0	0	0	0	0	6	3.2
135.00	0	13	5	2	0	0	0	0	20	6.9
157.50	7	21	1	0	0	0	0	0	29	4.3
180.00	5	15	0	0	0	0	0	0	20	3.7
202.50	11	5	0	0	0	0	0	0	16	3.1
225.00	5	4	0	0	0	0	0	0	9	3.0
247.50	5	5	0	0	0	0	0	0	10	2.9
270.00	13	15	3	0	0	0	0	0	31	4.2
292.50	17	75	43	25	5	1	0	0	166	7.8
315.00	9	33	79	67	36	14	0	0	238	12.9
337.50	2	17	3	0	0	0	0	0	22	6.0
360.00	4	11	0	0	0	0	0	0	15	3.5
Column Sums	87	225	134	94	41	15	0	0	596	8.7

Hours of Calm = 2
Sums of this table: row totals = 596 and column totals = 596

TABLE 2.3-109

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E AUG.

FREQUENCY TABLE

Mean Wind Direction				*Mean Wind Speed, mph*					*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*8*	*7*	*0*	*0*	*0*	*0*	*0*	*0*	*15*	*3.2*
45.00	*8*	*4*	*0*	*0*	*0*	*0*	*0*	*0*	*12*	*3.3*
67.50	*3*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*4*	*3.5*
90.00	*5*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*6*	*2.5*
112.50	*7*	*2*	*3*	*0*	*0*	*0*	*0*	*0*	*12*	*4.2*
135.00	*5*	*11*	*6*	*1*	*0*	*0*	*0*	*0*	*23*	*5.9*
157.50	*7*	*18*	*2*	*0*	*0*	*0*	*0*	*0*	*27*	*4.4*
180.00	*5*	*4*	*0*	*0*	*0*	*0*	*0*	*0*	*9*	*3.4*
202.50	*2*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*4*	*3.0*
225.00	*4*	*4*	*1*	*0*	*0*	*0*	*0*	*0*	*9*	*4.3*
247.50	*5*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*8*	*3.3*
270.00	*6*	*4*	*2*	*0*	*0*	*0*	*0*	*0*	*12*	*4.5*
292.50	*11*	*52*	*19*	*10*	*7*	*8*	*0*	*0*	*107*	*9.3*
315.00	*18*	*68*	*75*	*107*	*70*	*61*	*2*	*0*	*401*	*15.0*
337.50	*10*	*31*	*7*	*0*	*0*	*0*	*0*	*0*	*48*	*5.3*
360.00	*14*	*17*	*0*	*0*	*0*	*0*	*0*	*0*	*31*	*4.1*
Column Sums	*118*	*228*	*116*	*118*	*77*	*69*	*2*	*0*	*728*	*11.0*

Hours of Calm = 3
Sums of this table: row totals = 728 and column totals = 728

TABLE 2.3-110

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F AUG.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	1	0	0	0	0	0	1	7.6
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	1	4	0	0	0	0	0	0	5	4.3
180.00	1	3	0	0	0	0	0	0	4	4.4
202.50	0	1	0	0	0	0	0	0	1	3.4
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	1	0	0	0	0	0	1	9.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	1	2	2	3	6	9	0	0	23	20.3
315.00	2	1	5	5	14	22	6	0	55	24.3
337.50	2	0	0	1	0	0	0	0	3	6.8
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	7	11	9	9	20	31	6	0	93	20.3

Hours of Calm = 0
Sums of this table: row totals = 93 and column totals = 93

TABLE 2.3-111

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G AUG.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	3	0	1	0	0	0	0	4	6.7
292.50	0	1	0	0	2	3	0	0	6	20.1
315.00	0	0	0	1	2	0	1	0	4	24.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	0	4	0	2	4	3	1	0	14	17.4

Hours of Calm = 0
Sums of this table: row totals = 14 and column totals = 14

TABLE 2.3-112

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A SEPT.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	1	0	0	0	0	0	0	1	4.4
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	1	0	0	0	0	0	0	0	1	2.4
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	2	0	0	0	0	0	0	2	6.5
315.00	0	0	0	0	0	3	0	0	3	28.7
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	1	3	0	0	0	3	0	0	7	15.1

Hours of Calm = 0
Sums of this table: row totals = 7 and column totals = 7

TABLE 2.3-113

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B SEPT.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	1	0	0	0	0	0	0	1	3.8
315.00	1	0	0	0	0	0	0	0	1	2.9
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	1	1	0	0	0	0	0	0	2	3.3

Hours of Calm = 0
Sums of this table: row totals = 2 and column totals = 2

TABLE 2.3-114

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C SEPT.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	1	0	0	0	0	0	0	1	7.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	2	0	0	0	0	0	0	0	2	2.2
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	1	2	2	0	0	0	0	0	5	6.1
315.00	0	0	1	0	0	0	0	0	1	11.2
337.50	0	0	0	1	0	0	0	0	1	16.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	3	3	3	1	0	0	0	0	10	6.9

Hours of Calm = 0
Sums of this table: row totals = 10 and column totals = 10

TABLE 2.3-115

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D SEPT.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*4*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*6*	*3.5*
45.00	*1*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*3.2*
67.50	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*3.5*
90.00	*1*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*3.6*
112.50	*5*	*21*	*4*	*1*	*0*	*0*	*0*	*0*	*31*	*5.2*
135.00	*9*	*54*	*9*	*1*	*0*	*0*	*0*	*0*	*73*	*5.4*
157.50	*3*	*15*	*4*	*0*	*0*	*0*	*0*	*0*	*22*	*5.0*
180.00	*3*	*14*	*0*	*0*	*0*	*0*	*0*	*0*	*17*	*3.5*
202.50	*7*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*10*	*2.8*
225.00	*6*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*7*	*2.9*
247.50	*1*	*5*	*1*	*0*	*0*	*0*	*0*	*0*	*7*	*4.8*
270.00	*3*	*7*	*1*	*0*	*0*	*0*	*0*	*0*	*11*	*4.1*
292.50	*3*	*30*	*23*	*13*	*3*	*0*	*0*	*0*	*72*	*8.9*
315.00	*4*	*24*	*42*	*40*	*24*	*6*	*0*	*0*	*140*	*12.6*
337.50	*1*	*15*	*5*	*2*	*0*	*0*	*0*	*0*	*23*	*6.3*
360.00	*4*	*4*	*0*	*0*	*0*	*0*	*0*	*0*	*8*	*3.5*
Column Sums	*55*	*201*	*89*	*57*	*27*	*6*	*0*	*0*	*435*	*8.0*

Hours of Calm = 0
Sums of this table: row totals = 435 and column totals = 435

TABLE 2.3-116

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E SEPT.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	7	13	1	0	0	0	0	0	21	3.9
45.00	6	9	1	0	0	0	0	0	16	4.0
67.50	5	6	1	1	0	0	0	0	13	5.0
90.00	8	3	0	0	0	0	0	0	11	2.9
112.50	7	15	1	0	0	0	0	0	23	4.2
135.00	8	20	10	0	0	0	0	0	38	5.2
157.50	4	11	5	0	0	0	0	0	20	5.5
180.00	1	3	0	0	0	0	0	0	4	3.7
202.50	3	4	0	1	0	0	0	0	8	4.3
225.00	9	1	0	0	0	0	0	0	10	2.6
247.50	2	3	0	1	1	0	0	0	7	8.0
270.00	6	2	0	1	0	0	0	0	9	4.5
292.50	4	27	17	10	2	1	0	0	61	8.6
315.00	4	36	46	52	56	27	0	0	221	15.0
337.50	3	25	10	7	1	1	0	0	47	7.8
360.00	2	12	1	0	0	0	0	0	15	4.4
Column Sums	79	190	93	73	60	29	0	0	524	9.7

Hours of Calm = 2
Sums of this table: row totals = 524 and column totals = 524

TABLE 2.3-117

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F SEPT.

FREQUENCY TABLE

Mean Wind Direction	*1.5*	*5.1*	*9.6*	*Mean Wind Speed, mph 15.1*	*21.1*	*29.6*	*40.1*	*50.1*	*Row Sums*	*Row Avg.*
22.50	4	2	0	0	0	0	0	0	6	3.3
45.00	3	3	0	0	0	0	0	0	6	3.5
67.50	2	0	0	0	0	0	0	0	2	1.5
90.00	4	1	0	0	0	0	0	0	5	2.6
112.50	2	5	0	0	0	0	0	0	7	4.1
135.00	2	3	1	0	0	0	0	0	6	5.3
157.50	1	9	0	0	0	0	0	0	10	5.3
180.00	1	5	0	0	0	0	0	0	6	4.3
202.50	2	0	0	0	0	0	0	0	2	1.7
225.00	2	1	0	0	0	0	0	0	3	3.3
247.50	1	2	0	0	0	0	0	0	3	4.0
270.00	1	0	1	0	0	0	0	0	2	5.2
292.50	2	7	1	1	3	0	0	0	14	9.7
315.00	2	14	40	1	28	38	0	0	153	17.2
337.50	1	5	6	1	1	0	0	0	14	9.2
360.00	3	5	0	0	0	0	0	0	8	4.2
Column Sums	33	62	49	33	32	8	0	0	247	12.8

Hours of Calm = 0
Sums of this table: row totals = 247 and column totals = 247

TABLE 2.3-118

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G SEPT.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	1	1	0	0	0	0	0	0	2	4.4
45.00	2	1	0	0	0	0	0	0	3	4.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	2	1	0	0	0	0	0	0	3	2.9
135.00	1	6	0	0	0	0	0	0	7	4.0
157.50	0	1	0	0	0	0	0	0	1	3.1
180.00	1	0	0	0	0	0	0	0	1	1.8
202.50	1	0	0	0	0	0	0	0	1	2.5
225.00	1	0	0	0	0	0	0	0	1	1.8
247.50	1	1	0	0	0	0	0	0	2	4.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	1	2	1	1	3	0	0	8	17.8
315.00	1	4	7	9	4	10	1	0	36	17.8
337.50	1	0	0	0	1	0	0	0	2	11.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	12	16	9	10	6	13	1	0	67	13.1

Hours of Calm = 0
Sums of this table: row totals = 67 and column totals = 67

TABLE 2.3-119

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A OCT.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	0	0	0	0	0	0	0	0.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	1	0	0	0	0	0	0	0	1	2.8
202.50	0	1	0	0	0	0	0	0	1	4.9
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	0	0	0	0	0	0	0	0	0.0
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	1	1	0	0	0	0	0	0	2	3.8

Hours of Calm = 0
Sums of this table: row totals = 2 and column totals = 2

TABLE 2.3-120

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B OCT.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	5	1	0	0	0	0	6	10.2
90.00	0	0	1	0	0	0	0	0	1	8.2
112.50	1	0	0	0	0	0	0	0	1	3.0
135.00	2	0	0	0	0	0	0	0	2	3.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	1	0	0	0	0	0	1	9.3
292.50	0	0	1	2	0	0	0	0	3	13.8
315.00	0	2	2	1	0	0	0	0	5	8.6
337.50	0	0	0	0	0	0	0	0	0	0.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	3	2	10	4	0	0	0	0	19	9.1

Hours of Calm = 0
Sums of this table: row totals = 19 and column totals = 19

TABLE 2.3-121

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C OCT.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	1	0	1	0	0	0	0	2	8.7
157.50	0	1	0	0	0	0	0	0	1	3.2
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	1	0	1	0	0	0	0	2	8.2
315.00	0	0	0	0	0	0	0	0	0	0.0
337.50	1	0	0	0	0	0	0	0	1	2.0
360.00	0	0	0	0	0	0	0	0	0	0.0
Column Sums	1	3	0	2	0	0	0	0	6	6.5

Hours of Calm = 0
Sums of this table: row totals = 6 and column totals = 6

TABLE 2.3-122

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D OCT.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	3	0	0	0	0	0	0	3	4.4
45.00	2	6	1	0	0	0	0	0	9	4.5
67.50	0	3	0	0	0	0	0	0	3	3.5
90.00	4	4	4	0	0	0	0	0	12	5.7
112.50	5	17	12	2	0	0	0	0	36	6.7
135.00	4	25	21	5	0	0	0	0	55	7.1
157.50	2	18	1	0	0	0	0	0	21	4.7
180.00	3	7	0	0	0	0	0	0	10	3.4
202.50	2	6	1	0	0	0	0	0	9	4.8
225.00	4	2	0	2	0	0	0	0	8	5.0
247.50	0	1	0	0	0	0	0	0	1	3.3
270.00	8	10	0	0	0	0	0	0	18	3.5
292.50	5	25	23	6	0	1	0	0	60	7.9
315.00	3	22	29	31	4	18	1	0	108	13.8
337.50	1	11	9	2	0	0	0	0	23	7.7
360.00	0	3	1	0	0	0	0	0	4	5.4
Column Sums	43	163	102	48	4	19	1	0	380	8.4

Hours of Calm = 2
Sums of this table: row totals = 380 and column totals = 380

TABLE 2.3-123

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E OCT.

FREQUENCY TABLE

Mean Wind Direction				*Mean Wind Speed, mph*					*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*7*	*28*	*2*	*2*	*0*	*0*	*0*	*0*	*39*	*5.0*
45.00	*10*	*17*	*1*	*4*	*2*	*0*	*0*	*0*	*34*	*6.2*
67.50	*27*	*23*	*0*	*2*	*0*	*1*	*0*	*0*	*53*	*4.1*
90.00	*20*	*22*	*4*	*1*	*0*	*0*	*0*	*0*	*47*	*4.1*
112.50	*17*	*15*	*11*	*3*	*2*	*0*	*0*	*0*	*48*	*6.7*
135.00	*7*	*53*	*22*	*8*	*0*	*0*	*0*	*0*	*90*	*6.6*
157.50	*5*	*9*	*0*	*0*	*0*	*0*	*0*	*0*	*14*	*3.7*
180.00	*5*	*6*	*0*	*0*	*0*	*0*	*0*	*0*	*11*	*3.3*
202.50	*4*	*4*	*2*	*0*	*0*	*0*	*0*	*0*	*10*	*4.7*
225.00	*3*	*2*	*5*	*10*	*1*	*0*	*0*	*0*	*21*	*11.8*
247.50	*3*	*1*	*1*	*0*	*2*	*0*	*0*	*0*	*7*	*9.2*
270.00	*4*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*6*	*3.1*
292.50	*12*	*20*	*20*	*8*	*6*	*3*	*0*	*0*	*69*	*9.4*
315.00	*11*	*23*	*21*	*37*	*19*	*9*	*0*	*0*	*120*	*12.9*
337.50	*14*	*24*	*13*	*4*	*2*	*0*	*0*	*0*	*57*	*6.7*
360.00	*5*	*16*	*6*	*2*	*0*	*0*	*0*	*0*	*29*	*6.1*
Column Sums	*154*	*265*	*108*	*81*	*34*	*13*	*0*	*0*	*655*	*7.6*

Hours of Calm = 3
Sums of this table: row totals = 655 and column totals = 655

TABLE 2.3-124

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F OCT.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	4	4	2	0	0	0	0	0	10	4.9
45.00	3	1	1	0	0	0	0	0	5	4.4
67.50	5	5	0	0	1	0	0	0	11	5.1
90.00	4	1	0	1	0	0	0	0	6	5.2
112.50	5	12	1	0	0	0	0	0	18	4.3
135.00	3	10	5	1	0	0	0	0	19	6.2
157.50	3	1	0	0	0	0	0	0	4	2.4
180.00	2	0	0	0	0	0	0	0	2	2.1
202.50	0	1	0	0	0	0	0	0	1	4.0
225.00	0	2	1	5	3	0	0	0	11	13.5
247.50	0	1	0	1	1	0	0	0	3	12.4
270.00	3	0	1	0	0	0	0	0	4	4.1
292.50	3	5	0	4	2	3	0	0	27	11.2
315.00	10	11	14	15	15	7	0	0	72	12.8
337.50	3	10	7	7	0	0	0	0	27	8.7
360.00	3	4	4	0	0	0	0	0	11	6.3
Column Sums	51	68	46	34	22	10	0	0	231	9.1

Hours of Calm = 0
Sums of this table: row totals = 231 and column totals = 231

TABLE 2.3-125

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G OCT.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	1	0	0	0	0	0	0	1	4.2
45.00	1	2	0	1	0	0	0	0	4	6.5
67.50	2	1	0	0	0	0	0	0	3	2.7
90.00	3	0	0	0	0	0	0	0	3	2.8
112.50	2	6	0	0	0	0	0	0	8	4.4
135.00	8	6	0	0	0	0	0	0	14	3.5
157.50	3	5	0	0	0	0	0	0	8	3.3
180.00	0	1	0	0	0	0	0	0	1	4.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	1	0	2	0	0	0	0	3	13.1
247.50	1	1	0	0	0	0	0	0	2	2.5
270.00	2	0	0	0	0	0	0	0	2	2.9
292.50	2	3	6	2	2	0	0	0	15	9.7
315.00	8	11	5	14	7	5	0	0	50	12.2
337.50	0	2	0	2	0	0	0	0	4	10.4
360.00	3	1	0	0	0	0	0	0	4	2.7
Column Sums	35	41	11	21	9	5	0	0	122	8.3

Hours of Calm = 0
Sums of this table: row totals = 122 and column totals = 122

TABLE 2.3-126

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A NOV.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	1	2	0	0	0	0	0	3	6.9
45.00	0	0	1	0	0	0	0	0	1	7.9
67.50	0	2	0	1	0	0	0	0	3	8.0
90.00	0	0	4	1	0	0	0	0	5	11.2
112.50	0	2	2	4	5	1	0	0	14	15.4
135.00	1	1	1	7	1	0	0	0	11	13.5
157.50	0	2	0	1	0	0	0	0	3	9.3
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	1	0	0	0	0	0	0	1	3.6
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	1	0	0	0	0	0	1	10.1
292.50	0	0	0	0	0	0	0	0	0	0.0
315.00	0	2	2	8	3	5	0	0	20	18.4
337.50	1	2	9	11	11	7	0	0	41	16.4
360.00	1	4	7	2	0	0	0	0	14	8.5
Column Sums	3	17	29	35	20	13	0	0	117	14.3

Hours of Calm = 0
Sums of this table: row totals = 117 and column totals = 117

TABLE 2.3-127

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B NOV.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	1	0	0	0	0	0	0	0	1	2.1
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	1	0	1	0	0	0	0	0	2	7.2
90.00	0	1	0	0	0	0	0	0	1	5.2
112.50	0	0	2	1	0	0	0	0	3	11.1
135.00	0	1	3	5	0	0	0	0	9	12.6
157.50	2	3	0	0	0	0	0	0	5	4.2
180.00	1	1	0	0	0	0	0	0	2	3.6
202.50	1	1	0	0	0	0	0	0	2	3.9
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	1	0	1	0	0	0	0	0	2	5.3
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	1	0	0	0	0	0	0	0	1	2.9
315.00	2	2	1	3	3	0	0	0	11	12.0
337.50	1	0	2	3	1	2	0	0	9	15.9
360.00	0	3	5	1	0	0	0	0	9	9.2
Column Sums	11	12	15	13	4	2	0	0	57	10.1

Hours of Calm = 0
Sums of this table: row totals = 57 and column totals = 57

TABLE 2.3-128

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C NOV.

FREQUENCY TABLE

Mean Wind Direction	*1.5*	*5.1*	*9.6*	*Mean Wind Speed, mph 15.1*	*21.1*	*29.6*	*40.1*	*50.1*	*Row Sums*	*Row Avg.*
22.50	*1*	*1*	*2*	*0*	*0*	*0*	*0*	*0*	*4*	*7.0*
45.00	*1*	*1*	*3*	*0*	*0*	*0*	*0*	*0*	*5*	*6.7*
67.50	*1*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*2*	*4.9*
90.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
112.50	*0*	*2*	*0*	*0*	*1*	*1*	*0*	*0*	*4*	*15.2*
135.00	*1*	*6*	*5*	*10*	*0*	*0*	*0*	*0*	*22*	*10.6*
157.50	*2*	*5*	*2*	*0*	*1*	*0*	*0*	*0*	*10*	*7.1*
180.00	*1*	*1*	*0*	*0*	*1*	*0*	*0*	*0*	*3*	*8.4*
202.50	*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*3.4*
225.00	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*4.4*
247.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
270.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
292.50	*1*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*4*	*3.5*
315.00	*0*	*3*	*3*	*2*	*1*	*0*	*0*	*0*	*9*	*11.6*
337.50	*0*	*1*	*4*	*10*	*4*	*4*	*0*	*0*	*23*	*17.8*
360.00	*0*	*0*	*1*	*1*	*0*	*0*	*0*	*0*	*2*	*12.2*
Column Sums	*9*	*25*	*21*	*23*	*8*	*5*	*0*	*0*	*91*	*11.3*

Hours of Calm = 0
Sums of this table: row totals = 91 and column totals = 91

TABLE 2.3-129

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D NOV.

FREQUENCY TABLE

Mean Wind Direction				*Mean Wind Speed, mph*					*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*2*	*14*	*9*	*1*	*0*	*1*	*0*	*0*	*27*	*7.4*
45.00	*6*	*12*	*4*	*0*	*1*	*0*	*0*	*0*	*23*	*5.7*
67.50	*6*	*4*	*9*	*0*	*0*	*0*	*0*	*0*	*19*	*5.8*
90.00	*5*	*8*	*3*	*0*	*0*	*0*	*0*	*0*	*16*	*4.5*
112.50	*0*	*5*	*1*	*5*	*4*	*3*	*0*	*0*	*18*	*15.3*
135.00	*2*	*17*	*16*	*9*	*1*	*2*	*0*	*0*	*47*	*9.6*
157.50	*4*	*20*	*2*	*1*	*2*	*1*	*0*	*0*	*30*	*7.4*
180.00	*1*	*2*	*2*	*0*	*0*	*0*	*0*	*0*	*5*	*5.5*
202.50	*2*	*3*	*4*	*1*	*1*	*0*	*0*	*0*	*11*	*8.5*
225.00	*2*	*0*	*2*	*2*	*1*	*0*	*0*	*0*	*7*	*11.2*
247.50	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*4.5*
270.00	*2*	*1*	*2*	*0*	*0*	*0*	*0*	*0*	*5*	*5.7*
292.50	*2*	*6*	*6*	*2*	*2*	*0*	*0*	*0*	*18*	*10.0*
315.00	*0*	*3*	*24*	*38*	*24*	*3*	*0*	*0*	*92*	*15.3*
337.50	*1*	*5*	*13*	*22*	*10*	*0*	*0*	*0*	*51*	*13.5*
360.00	*2*	*5*	*26*	*12*	*2*	*0*	*0*	*0*	*47*	*10.5*
Column Sums	*37*	*107*	*123*	*93*	*48*	*10*	*0*	*0*	*418*	*10.7*

Hours of Calm = 0
Sums of this table: row totals = 418 and column totals = 418

TABLE 2.3-130

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E NOV.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*12*	*20*	*9*	*1*	*0*	*0*	*0*	*0*	*42*	*5.4*
45.00	*22*	*33*	*10*	*1*	*0*	*0*	*0*	*0*	*66*	*4.6*
67.50	*20*	*14*	*5*	*7*	*0*	*0*	*0*	*0*	*46*	*5.7*
90.00	*17*	*13*	*2*	*1*	*0*	*0*	*0*	*0*	*33*	*4.1*
112.50	*9*	*18*	*0*	*2*	*1*	*1*	*0*	*0*	*31*	*6.1*
135.00	*5*	*28*	*5*	*3*	*0*	*0*	*0*	*0*	*41*	*6.1*
157.50	*3*	*14*	*1*	*2*	*0*	*0*	*0*	*0*	*20*	*5.4*
180.00	*1*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*3.6*
202.50	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*2.5*
225.00	*1*	*4*	*1*	*1*	*1*	*1*	*0*	*0*	*9*	*10.4*
247.50	*1*	*2*	*1*	*0*	*0*	*0*	*0*	*0*	*4*	*5.0*
270.00	*1*	*3*	*2*	*0*	*0*	*0*	*0*	*0*	*6*	*6.6*
292.50	*5*	*12*	*3*	*3*	*5*	*0*	*0*	*0*	*28*	*9.2*
315.00	*1*	*21*	*24*	*28*	*16*	*7*	*0*	*0*	*97*	*13.3*
337.50	*3*	*19*	*13*	*18*	*7*	*1*	*0*	*0*	*61*	*11.0*
360.00	*7*	*23*	*14*	*6*	*3*	*0*	*0*	*0*	*53*	*7.6*
Column Sums	*110*	*226*	*90*	*73*	*33*	*10*	*0*	*0*	*542*	*7.9*

Hours of Calm = 0
Sums of this table: row totals = 542 and column totals = 542

TABLE 2.3-131

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M, TEMP GRAD 76-10M STABILITY CLASS F NOV.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	3	5	0	0	0	0	0	0	8	3.7
45.00	4	8	1	0	0	0	0	0	13	4.2
67.50	5	4	1	0	0	0	0	0	0	4.1
90.00	9	2	0	0	0	0	0	0	11	2.9
112.50	8	7	0	0	0	0	0	0	15	3.2
135.00	3	9	5	0	0	0	0	0	17	5.3
157.50	4	0	1	0	0	0	0	0	5	4.0
180.00	0	2	0	0	0	0	0	0	2	4.8
202.50	1	0	0	0	0	0	0	0	1	2.7
225.00	2	1	0	0	0	0	0	0	3	2.5
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	2	2	2	0	0	0	0	0	6	5.1
315.00	2	9	9	8	6	1	0	0	35	11.6
337.50	1	3	1	1	2	0	0	0	8	10.4
360.00	1	4	1	0	0	0	0	0	6	4.5
Column Sums	45	56	21	9	8	1	0	0	140	6.3

Hours of Calm = 0
Sums of this table: row totals = 140 and column totals = 140

TABLE 2.3-132

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G NOV.

Mean Wind Direction	*Mean Wind Speed, mph*								*Row Sums*	*Row Avg.*
	1.5	*5.1*	*9.6*	*15.1*	*21.1*	*29.6*	*40.1*	*50.1*		
22.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
45.00	*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*2.8*
67.50	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*3.3*
90.00	*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*3.0*
112.50	*4*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*5*	*2.7*
135.00	*2*	*7*	*1*	*1*	*0*	*0*	*0*	*0*	*11*	*5.3*
157.50	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*4.1*
180.00	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*2.2*
202.50	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
225.00	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*2.3*
247.50	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*4.7*
270.00	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*2.2*
292.50	*0*	*2*	*2*	*1*	*0*	*0*	*0*	*0*	*5*	*9.0*
315.00	*1*	*7*	*2*	*3*	*1*	*0*	*0*	*0*	*14*	*9.0*
337.50	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*5.9*
360.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
Column Sums	*14*	*23*	*5*	*5*	*1*	*0*	*0*	*0*	*48*	*5.9*

Hours of Calm = 0
Sums of this table: row totals = 48 and column totals = 48

TABLE 2.3-133

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS A DEC.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	2	0	0	0	0	0	2	8.7
45.00	0	1	0	0	0	0	0	0	1	6.8
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	1	0	0	0	0	0	1	9.5
112.50	0	0	0	1	0	1	0	0	2	20.3
135.00	0	0	2	0	0	0	0	0	2	10.7
157.50	1	0	0	0	0	0	0	0	1	3.0
180.00	0	1	0	1	0	0	0	0	2	8.2
202.50	0	0	0	1	0	0	0	0	1	12.7
225.00	0	0	0	1	0	0	0	0	1	12.1
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	1	0	0	0	0	1	15.1
292.50	0	1	0	0	0	2	0	0	3	18.6
315.00	0	0	0	0	0	2	0	0	2	29.4
337.50	0	2	0	1	0	0	0	0	3	9.0
360.00	0	0	2	0	0	0	0	0	2	8.3
Column Sums	1	5	7	6	0	5	0	0	24	13.1

Hours of Calm = 0
Sums of this table: row totals = 24 and column totals = 24

TABLE 2.3-134

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS B DEC.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	1	0	0	0	0	0	1	8.6
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	1	0	0	0	0	0	0	1	5.0
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	1	0	0	0	1	20.3
292.50	0	0	1	0	0	0	0	0	1	7.5
315.00	0	0	0	0	0	1	0	0	1	25.3
337.50	0	0	1	2	0	0	0	0	3	14.4
360.00	0	0	1	0	0	0	0	0	1	10.9
Column Sums	0	1	4	2	1	1	0	0	9	13.4

Hours of Calm = 0
Sums of this table: row totals = 9 and column totals = 9

TABLE 2.3-135

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS C DEC.
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	0	0	0	0	0	0	0	0	0	0.0
90.00	0	0	1	0	0	0	0	0	1	7.5
112.50	0	0	0	0	0	0	0	0	0	0.0
135.00	0	0	1	1	0	0	0	0	2	11.5
157.50	0	0	0	0	0	0	0	0	0	0.0
180.00	0	0	0	0	1	0	0	0	1	19.3
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	0	1	0	0	0	0	0	1	10.8
315.00	1	0	0	0	0	0	0	0	1	2.0
337.50	0	0	4	3	0	0	0	0	7	12.6
360.00	0	2	2	0	0	0	0	0	4	6.4
Column Sums	1	2	9	4	1	0	0	0	17	10.4

Hours of Calm = 0
Sums of this table: row totals = 17 and column totals = 17

TABLE 2.3-136

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS D DEC.

FREQUENCY TABLE

Mean Wind Direction	Mean Wind Speed, mph 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	Row Sums	Row Avg.
22.50	0	10	21	4	0	0	0	0	35	8.8
45.00	0	7	12	5	0	0	0	0	24	9.3
67.50	0	7	6	2	0	0	0	0	15	8.0
90.00	1	10	0	1	0	0	0	0	12	5.5
112.50	1	7	7	14	5	5	0	0	39	14.6
135.00	0	7	8	8	6	4	0	0	33	14.0
157.50	0	16	4	5	1	3	0	0	29	10.4
180.00	1	8	2	0	0	0	0	0	11	5.1
202.50	1	4	0	0	0	0	0	0	5	4.4
225.00	0	1	0	0	0	0	0	0	1	5.0
247.50	2	2	0	0	0	0	0	0	4	3.5
270.00	2	4	0	0	0	0	0	0	6	4.7
292.50	1	5	2	2	0	1	0	0	11	9.2
315.00	2	2	6	33	17	8	0	0	68	16.9
337.50	2	6	13	22	11	1	0	0	55	13.2
360.00	1	18	22	11	0	0	0	0	2	8.7
Column Sums	14	114	103	107	40	22	0	0	400	11.5

Hours of Calm = 0
Sums of this table: row totals = 400 and column totals = 400

TABLE 2.3-137

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS E DEC.

FREQUENCY TABLE

Mean Wind Direction	*1.5*	*5.1*	*9.6*	*Mean Wind Speed, mph 15.1*	*21.1*	*29.6*	*40.1*	*50.1*	*Row Sums*	*Row Avg.*
22.50	*6*	*50*	*17*	*9*	*1*	*0*	*0*	*0*	*83*	*6.7*
45.00	*10*	*49*	*21*	*2*	*0*	*0*	*0*	*0*	*82*	*5.8*
67.50	*22*	*22*	*19*	*11*	*2*	*0*	*0*	*0*	*76*	*6.8*
90.00	*19*	*25*	*6*	*2*	*1*	*0*	*0*	*0*	*53*	*4.8*
112.50	*15*	*30*	*9*	*6*	*8*	*4*	*0*	*0*	*72*	*8.7*
135.00	*4*	*30*	*21*	*2*	*0*	*5*	*0*	*0*	*62*	*8.6*
157.50	*6*		*2*	*0*	*0*	*1*	*0*	*0*	*23*	*5.9*
180.00	*4*	*9*	*2*	*0*	*0*	*0*	*0*	*0*	*15*	*4.4*
202.50	*2*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*75*	*3.3*
225.00	*3*	*5*	*0*	*0*	*1*	*0*	*0*	*0*	*9*	*5.5*
247.50	*0*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*4.9*
270.00	*1*	*6*	*1*	*0*	*0*	*0*	*0*	*0*	*8*	*4.8*
292.50	*3*	*10*	*3*	*7*	*3*	*2*	*0*	*0*	*28*	*11.0*
315.00	*4*	*24*	*26*	*33*	*31*	*1*	*0*	*0*	*119*	*13.1*
337.50	*4*	*36*	*36*	*33*	*3*	*0*	*1*	*0*	*113*	*10.0*
360.00	*9*	*39*	*29*	*12*	*0*	*0*	*0*	*0*	*89*	*7.3*
Column Sums	*112*	*355*	*192*	*117*	*50*	*13*	*1*	*0*	*840*	*8.3*

Hours of Calm = 0
Sums of this table: row totals = 840 and column totals = 840

TABLE 2.3-138

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS F DEC.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	2	2	1	0	0	0	0	0	5	5.3
45.00	4	1	1	0	0	0	0	0	6	3.8
67.50	4	1	0	0	0	0	0	0	5	2.8
90.00	7	2	1	0	0	0	0	0	10	3.6
112.50	11	11	0	0	0	0	0	0	22	3.1
135.00	6	17	4	0	0	0	2	0	29	6.9
157.50	3	8	1	0	0	0	0	0	12	4.6
180.00	2	0	0	0	0	0	0	0	2	2.8
202.50	2	0	0	0	0	0	0	0	2	2.4
225.00	0	0	0	0	0	0	0	0	0	0.0
247.50	0	1	0	0	0	0	0	0	1	6.3
270.00	1	0	0	0	0	0	0	0	1	3.0
292.50	2	2	0	1	1	0	0	0	6	8.2
315.00	1	5	8	12	10	0	0	0	36	13.8
337.50	0	7	4	5	0	0	0	0	16	9.6
360.00	1	5	3	0	0	0	0	0	9	6.4
Column Sums	46	62	23	18	11	0	2	0	162	7.4

Hours of Calm = 0
Sums of this table: row totals = 162 and column totals = 162

TABLE 2.3-139
HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED
DCPP SITE - MAY 1973 - APRIL 1975 WIND DATA 10M,
TEMP GRAD 76-10M STABILITY CLASS G DEC.

FREQUENCY TABLE

Mean Wind Direction	*Mean Wind Speed, mph* 1.5	5.1	9.6	15.1	21.1	29.6	40.1	50.1	*Row Sums*	*Row Avg.*
22.50	0	0	0	0	0	0	0	0	0	0.0
45.00	0	0	0	0	0	0	0	0	0	0.0
67.50	1	0	0	0	0	0	0	0	1	2.9
90.00	0	0	0	0	0	0	0	0	0	0.0
112.50	0	2	0	0	0	0	0	0	2	5.3
135.00	1	3	1	0	0	0	0	0	5	5.0
157.50	2	0	0	0	0	0	0	0	2	2.6
180.00	0	0	0	0	0	0	0	0	0	0.0
202.50	0	0	0	0	0	0	0	0	0	0.0
225.00	1	0	1	0	0	0	0	0	2	5.4
247.50	0	0	0	0	0	0	0	0	0	0.0
270.00	0	0	0	0	0	0	0	0	0	0.0
292.50	0	2	0	0	0	0	0	0	2	3.3
315.00	0	8	2	1	1	0	0	0	12	8.0
337.50	0	3	1	1	0	0	0	0	5	8.1
360.00	1	0	1	0	0	0	0	0	2	5.7
Column Sums	6	18	6	2	1	0	0	0	33	6.3

Hours of Calm = 0
Sums of this table: row totals = 33 and column totals = 33

TABLE 2.3-141

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

RANGES OF STABILITY CLASSIFICATION PARAMETERS
FOR EACH STABILITY CATEGORY AT DCPP SITE

Pasquil Stability Class[a]	σ_θ *Range, (deg)*	ΔT *Range, (°C/100m)*	R_i *Range* $g = \frac{\theta_{76m} - \theta_{10m}}{\theta \quad U^2}$
A	$\sigma_\theta \geq 22.5$	*< -1.9*	*< -0.02*
B	$22.5 > \sigma_\theta \geq 17.5$	*-1.9 to -1.7*	*-0.02 to- .01*
C	$17.5 > \sigma_\theta \geq 12.5$	*-1.7 to -1.5*	*-0.01 to -.001*
D	$12.5 > \sigma_\theta \geq 7.5$	*-1.5 to -0.5*	*-0.001 to +0.005*
E	$7.5 > \sigma_\theta \geq 3.8$	*-0.5 to +1.5*	*+0.005 to +0.02*
F	$3.8 > \sigma_\theta \geq 2.1$	*+1.5 to +4.0*	*+0.02 to +0.07*
G	$2.1 > \sigma_\theta$	*≥ +4.0*	*≥ +0.07*

(a) See Reference 17, Section 2.3.9.

TABLE 2.3-142

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

SUMMARY OF METEOROLOGICAL DATA
FOR DIFFUSION EXPERIMENTS AT DCPP SITE

Trial No.	Date	Release Time (Local Time)	h (ft)	Wind Dir. (deg)	m (mph)	H m (ft)	Δ T 250 30 (°F)
			Trials with Northwesterly Flow				
1	11-20-68	1552-1652	250	304	11	1000	11.7
2	11-21-68	1411-1510	250	313	15	800	3.1
3	11-22-68	1540-1632	250	303	20	400	5.9
4	11-24-68	1036-1135	250	310	19	2500	-2.0
9	03-04-69	1110-1210	250	294	16	800	-3.0
10	03-06-69	1220-1320	250	311	26	2400	-3.0
11	03-07-69	1100-1200	250	297	16	4600	-4.2
12	03-08-69	1418-1518	250	306	14	1400	-2.0
15	05-20-69	1100-1200	250	305	15	1000	-0.2
16	05-20-69	1445-1545	250	306	18	600	-0.6
17	05-21-69	1240-1340	250	308	24	800	+1.5
18	05-22-69	1230-1330	250	310	20	1000	+0.3
20	07-15-69	1412-1512	250	305	27	600	+4.5
22	07-16-69	1500-1600	250	304	16	500	+1.0
24	07-24-69	1238-1338	250	305	24	600	+1.7
25	07-25-69	1054-1155	250	306	20	1500	+0.1
			Trials with Southeasterly Flow				
6	01-12-69	0940-1040	250	133	15	2500	-1.3
8	02-22-69	1300-1400	250	168	9	2500	-2.7
13	04-02-69	0930-1030	250	146	10	1500	-0.4
14	04-02-69	1300-1400	250	148	9	2500	-2.2
23	07-17-69	0205-0305	250	131	8	500	+1.9
30	10-15-69	0742-0842	25	143	6	2500	+0.4
			Trials with Light and Variable Winds[(a)]				
19	07-15-69	0201-0301	250				-0.8
21	07-16-69	0433-0500	250				0.9
26	09-29-69	0037-0137	25				-1.1
27	09-30-69	0220-0322	25				+0.4
28	10-01-69	0250-0350	25				+0.3

[(a)] *Wind speed of 2 mph was assumed.*

TABLE 2.3-144

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

DCPP SITE NIGHTTIME P-G STABILITY CATEGORIES BASED ON σ_θ

If the σ_θ Stability Class is:	And if the 10m Wind Speed, u is: m/s	mi/hr	The Stability Class for the σ_z is:
A	$u<2.9$	$u<6.4$	F
	$2.9 \leq u<3.6$	$6.4 \leq u<7.9$	E
	$3.6 \leq u$	$7.9 \leq u$	D
B	$u<2.4$	$u<5.3$	F
	$2.4 \leq u<3.0$	$5.3 \leq u<6.6$	E
	$3.0<u$	$6.6 \leq u$	D
C	$u<2.4$	$u<5.3$	E
	$2.4<u$	$5.3<u$	D
D, E, F, or G	*wind speed not considered*		

TABLE 2.4-1

HISTORICAL INFORMATION IN ITALICS BELOW NOT REQUIRED TO BE REVISED

PROBABLE MAXIMUM PRECIPITATION (PMP) AS A FUNCTION OF DURATION AT DCPP SITE AS DETERMINED FROM USWB HMR NO. 36

Duration, hours	*PMP, inches*
1	*4.3*
3	*7.1*
6	*9.1*
12	*12.0*
18	*14.8*
24	*16.6*

TABLE 2.5-1

LISTING OF EARTHQAKES WITHIN 75 MILES OF THE DIABLO CANYON POWER PLANT SITE
SELECTED EARTHQUAKES

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
-?/-?/1800	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
03/25/1806	08--?--?	34.50	119.67	D			F	VIII AT SANTA BARBARA.
12/21/1812	18--?--?	34.50	120.00	D			F	VIII AT SAN FERNANDO.
12/21/1812	19--?--?	34.50	120.00	D			F	IX AT SAN FERNANDO.
01/18/1815	-?--?--?	34.50	119.67	D			F	SANTA BARBARA; 5 SHOCKS.
01/30/1815	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
07/08/1815	-?--?--?	34.50	119.67	D			F	SANTA BARBARA; 6 SHOCKS ON THE EIGHTH AND NINTH.
-?/-?/1830	-?--?--?	35.25	120.67	D			F	VIII AT SAN LUIS OBISPO.
07/03/1841	-?--?--?	36.30	122.30		6.3			(CALTECH FILE)
06/13/1851	-?--?--?	35.25	120.67	D			F	V AT SAN LUIS OBISPO.
10/26/1852	-?--?--?	35.67	121.17	D			F	X AT SAN SIMEON; 11 SHOCKS.
12/17/1852	-?--?--?	35.25	120.67	D			F	IX AT SAN LUIS OBISPO; 2 SHOCKS.
01/10/1853	-?--?--?	35.25	120.67	D			F	DANA RANCHO.
01/29/1853	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
02/01/1853	21--?--?	35.67	121.17	D			F	VIII AT SAN SIMEON.
02/14/1853	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
03/01/1853	-?--?--?	34.50	119.67	D			F	V AT SAN LUIS OBISPO.
04/20/1854	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
04/29/1854	-?--?--?	34.50	119.67	D			F	III AT SANTA BARBARA.
05/03/1854	13-10--?	34.50	119.67	D			F	SANTA BARBARA; 3 SEVERE SHOCKS.
05/13/1854	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
05/29/1854	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
05/31/1854	12-50--?	34.50	119.67	D			F	VI AT SANTA BARBARA; 3 SHOCKS.
01/14/1855	02-30--?	35.75	120.67	D			F	SAN BENITO AND SAN MIGUEL.
06/25/1855	22--?--?	34.50	119.67	D			F	V AT SANTA BARBARA.
01/08/1857	14--?--?	34.50	119.67	D			F	SANTA BARBARA.
01/08/1857	17--?--?	34.50	119.67	D			F	SANTA BARBARA.
01/08/1857	18--?--?	34.50	119.67	D			F	SANTA BARBARA.
01/09/1857	07-20--?	34.50	119.67	D			F	IX AT SANTA BARBARA.
01/21/1857	-?--?--?	36.50	121.08	D			F	III AT A POINT NORTHWEST OF SAN BENITO.
03/14/1857	23--?--?	34.50	119.67	D			F	V AT MONTECITO AND SANTA BARBARA.
09/02/1858	-?--?--?	34.50	119.67	D			F	V AT SANTA BARBARA.
04/03/1860	04--?--?	36.50	121.08	D			F	VI AT SAN JOSE.
04/17/1860	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
-?/-?/1862	-?--?--?	34.42	119.63	D			F	VIII AT GOLETA.
09/13/1869	-?--?--?	35.25	120.67	D			F	V AT SAN LUIS OBISPO.
09/14/1869	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
12/15/1869	-?--?--?	35.25	120.67				F	V AT SAN LUIS OBISPO.
02/06/1872	-?--?--?	34.50	119.67	D			F	SANTA BARBARA; FIRST SINCE APRIL 1860.
11/07/1875	-?--?--?	36.50	121.08	D			F	V IN SAN BENITO COUNTY.
12/21/1875	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
05/10/1876	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
05/30/1877	-?--?--?	35.67	120.67	D			F	V AT PASO ROBLES.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
06/24/1877	07-30--?	34.50	119.67	D			F	SANTA BARBARA.
01/08/1878	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
11/13/1880	06-30--?	34.50	119.67	D			F	SANTA BARBARA.
02/02/1881	-?--?--?	36.37	121.67	D			F	III AT SALINAS.
08/31/1881	03--?--?	34.50	119.67	D			F	III AT SANTA BARBARA.
09/13/1883	22-30--?	34.50	119.67	D			F	IV AT SANTA BARBARA.
08/03/1884	-?--?--?	34.50	119.67	D			F	III AT SANTA BARBARA; NIGHT.
08/04/1884	09--?--?	34.50	119.67	D			F	III AT SANTA BARBARA; 3 SHOCKS.
03/31/1885	-?--?--?	36.30	121.00		7.0			(CALTECH FILE)
04/07/1885	10--?--?	34.50	119.67	D			F	SANTA BARBARA AND SAN BUENAVENTURA.
04/09/1885	-?--?--?	35.58	121.08	D			F	CAMBRIA.
04/12/1885	04-05--?	36.25	120.80	D			F	IX IN CENTRAL CALIFORNIA; FELT OVER AN AREA OF 125,000 SQ. MI.- EPICENTER PROBABLY EAST OF KING CITY.
04/12/1885	11--?--?	36.33	119.67	D			F	HANFORD.
07/09/1885	09-15--?	34.50	119.67	D			F	V AT SANTA BARBARA.
07/09/1885	16-15--?	34.50	119.67	D			F	V AT SANTA BARBARA; 5 EARTHQUAKES.
10/03/1888	20-52--?	35.75	120.67	D			F	III AT SAN MIGUEL.
10/03/1888	21-02--?	35.75	120.67	D			F	VI AT SAN MIGUEL.
10/04/1888	-?--?--?	35.67	120.67	D			F	PASO ROBLES.
05/01/1889	19-55--?	34.67	120.42	D			F	SUSANVILLE.
05/26/1889	15-13--?	36.50	121.42	D			F	GONZALES, SAN FRANCISCO, AND SANTA CRUZ; RECORDED AT MT. HAMILTON.
07/10/1889	-?--?--?	35.17	120.58	D			F	ARROYO GRANDE; SHOCKS FOR SEVERAL DAYS.
09/30/1889	20-17--?	36.50	119.58	D			F	KINGSBURG.
01/-?/1890	23-30--?	34.50	119.67	D			F	SANTA BARBARA.
11/13/1892	-?--?--?	36.30	122.00		6.0			(CALTECH FILE)
05/19/1893	-?-35--?	34.17	119.50	D			F	VII FELT FROM SAN DIEGO TO LOMPOC, INLAND TO SAN BERNADINO. MOST SEVERE SE OF VENTURA. POSSIBLY OF SUBMARINE ORIGIN OFF THE COAST OF VENTURA COUNTY
06/01/1893	12--?--?	34.50	119.67	D			F	VII AT NORDHOFF (OJAI), SANTA BARBARA, AND VENTURA.
06/01/1893	12--?--?	34.50	119.67	D			F	NORDHOFF, SANTA BARBARA, AND VENTURA.
06/01/1893	12-10--?	34.50	119.67	D			F	NORDHOFF, SANTA BARBARA, AND VENTURA.
12/06/1893	04-56--?	35.67	121.33	D			F	PIEDRAS BLANCAS LIGHTHOUSE.
07/27/1895	-?-10--?	34.50	119.67	D			F	SANTA BARBARA.
12/24/1895	05-30--?	34.50	119.67	D			F	SANTA BARBARA.
06/24/1897	14-10--?	34.50	119.67	D			F	SANTA BARBARA.
07/18/1897	-?--?--?	34.50	119.67	D			F	CASTLE PINCKNEY.
07/20/1897	07-45--?	34.50	119.67	D			F	SANTA BARBARA.
05/30/1898	03-03--?	34.50	119.67	D			F	SANTA BARBARA.
06/04/1898	06-20--?	34.67	120.08	D			F	LOS OLIVOS; FELT THROUGHOUT THE SANTA YNEZ VALLEY; AT SANTA BARBARA THE HEAVIEST FOR SOME YEARS.
02/08/1899	04-55--?	36.33	121.92	D			F	POINT SUR LIGHT STATION.
06/05/1899	-?--?--?	35.83	120.83	D			F	BRADLEY.
06/25/1899	-?--?--?	35.75	120.67	D			F	SAN MIGUEL.
06/09/1900	-?--?--?	36.00	120.92	D			F	SAN ARDO.
10/18/1900	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
03/03/1901	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
03/03/1901	07-45--?	36.08	120.58	D			F	IX AT STONE CANYON - SURFACE CRACKS IN THE GROUND; ALSO FELT AT ADELAIDA, ESTRELLA, PARKFIELD, PASO ROBLES, PORTERVILLE, SAN JOSE, SAN LUIS OBISPO, AND SAN MIGUEL.
03/05/1901	-?--?--?	35.67	120.67	D			F	PASO ROBLES.
03/06/1901	-?--?--?	36.00	120.92	D			F	SAN ARDO AND SAN LUIS OBISPO.
06/03/1901	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
07/30/1901	19--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
08/14/1901	11-11--?	35.42	120.92	D			F	CAYUCOS, HOLLISTER, SALINAS, SAN LUIS OBISPO, AND SANTA CRUZ.
02/07/1902	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
02/09/1902	15--?--?	34.50	119.67	D			F	PINE CREST, SAN LUIS OBISPO, SANTA BARBARA, AND VENTURA.
04/06/1902	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
07/21/1902	-?--?--?	34.75	120.00	D			F	PINE CREST.
07/28/1902	06-57--?	34.75	120.25	D			F	IX AT LOMPOC AND LOS ALAMOS; CONFINED TO THE NORTHERN PART OF SANTA BARBARA COUNTY.
07/28/1902	13--8--?	35.25	120.67	D			F	SAN LUIS OBISPO; AFTERSHOCK OF 06-57-?.
07/31/1902	09-20--?	34.75	120.25	D			F	IX AT LOS ALAMOS AND SURROUNDING COUNTRY; FISSURES, CRACKS IN THE GROUND, AND LANDSLIDES.
08/01/1902	-?--?--?	34.75	120.25	D			F	LOS ALAMOS. SEVERAL SHOCKS.
08/01/1902	03-30--?	34.75	120.25	D			F	VIII AT LOS ALAMOS.
08/02/1902	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
08/03/1902	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
08/04/1902	10 -5--?	34.75	120.25	D			F	LOS ALAMOS.
08/04/1902	11-18--?	34.75	120.25	D			F	LOS ALAMOS.
08/04/1902	12-15--?	34.75	120.25	D			F	LOS ALAMOS.
08/04/1902	21-29--?	34.75	120.25	D			F	LOS ALAMOS.
08/04/1902	23-40--?	34.75	120.25	D			F	LOS ALAMOS.
08/05/1902	-?-55--?	34.75	120.25	D			F	LOS ALAMOS.
08/10/1902	-?--?--?	34.75	120.25	D			F	LOS ALAMOS; DISTINCT EARTHQUAKE DETONATION AND TREMOR.
08/10/1902	10-40--?	34.75	120.25	D			F	LOS ALAMOS; HEAVY DETONATION FOLLOWED BY TREMBLING.
08/10/1902	22-40--?	34.50	119.67	D			F	SANTA BARBARA.
08/14/1902	10-15--?	34.75	120.25	D			F	LOS ALAMOS.
08/14/1902	11-05--?	34.75	120.25	D			F	LOS ALAMOS.
08/14/1902	11-20--?	34.75	120.25	D			F	LOS ALAMOS; SHOOK GROUND VIOLENTLY.
08/14/1902	21-50--?	34.75	120.25	D			F	LOS ALAMOS.
08/14/1902	23-50--?	34.75	120.25	D			F	LOS ALAMOS.
08/28/1902	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
08/31/1902	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
09/11/1902	05-30--?	34.25	120.25	D			F	V AT LOS ALAMOS.
10/21/1902	21-45--?	34.75	120.25	D			F	LOMPOC AND LOS ALAMOS.
10/21/1902	22-15--?	34.75	120.25	D			F	LOMPOC AND LOS ALAMOS.
10/22/1902	10--?--?	34.75	120.25	D			F	LOS ALAMOS.
12/12/1902	-?--?--?	34.75	120.25	D			F	VIII AT LOS ALAMOS -3 SHOCKS IN 5 MINUTES; FELT THROUGHOUT THE NORTHERN PART OF SANTA BARBARA COUNTY, ESPECIALLY AT LOMPOC, LOS ALAMOS, SAN LUIS OBISPO, SANTA BARBARA, AND SANTA MARIA.
01/11/1903	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
03/07/1903	-?--?--?	36.50	121.42	D			F	GONZALES.
03/24/1903	-?--?--?	36.50	121.42	D			F	GONZALES AND SANTA MARGARITA.
04/24/1903	-?--?--?	35.42	120.58	D			F	SANTA MARGARITA.
07/29/1903	07-13--?	35.67	121.33	D			F	V AT POINT PIEDRAS BLANCAS LIGHTHOUSE.
07/29/1903	10-30--?	35.67	121.33	D			F	POINT PIEDRAS BLANCAS LIGHTHOUSE.
08/24/1903	-?--?--?	34.67	120.08	D			F	LOS OLIVOS.
01/22/1904	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
01/23/1904	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
09/10/1904	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
05/26/1905	05-49--?	35.25	120.67	D			F	LOS GATOS, SALINAS, SAN FRANCISCO, SAN LUIS OBISPO, SANTA CRUZ AND SOLEDAD.
07/06/1906	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
07/22/1906	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
08/01/1906	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
12/07/1906	06-40--?	35.67	121.33	D			F	VII AT SAN LUIS OBISPO AND SANTA MARIA; DURATION 30 SECONDS, FOLLOWED BY SECOND SHOCK HALF AN HOUR LATER.
+12/08/1906	06-55--?	35.75	120.67	D			F	SAN MIGUEL.
06/19/1907	12--?--?	36.17	120.67	D			F	PRIEST VALLEY.
07/02/1907	18-10--?	35.25	120.67	D			F	SAN LUIS OBISPO.
07/21/1907	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
07/29/1907	05-10--?	34.75	120.00	D			F	PINE CREST.
08/-?/1907	-?--?--?	34.75	120.00	D			F	PINE CREST AND SANTA BARBARA.
12/27/1907	09-15--?	34.50	119.67	D			F	SANTA BARBARA; ALSO FELT AT VENTURA; REPORTED FROM OJAI AND PINE CREST.
04/27/1908	10-50--?	36.00	121.17	D			F	JOLON, PASO ROBLES, PRIEST VALLEY, SAN LUIS OBISPO, SANTA MARGARETA, AND SAN MIGUEL.
05/19/1908	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
09/16/1908	-?--?--?	36.17	120.67	D			F	PRIEST VALLEY.
11/-?/1908	19-30--?	36.17	120.67	D			F	PRIEST VALLEY.
01/23/1909	14-58--?	34.50	119.67	D			F	PINE CREST AND SANTA BARBARA.
04/10/1909	-?--?--?	34.50	119.67	D			F	MONO RANCH AND SANTA PAULA CANYON.
06/17/1909	08-20--?	36.42	121.33	D			F	SOLEDAD.
07/03/1909	07--?--?	34.50	119.67	D			F	MONTECITO AND SANTA BARBARA.
07/05/1909	06-10--?	34.50	119.67	D			F	III AT SANTA BARBARA.
07/16/1909	10-28--?	34.50	119.67	D			F	IV AT LOS ANGELES AND SANTA BARBARA.
07/31/1909	19-37--?	34.50	119.67	D			F	IV AT OJAI AND SANTA BARBARA.
08/18/1909	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
11/24/1909	15--?--?	36.00	121.17	D			F	JOLON.
03/08/1910	09-30--?	36.17	120.67	D			F	PRIEST VALLEY.
04/30/1910	18-25--?	36.17	120.67	D			F	PRIEST VALLEY; 3 SHOCKS, THE SECOND ONE QUITE VIOLENT.
11/-?/1910	-?--?--?	34.50	119.67	D			F	SANTA BARBARA; 2 SLIGHT QUAKES DURING NOVEMBER.
02/02/1911	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
03/22/1911	10-55--?	35.75	120.67	D			F	SAN MIGUEL; QUITE SEVERE.
06/02/1911	-?--?--?	36.17	120.67	D			F	PRIEST VALLEY.
06/18/1912	22-27--?	36.00	121.17	D			F	JOLON. (RECORDED AT BERKELEY.)
10/20/1913	11-25--?	35.25	120.67	D			F	BETTERAVIA, PASO ROBLES, SAN LUIS OBISPO,AND SANTA MARIA.
11/27/1913	19--?--?	34.50	119.67	D			F	MONO RANCH.

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
12/26/1913	12--?--?	36.17	121.00	D			F	SAN LUCAS.
11/24/1914	04-25--?	35.25	120.67	D			F	II AT SAN LUIS OBISPO; ABRUPT TREMBLING, LASTING 20 SECONDS.
01/12/1915	-?--?--?	34.92	120.50	D			F	BETTERAVIA.
01/12/1915	04-31--?	34.75	120.25	B			F	VIII AT LOS ALAMOS - EPICENTER 2 OR 3 MI. EAST OF LOS ALAMOS; FELT FROM SAN JOSE TO LOS ANGELES; SHAKEN AREA IN EXCESS OF 50,000 SQ. MI. - PRACTICALLY EVERY CHIMNEY DAMAGED AT LOS ALAMOS, VII AT LOMPOC, VI-VII AT SANTA MARIA, V AT SAN LUIS OBISPO AND SANTA BARBARA, IV AT PASO ROBLES, AND II AT LOS ANGELES, WEATHER BUREAU REPORTED V-VI AT SANTA BARBARA, V AT OZENA AND SAN LUIS OBISPO, IV AT PASO ROBLES, III AT OJAI, AND II IN PRIEST VALLEY; ALSO II AT BAKERSFIELD.
01/14/1915	-?--?--?	34.92	120.50	D			F	BETTERAVIA.
01/15/1915	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
01/20/1915	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
01/26/1915	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
01/27/1915	-?--?--?	34.75	120.25	D			F	LOS ALAMOS.
04/21/1915	09-58--?	35.25	120.67	D			F	IV AT SAN LUIS OBISPO; ALSO FELT 3 MI. NW OF PRIEST VALLEY.
08/23/1915	23-15--?	34.75	119.75	D			F	HILL CAMP.
08/31/1915	21--?--?	34.75	119.75	D			F	HILL CAMP.
09/08/1915	12-45--?	35.67	120.67	D			F	V IN REGION EAST OF PASO ROBLES; ANTELOPE - 2 SHOCKS, FIRST THE HEAVIER, OIL CAME UP WITH WATER IN WELL AFTER SHOCK. AT SHANDON A SEATED MAN WAS SHAKEN SO HARD HE THOUGHT A PERSON WAS SHAKING HIM. AT CRESTON THE SHOCK WAS SHORT AND SHARP. A SLIGHT LANDSLIDE AT PORT SAN LUIS. WEATHER BUREAU REPORTS -PASO ROBLES V AND SAN LUIS OBISPO III-IV.
09/14/1915	-?--?--?	34.75	119.75	D			F	HILL CAMP; 3 HARD SHOCKS - EARTH TREMBLED FOR 15 MINUTES AFTERWARDS.
02/27/1916	13-26--?	34.75	120.25	D			F	LOS ALAMOS.
03/01/1916	19-15--?	34.75	120.25	D			F	LOS ALAMOS.
05/06/1916	03-45--?	34.75	120.25	D			F	III AT LOS ALAMOS. FELT BY MANY AT EL ROBLAR RANCH, 2 MI. SE OF LOS ALAMOS.
08/06/1916	-?--?--?	36.00	121.00		7.0			(CALTECH FILE)
10/24/1916	13-03--?	35.25	120.67	D			F	II AT SAN LUIS OBISPO; PROBABLY NEXT SHOCK, WITH TIME ERROR.
10/24/1916	13-30--?	36.00	121.17	D			F	V AT JOLON; III AT A POINT 3.5 MI. NW OF PRIEST VALLEY.
12/01/1916	22-53--?	35.17	120.75	D			F	VII AT AVILA - CONSIDERABLE GLASS BROKEN AND GOODS IN STORES THROWN FROM SHELVES. FELT AT SAN LUIS OBISPO; WATER IN BAY DISTURBED, PLASTER IN COTTAGES JARRED LOOSE, SMOKESTACKS OF UNION OIL CO. REFINERY TOPPLED OVER. SEVERE AT PORT SAN LUIS; III AT SANTA MARIA.
02/01/1917	05-18--?	34.92	120.42	D			F	III AT SANTA MARIA.
04/05/1917	19--?--?	34.67	120.33	D			F	IV AT SANTA RITA; ALSO FELT AT LOMPOC.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
04/13/1917	03-59--?	34.25	119.67	D			F	VI AT SANTA BARBARA CHANNEL REGION; FELT OVER AN AREA OF COAST SOUTH AND EAST OF SANTA BARBARA AS FAR AS VENTURA, AND ON SANTA CRUZ ISLAND.
04/21/1917	06-59--?	34.25	119.67	D			F	V AT SANTA BARBARA CHANNEL; PERCEPTIBLE OVER AN AREA OF PERHAPS 4000 SQ. MI.
07/07/1917	20-57--?	35.25	120.50	D			F	LOPEZ CANYON; ALSO AT SAN LUIS OBISPO.
07/07/1917	21-02--?	35.25	120.50	D			F	LOPEZ CANYON.
07/07/1917	21-15--?	35.25	120.50	D			F	LOPEZ CANYON.
07/08/1917	03-20--?	34.92	120.42	D			F	II AT SANTA MARIA.
07/08/1917	11-29--?	35.25	120.50	D			F	IV IN LOPEZ CANYON.
07/09/1917	22-22--?	35.25	120.50	D			F	VII IN LOPEZ CANYON; IV AT SAN LUIS OBISPO.
07/09/1917	22-38--?	35.25	120.50	D			F	LOPEZ CANYON.
07/10/1917	-?-43--?	35.25	120.50	D			F	LOPEZ CANYON.
07/10/1917	-?-45--?	35.25	120.50	D			F	LOPEZ CANYON.
07/26/1917	08-31--?	34.92	120.42	D			F	V AT SANTA MARIA - FURNITURE MOVED. IV AT LOS OLIVOS - AWAKENED SLEEPERS AT SAN LUIS OBISPO
12/05/1918	02-38--?	35.67	120.67	D			F	IV AT PASO ROBLES; II AT SAN LUIS OBISPO.
12/05/1918	04-30--?	35.25	120.67	D			F	SAN LUIS OBISPO.
03/01/1919	04-19--?	36.17	120.67	D			F	IV IN PRIEST VALLEY.
03/15/1919	07-53--?	35.25	120.67	D			F	SAN LUIS OBISPO.
07/31/1919	21-31--?	36.33	120.67	D			F	V IN SAN BENITO COUNTY; FELT AT IDRIA - ORIGIN SOME DISTANCE FROM IDRIA
08/26/1919	12-12--?	34.50	119.67	D			F	V IN SANTA BARBARA COUNTY - FELT AT OJAI, SAN LUIS OBISPO (3 SHOCKS), SANTA BARBARA.
08/26/1919	14.57--?	34.50	119.67	D			F	V IN SANTA BARBARA COUNTY - THIS SHOCK STRONGER AT SANTA BARBARA THAN PREVIOUS SHOCK. BUILDINGS AND WHARVES SWAYED; FELT AT OJAI.
12/18/1919	07-15--?	35.67	120.67	D			F	PASO ROBLES.
01/30/1920	23-30--?	34.50	119.67	D			F	III AT SANTA BARBARA.
01/30/1920	23-33--?	34.50	119.67	D			F	II AT SANTA BARBARA.
01/30/1920	23-35--?	34.50	119.67	D			F	II AT SANTA BARBARA.
01/30/1920	23-38--?	34.50	119.67	D			F	II AT SANTA BARBARA.
01/31/1920	01--?--?	34.50	119.67	D			F	III AT SANTA BARBARA.
01/31/1920	01-03--?	34.50	119.67	D			F	III AT SANTA BARBARA.
01/31/1920	01-07--?	34.50	119.67	D			F	III AT SANTA BARBARA.
03/20/1920	07-04--?	35.25	120.67	D			F	II AT SAN LUIS OBISPO.
05/07/1920	01-59--?	35.25	120.67	D			F	IV AT SAN LUIS OBISPO.
06/28/1920	09-01--?	35.25	120.67	D			F	V AT SAN LUIS OBISPO.
12/01/1920	01-30--?	35.17	119.50	D			F	VI AT TAFT - MANY PEOPLE MADE "SEASICK", DISHES SHAKEN FROM SHELVES, IV AT MARICOPA.
12/05/1920	11-58--?	34.50	119.67	D			F	V IN SANTA BARBARA COUNTY MOUNTAINS, V AT LOMPOC, LOS ALAMOS, MARICOPA, OJAI, AND SANTA BARBARA.
12/06/1920	-?--?--?	35.25	120.67	D			F	SAN LUIS OBISPO.
03/10/1922	11-21-20	35.75	120.25	C	6.5	43	F	IX IN CHOLAME VALLEY REGION OF SAN ANDREAS FAULT. FELT OVER AN AREA OF 100,000 SQ. MI. - CRACKS IN THE GROUND AND NEW SPRINGS. VII-VIII AT PARKFIELD AND SHANDON. VI-VII AT SAN LUIS OBISPO AND SIMMLER, AND V AT LOS ANGELES.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
03/16/1922	23-10--?	35.75	120.33	D			F	VI IN CHOLAME VALLEY - RATHER STRONG AFTERSHOCKS, V AT PASO ROBLES AND SAN LUIS OBISPO, AND IV AT ANTELOPE VALLEY; ALSO IV AT SHANDON.
03/19/1922	11--?--?	35.67	120.67	D			F	III AT PASO ROBLES.
03/23/1922	10--?--?	35.67	120.67	D			F	III AT PASO ROBLES.
03/25/1922	12--?--?	35.67	120.67	D			F	III AT PASO ROBLES.
05/31/1922	01-25--?	35.67	120.67	D			F	III AT PASO ROBLES; 2 SHOCKS.
07/05/1922	19--?--?	34.75	120.25	D			F	LOS ALAMOS.
07/09/1922	12--?--?	34.75	120.25	D			F	LOS ALAMOS.
07/11/1922	03--?--?	34.75	120.25	D			F	LOS ALAMOS.
07/11/1922	15-30--?	34.75	120.25	D			F	LOS ALAMOS.
08/18/1922	05-12--?	35.75	120.33	D			F	VII IN CHOLAME VALLEY; V AT PASO ROBLES AND SAN LUIS OBISPO.
08/20/1922	21-14--?	35.50	120.67	D			F	III AT ATASCADERO.
09/04/1922	10-15--?	35.67	120.67	D			F	IV AT PASO ROBLES.
09/05/1922	09-05--?	35.25	120.67	D			F	V AT SAN LUIS OBISPO; 2 SHOCKS.
12/29/1922	11--?--?	35.67	120.67	D			F	III AT PASO ROBLES.
12/29/1922	12--?--?	35.67	120.67	D			F	III AT PASO ROBLES.
03/12/1923	06--?--?	34.75	120.25	D			F	LOS ALAMOS.
05/04/1923	22-45--?	35.25	120.67	D			F	V AT SAN LUIS OBISPO; 2 SHOCKS, SECOND EQUALED INTENSITY II.
05/08/1923	05-02--?	35.75	120.33	D			F	II AT CHOLAME.
06/16/1923	20-40--?	35.67	120.67	D			F	IV AT PASO ROBLES - DURATION 15-20 SECONDS.
06/25/1923	13-21--?	35.25	120.67	D			F	II AT SAN LUIS OBISPO.
12/19/1923	07-35--?	34.92	120.42	D			F	II AT SANTA MARIA - DURATION 20 SECONDS.
07/02/1924	58-02--?	34.50	119.67	D			F	SANTA BARBARA.
12/30/1924	12-17--?	34.50	119.67	D			F	SANTA BARBARA.
12/30/1924	14-15--?	34.50	119.67	D			F	SANTA BARBARA.
06/29/1925	14-42-16	34.30	119.80	B	6.3	1	F	IX AT SANTA BARBARA; FELT OVER AN AREA OF 100,000 SQ. MI. - RECORDED WORLD-WIDE. RUPTURE AT DEPTH ON THE MESA AND RECORDED WORLD-WIDE. RUPTURE AT DEPTH ON THE MESA AND SANTA YNEZ FAULTS (BAILEY WILLIS); A FEW DEATHS, SEVERAL MILLION DOLLARS DAMAGE; IX AT GOLETA, NAPLES, AND SANTA BARBARA; VIII AT GAVIOTA, MIRAMAR, AND SANTA YNEZ, LOS ALAMOS, LOS OLIVOS; VII AT ARROYO GRANDE, NIPOMO, ORCOTT, ALAMOS, LOS OLIVOS; VII AT ARROYO GRANDE, NIPOMO, ORCOTT, ALAMOS, LOS OLIVOS; VII AT ARROYO GRANDE, NIPOMO, ORCOTT, PISMO BEACH, SANTA MARIA, AND VENTURA, AND VI AT AVILA, LOMPOC, AND PORT SAN LUIS.
06/29/1925	15-20--?	35.25	120.67	D			F	III AT SAN LUIS OBISPO.
06/29/1925	16-35--?	34.50	119.67	D			F	SANTA BARBARA; II AT OXNARD.
06/29/1925	18-54--?	34.50	119.67	D			F	IV AT SANTA BARBARA; II AT OXNARD - STRONGEST AFTERSHOCK OF THE DAY.
06/30/1925	01-37--?	34.50	119.67	D			F	SANTA BARBARA.
06/30/1925	02-47--?	34.50	119.67	D			F	SANTA BARBARA.
06/30/1925	09-19--?	34.50	119.67	D			F	SANTA BARBARA - VIOLENT; FELT AT OJAI AND OXNARD.

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
07/03/1925	16-38--?	34.50	119.67	D			F	VII AT SANTA BARBARA; III AT PASADENA AND OJAI - STIFF TREMOR AT VENTURA.
07/03/1925	18-21--?	34.50	119.67	D			F	VII AT SANTA BARBARA - STRONGEST AFTERSHOCK; FELT AT LOS ANGELES, OJAI, AND PASADENA.
07/03/1925	18-46--?	34.50	119.67	D			F	SANTA BARBARA.
07/04/1925	19-18--?	34.50	119.67	D			F	SANTA BARBARA - ANOTHER SHOCK FELT LATER IN DAY.
07/05/1925	12--?--?	34.50	119.67	D			F	SANTA BARBARA; 11 SHOCKS IN THE NEXT 19 HOURS.
07/06/1925	21-45--?	34.50	119.67	D			F	SANTA BARBARA - SEVERAL FAIRLY SEVERE SHOCKS.
07/09/1925	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
07/20/1925	09-50--?	34.50	119.67	D			F	SANTA BARBARA.
07/29/1925	14--?--?	34.50	119.67	D			F	V AT WASIOJA - CEMENT WALK CRACKED.
07/30/1925	09-50--?	34.50	119.67	D			F	SANTA BARBARA.
07/30/1925	12--?--?	34.50	119.67	D			F	SANTA BARBARA.
08/13/1925	11--?--?	34.50	119.67	D			F	SANTA BARBARA - 5 LIGHT SHOCKS DURING NIGHT; THE STRONGEST TOOK PLACE JUST BEFORE 11--?--?.
10/04/1925	-?-50--?	34.50	119.67	D			F	SANTA BARBARA.
10/08/1925	21-30--?	34.50	119.67	D			F	SANTA BARBARA.
10/30/1925	09-45--?	34.50	119.67	D			F	SANTA BARBARA.
10/30/1925	13-30--?	34.50	119.67	D			F	SANTA BARBARA AND VENTURA.
02/18/1926	18-18--?	34.17	119.50	D			F	VII ORIGIN AT SEA, SW OF VENTURA; FELT ALONG COAST FROM SAN LUIS OBISPO ON NW TO SOUTH OF SANTA ANA, A DISTANCE OF 200 MI. AT SANTA BARBARA WINDOWS OF A SCHOOL WERE BROKEN, WATER PIPE IN ROUNDHOUSE WAS BROKEN. THERE WAS DAMAGE TO TELEPHONE EQUIPMENT AT SIMI. ALSO FELT AT LOS ANGELES, PASADENA, SANTA MONICA, SANTA SUSANA, AND VENTURA.
04/29/1926	12-18--?	34.67	120.17	D			F	IV AT BUELLTON.
06/18/1926	-?--?--?	34.50	119.67	D			F	SANTA BARBARA.
06/24/1926	15-30--?	34.50	119.67	D			F	V AT SANTA BARBARA.
06/29/1926	23-21--?	34.50	119.67	D			F	VII-VIII AT SANTA BARBARA - ONE PERSON KILLED BY FALLING CHIMNEY. VI AT BUELLTON AND VENTURA; ALSO FELT AT CAMARILLO, LOS ANGELES, OJAI, OXNARD, PORT HUENEME, AND SANTA PAULA - POSSIBLY SUBMARINE ORIGIN; FELT OVER AN AREA OF 30,000 SQ. MI.
07/03/1926	23--?--?	34.50	119.67	D			F	II AT SANTA BARBARA.
07/06/1926	17-45--?	34.50	119.67	D			F	V AT SANTA BARBARA.
07/25/1926	-?--?--?	36.30	120.30					(CALTECH FILE)
08/06/1926	17-42--?	34.50	119.67	D			F	IV IN SANTA BARBARA REGION; 2 SHOCKS AT OJAI - LASTED 30 SECONDS AT VENTURA WITH SHARP SHOCK AT SANTA BARBARA.
08/09/1926	04-12--?	34.50	119.67	D			F	V AT SANTA BARBARA; 2 SHOCKS AT VENTURA.
10/22/1926	10-10--?	35.67	120.67	D			F	III AT PASO ROBLES.
10/22/1926	-?--?--?	36.45	122.00					(CALTECH FILE)
12/09/1926	-?-03--?	35.67	120.67	D			F	IV AT PASO ROBLES - PROBABLY MISTIMED REPORT OF SHOCK AT -? 41-?.
12/09/1926	-?-41--?	35.25	120.67	D			F	NE OF SAN LUIS OBISPO; AT SAN LUIS OBISPO DURATION 20 SECONDS; FELT AT COALINGA WITH ORIGIN ABOUT 120 MI. FROM MT HAMILTON.

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
12/27/1926	09-19--?	36.17	120.33	D			F	VI NEAR COALINGA; FELT OVER AN AREA OF 25,000 SQ. MI. FELT AT FIREBAUGH, FRESNO, LOS BANOS, MENDOTA, OAKDALE, OILFIELDS, PORTERVILLE, AND SAN LUIS OBISPO.
11/04/1927	11--?--?	34.58	120.67	D			F	LOMPOC, POINT ARGUELLO, AND SAN LUIS OBISPO.
11/04/1927	11-30--?	34.58	120.67	D			F	LOMPOC.
11/04/1927	13-50-53	34.54	121.40	A	7.3	3	F	X AT SEA, WEST OF POINT ARGUELLO. AREA SHAKEN WITH INTENSITY VI OR GREATER WAS 40,000 SQ. MI. A SMALL SEA WAVE WAS PRODUCED, RECORDED ON TIDE GAUGES AT SAN DIEGO AND SAN FRANCISCO, AND OBSERVED AS 6 FEET HIGH AT SURF; IX AT HONDA, ROBERDS RANCH, SURF, AND WHITE HILLS, VIII AT ARLIGHT, ARROYO GRANDE, BERROS, BETTERAVIA, CAMBRIA, CASMALIA, CAYUCOS, GUADOCEANO, PISMO BEACH, POINT CONCEPTION, SAN JULIAN RANCH, SAN LUIS OBISPO, AND SANTA MARIA, VI-VII AT GUADOCEANO, PISMO BEACH, POINT CONCEPTION, SAN JULIAN RANCH, SAN LUIS OBISPO, AND SANTA MARIA, VI-VII AT ALUPE, HALCYON, HARRISTON, HUASNO, LOMPOC, LOS ALAMOS, LOS OLIVOS, MORRO BAY, NIPOMO, ADELAIDA, ATASCADERO, BAKERSFIELD, BICKNELL, BUTTONWILLOW,CARPINTERIA CHOLAME, CRESTON, EDNA GAVIOTA, GOLETA, HARMONY, KING CITY, LAS CRUCES, NAPLES, OXNARD, PASO ROBLES, REWARD, SANTA BARBARA, SANTA MARGARITA, SANTA YNEZ, SOLVANG, TAFT, TEMPLETON, VENTURA, AND WASIOJA, AND IV-V AT ANNETTE, BIG SUR, CASTROVILLE, COALINGA, FELLOWS, GONZALES, GORMAN, HOLLISTER, LOCKWOOD, LUCIA, MCKITTRICK, MONTEREY, PARKFIELD, PATTIWAY, PORT SAN LUIS, POZO, PRIEST, SALINAS, SANGER, SAN LUCAS, SAN SIMEON, SANTA PAULA, SCHEIDECK, SESPE, SIMMLER, SOLEDAD, AND TEHACHAPI. DATA FROM BSSA V. 17, P. 258 AND V. 20, P. 53.
11/04/1927	14-12--?	34.58	120.67	D			F	SANTA MARIA - AFTERSHOCK.
11/04/1927	14-14--?	34.58	120.67	D			F	SANTA MARIA - AFTERSHOCK.
11/04/1927	15--?--?	34.58	120.67	D			F	SAN LUIS OBISPO - AFTERSHOCK.
11/04/1927	15-42--?	34.58	120.67	D			F	SANTA MARIA - AFTERSHOCK.
1/05/1927	08-17--?	34.58	120.67	D			F	POINT ARGUELLO - AFTERSHOCK; MILD AT SURF.
11/05/1927	09--?--?	34.58	120.67	D			F	POINT ARGUELLO - AFTERSHOCK; REPORTED FROM PASO ROBLES TO HADLEY TOWER.
11/05/1927	11-37--?	34.58	120.67	D			F	POINT ARGUELLO - AFTERSHOCK; REPORTED FROM SURF TO HADLEY TOWER, AND SOUTH OF SAN LUIS OBISPO.
11/06/1927	-?-06--?	34.67	120.17	D			F	IV AT BUELLTON.
11/06/1927	02-25--?	34.67	120.17	D			F	POINT ARGUELLO - AFTERSHOCK; STRONGEST IMMEDIATE AFTERSHOCK AT LOMPOC.
11/06/1927	03-10--?	34.67	120.17	D			F	IV AT BUELLTON.
11/06/1927	22-10--?	34.67	120.17	D			F	OFF POINT CONCEPTION.
11/06/1927	22-50--?	34.67	120.17	D			F	IV AT BUELLTON.
11/06/1927	23-10--?	34.67	120.17	D			F	OFF POINT CONCEPTION.
11/08/1927	10-10--?	34.67	120.17	D			F	IV AT BUELLTON - SHARP BUMPING AT 10-02--?, AROUSED NEARLY ALL. AT LOMPOC MANY AWAKENED BY SHOCK AT 10-15--?.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
11/19/1927	03-32--?	34.92	120.42	D			F	VII AT SANTA MARIA - CENTERED TO NW OF ORIGIN OF NOVEMBER 4 QUAKE -WEAKER, YET NEARLY AS STRONG AT SANTA MARIA,AND VI AT BETTERAVIA AND BICKNELL; REPORTED FROM SAN MIGUEL AND PARKFIELD ON THE NORTH TO SANTA BARBARA CHANNEL ON THE SOUTH.
12/05/1927	11-45--?	34.58	120.67	D			F	IV AT POINT ARGUELLO, AND IV AT BUELLTON WITH 2 SHOCKS 15 SECONDS APART; FELT AT GUADALUPE, SANTA MARGARITA, SANTA MARIA AND SURF.
12/31/1927	10-10--?	34.58	120.67	D			F	V AT POINT ARGUELLO.
03/15/1928	12-03--?	34.92	120.42	D			F	SANTA MARIA.
03/15/1928	12-20--?	34.50	119.67	D			F	SANTA BARBARA.
03/16/1928	14-30--?	34.92	120.42	D			F	SANTA MARIA.
03/29/1928	06-25--?	34.92	120.42	D			F	VII AT SANTA MARIA.
06/09/1928	08-22--?	35.17	119.50	D			F	TAFT.
06/09/1928	08-31--?	35.17	119.50	D			F	TAFT.
06/09/1928	12-25--?	35.17	119.50	D			F	TAFT.
09/03/1928	04-01-54	34.50	122.50	D	5.0	1		OFF POINT ARGUELLO - LICK OBSERVATORY S-P= 39 SECONDS.
11/02/1928	05--?--?	34.67	120.42	D			F	LOMPOC.
05/28/1929	07-10--?	36.17	120.33	D			F	COALINGA.
07/03/1929	09-24--?	34.50	119.67	D			F	SANTA BARBARA.
07/12/1929	13-10--?	36.17	120.33	D			F	COALINGA.
08/28/1929	18-10--?	34.50	119.67	D			F	SANTA BARBARA.
09/09/1929	05-15--?	34.50	119.67	D			F	GAVIOTA, NAPLES, AND SANTA BARBARA.
09/16/1929	03-16--?	35.42	120.92	D			F	CAYUCOS.
09/16/1929	06-15--?	35.42	120.92	D			F	CAYUCOS.
10/05/1929	20-03--?	36.17	120.33	D			F	COALINGA AND LIGHTHIPE.
10/06/1929	21-14--?	36.17	120.33	D			F	COALINGA.
10/07/1929	08--?--?	36.17	120.33	D			F	COALINGA.
10/07/1929	11-30--?	34.83	120.42	D			F	ORCUTT.
10/11/1929	17-55--?	36.17	120.33	D			F	COALINGA.
10/15/1929	22-02--?	36.17	120.67	D			F	COALINGA, KETTLEMEN HILLS, OILFIELDS, AND PRIEST VALLEY,.
11/07/1929	06-30--?	36.33	119.67	D			F	HANFORD.
11/09/1929	02-30--?	36.17	120.33	D			F	BITTER WATER, COALINGA, AND MCKITTRICK.
11/20/1929	22-50--?	36.42	121.00	D			F	BITTER WATER.
11/24/1929	09-54--?	36.42	121.00	D			F	LONOAK, BITTER WATER, AND LEWIS CREEK.
11/26/1929	08-05--?	36.42	121.00	D			F	V AT BITTER WATER AND SAN ARDO; FELT FROM HOLLISTER TO SANTA MARGARITA.
11/26/1929	09--?--?	36.42	120.83	D			F	HERNANDEZ.
11/26/1929	18-06--?	36.42	121.00	D			F	BITTER WATER.
12/05/1929	07-40--?	36.33	119.67	D			F	HANFORD.
03/11/1930	23-59--?	36.42	121.25	D			F	PINNACLES.
06/21/1930	05-15--?	34.83	120.50	D			F	CASMALIA.
08/05/1930	11-25--?	34.42	119.50	D			F	NEAR SANTA BARBARA - FELT OVER AN AREA OF 9000 SQ. MI. V-VI AT CARPINTERIA, GOLETA, OJAI, OXNARD, AND SANTA BARBARA,.
08/08/1930	16.46--?	34.42	119.67	D			F	SANTA BARBARA AND GOLETA.
08/18/1930	13-09--?	34.33	120.58	D			F	OFF POINT CONCEPTION; V OVER A LAND AREA OF 500 SQ. MI. NEAR POINT CONCEPTION.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
08/28/1930	05-15--?	36.42	121.33	D			F	SOLEDAD.
09/02/1930	13-35--?	35.00	121.00	D			F	OFF COAST - FELT AT HALCYON AND SAN LUIS OBISPO.
09/09/1930	05-27--?	34.42	119.50	D			F	SANTA BARBARA.
10/02/1930	14-18--?	34.58	120.67	D			F	OFF POINT ARGUELLO - FELT AT HALCYON.
10/28/1930	13-57--?	35.42	120.92	D			F	OFF COAST NEAR CAYUCOS - FELT AT NIPOMO.
12/08/1930	01-23--?	34.50	119.67	D			F	GOLETA AND SANTA BARBARA.
12/08/1930	01-29--?	34.50	119.67	D			F	GOLETA AND SANTA BARBARA.
02/21/1931	08-10--?	35.67	121.33	D			F	NW OF SAN LUIS OBISPO - FELT AT BRYSON AND PIEDRAS BLANCAS.
02/23/1931	10-01--?	35.83	120.50	D			F	OVER AN AREA OF 5000 SQ. MI.; V AT CAYUCOS, PARKFIELD, AND TEMPLETON.
02/23/1931	10-33--?	35.83	120.50	D			F	SAME AS ABOVE.
04/05/1931	03--?--?	36.17	121.00	D			F	SE OF KING CITY.
07/15/1931	18-40--?	35.00	120.58	D			F	GUADALUPE, NIPOMO, AND SANTA MARGARITA.
07/21/1931	03-25--?	35.25	120.67	D			F	SAN LUIS OBISPO.
07/21/1931	12-08--?	35.25	120.67	D			F	IV AT HALCYON, LOS ALAMOS, NIPOMO, OCEANO, AND TEMPLETON:ALSO FELT AT CAMBRIA, GAVIOTA, PIEDRAS BLANCAS, PORT SAN LUIS, SAN LUIS OBISPO, SANTA MARGARITA, AND SANTA MARIA
09/03/1931	13-50--?	34.50	119.67	D			F	SANTA BARBARA.
09/10/1931	14-35--?	35.50	120.67	D			F	ATASCADERO.
09/30/1931	14-35--?	35.50	120.67	D			F	ATASCADERO.
10/13/1931	12-25--?	36.33	121.67	D			F	JAMESBURG.
10/18/1931	19-58--?	36.33	121.67	D			F	IV AT HOLLISTER, JAMESBURG, AND SPRECKLES; ALSO FELT AT APTOS, CARMEL, CHUALAR, MOSS LANDING, MONTEREY, PARAISO, SALINAS, AND SANTA CRUZ.
12/04/1931	-?-53--?	36.50	121.67	D			F	10 MI. S OF SPRECKELS. FELT AT HOLLISTER, METZ, PIGEON POINT, SPRECKELS, AND SANTA CRUZ.
02/04/1932	16-02-58	34.55	119.73	C	3.0	1	F	SANTA BARBARA AND VENTURA.
02/05/1932	04-14-45	35.83	121.47	C	3.5	1	F	COAST OF MONTEREY COUNTY; FELT AT PIEDRAS BLANCAS LIGHT AND SALMON CREEK.
02/05/1932	06-46-54	35.83	121.47	C	3.5	1	F	COAST OF MONTEREY COUNTY; FELT AT PIEDRAS BLANCAS LIGHT AND SALMON CREEK.
02/05/1932	07-10--?	35.83	121.47	C			F	AFTERSHOCK OF PRECEDING.
02/26/1932	16-58--?	36.00	121.00		5.0		F	IV AT APTOS, ASILOMAR, CARMEL, DEL MONTE, GONZALES, METZ, MONTEREY, PACIFIC GROVE, AND PEBBLE BEACH.
03/13/1932	23-09-24	34.44	120.17	B	3.5	1	F	OFF POINT CONCEPTION; FELT AT BUELLTON.
04/21/1932	03-36-20	35.50	120.67	D	3.0		F	ATASCADERO.
05/06/1932	03-37-08	36.00	120.50	C	3.0	1	F	PARKFIELD.
06/27/1932	05-17-25	36.00	122.00	D	4.0			COAST OF MONTEREY COUNTY.
10/24/1932	04-45--?	35.75	120.75	D			F	PASO ROBLES.
01/30/1933	17--?--?	34.67	120.42	D			F	LOMPOC.
02/26/1933	09-34-32	36.40	121.30	D			F	III AT HOLLISTER, SALINAS, AND SPRECKLES.
04/12/1933	10-03--?	36.33	121.75	D			F	IV AT PORTERVILLE AND VISALIA.
06/26/1933	06-26--?	34.42	120.50	D			F	V AT BUELLTON AND POINT CONCEPTION.
06/26/1933	06-29--?	34.42	120.50	D			F	V AT BUELLTON AND POINT CONCEPTION.
01/09/1934	12-48--?	35.13	120.08	C	3.0			

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
01/12/1934	12-50--?	34.45	120.15	D			F	IV AT LOS ALAMOS.
02/01/1934	16-09--?	34.55	119.53	B	3.5		F	II AT SANTA BARBARA.
02/11/1934	15-16--?	34.55	119.53	C	2.0			
03/20/1934	11-48--?	36.00	120.00	D	3.0			
05/06/1934	20-14--?	35.83	120.75	B	3.5			
05/10/1934	11-28--?	34.50	119.58	C	3.0			
05/19/1934	06-37--?	34.58	120.75	D	3.0			
05/24/1934	06-52--?	34.42	119.75	C	2.5			
05/24/1934	09-04--?	34.42	119.75	C	2.5			
05/24/1934	11-18--?	34.42	119.75	C	2.0			
06/05/1934	09-51--?	35.80	120.33	D			F	COALINGA AND KETTLEMAN HILLS; ALSO FELT AT MONTEREY AND SANTA CRUZ.
06/05/1934	11-30--?	35.80	120.33	D			F	SAN MIGUEL AND SHANDON.
06/05/1934	11-47--?	35.80	120.33	B	3.0			
06/05/1934	13-46--?	35.80	120.33	C	3.0			
06/05/1934	21-30--?	35.80	120.33	D			F	SAN MIGUEL.
06/05/1934	21-48--?	35.80	120.33	B	5.0		F	V AT ADELAIDA, PARKFIELD, AND PRIEST, IV AT ATASCADERO, AVENAL, BIG SUR, BRYSON, CARMEL, HANFORD, KING CITY, LEMOORE, LONOAK, PARAISO, SAN MIGUEL, SANTA CRUZ, SHANDON, AND TEMPLETON, III AT APTOS, BOULDER CREEK, CAMBRIA, CHUALAR, COALINGA, GONZALES, HOLLISTER, MONTEREY, MORRO BAY, PASO ROBLES, SALINAS, SAN FRANCISCO, SAN JOAQUIN VALLEY, SAN LUIS OBISPO, SOLEDAD, SPRECKLES, ETC.; NOT FELT AT ANTIOCH, ETC., BAKERSFIELD, FRESNO, GILROY, LIVERMORE, LOS GATOS, MARICOPA, MERCED, MODESTO, MORGAN HILL, REDWOOD CITY, SAN JOSE, SANTA MARIA, TULARE, OR WATSONVILLE.
06/05/1934	22-52--?	35.80	120.33	C	4.0		F	VI AT ADELAIDA; IV AT ATASCADERO.
06/05/1934	23-30--?	35.80	120.33	D			F	V AT LEMOORE; ALSO FELT AT CASTROVILLE.
06/06/1934	-?-55--?	35.80	120.33	C	3.0			
06/06/1934	16-40--?	35.80	120.33	C	3.5			
06/06/1934	22-40--?	35.80	120.33	C	3.5		F	ADELAIDA, GRAEAGLE, AND PAYNES CREEK.
06/07/1934	22-30--?	35.80	120.33	D			F	STONE CANYON.
06/08/1934	04-15--?	35.80	120.33	D			F	IV AT GONZALES AND MCKITTRICK.
06/08/1934	04-30--?	35.80	120.33	B	5.0		F	VI TO VII AT CHOLOME RANCH, PARKFIELD, AND STONE CANYON DURATION 30 SECONDS, DAMAGE SLIGHT, V AT ATASCADERO, AT ANTELOPE, BIG SUR, CAMBRIA, CASTROVILLE, DELANO, MONTEREY, PASO ROBLES, SAN LUIS OBISPO, SANTA BARBARASANTA MARGARITA, SANTA MARIA, SOLEDAD, TAFT, VENTURA, VISALIA, ETC., AND III OR LESS AT ARVIN, BAKERSFIELD, FRESNO, KERNVILLE, LOMPOC, LOS ANGELES, MENDOTA, PORTERVILLE, SALINAS, SAN BENITO, SANTA ANA, SANTA BARBARA, TULARE, WATSONVILLE, ETC.; NOT FELT AT BIG BASIN, CAJON, COYOTE, GILROY, HUNTINGTON BEACH, INDEPENDENCE, INYOKERN, LANCASTER, MERCED, POMONA, OR SAN JOSE.
06/08/1934	04-37--?	35.60	121.30	D			F	IV AT PIEDRAS BLANCAS, SAN LUIS OBISPO, AND SANTA CRUZ; ALSO FELT AT BRYSON AND LOS ALAMOS.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
06/08/1934	04-45--?	35.80	120.33	D			F	ATASCADERO, COALINGA, LOCKWOOD, PASO ROBLES, PORT SAN LUIS, PRIEST, SAN MIGUEL, AND WESTHAVEN.
06/08/1934	04-47--?	35.80	120.33	B	6.0		F	WITHIN A RADIUS OF 250 KM FROM THE EPICENTER NEAR THE SOUTHEASTERN ANGLE OF MONTEREY COUNTY; VII TO VIII AT PARKFIELD, VI AT COALINGA, KETTLEMAN CITY, LEMOORE, AND STONE CANYON, V AT ATASCADERO, DUDLEY, HOLLISTER, KING CITY, OILFIELDS, SAN MIGUEL, SEASIDE, SHALE PUMP STATION, AND SHANDON, IV AT ANTELOPE, AVILA, CANOGA PARK, HANFORD, LOS ALAMOS, MARICOPA, MORRO BAY, NIPOMO, PASO ROBLES, PRIEST, SAN LUIS OBISPO, SANTA CRUZ, SANTA MARIA, SOLEDAD, VISALIA ETC., AND III OR LESS AT APTOS, FRESNO, KERNVILLE, LONE PINE, LOS BANOS, MENDOTA, MONTEREY, OAKLAND HARBOR, SALINAS, SAN BENITO, SANTA ANA, TEHACHAPI, TULARE, ETC.
06/08/1934	05--?--?	35.60	121.30	D			F	PIEDRAS BLANCAS LIGHT; ALSO BRYSON, KERNVILLE, LA PANZA, LEMOORE, PARKFIELD, SANDBERG, AND SAN FERNANDO.
06/08/1934	05-20--?	35.80	120.33	D			F	III AT ATASCADERO.
06/08/1934	05-23--?	35.80	120.33	C	3.5		F	ATASCADERO AND SAN MIGUEL.
06/08/1934	05-36--?	35.80	120.33	C	3.0			
06/08/1934	05-42--?	35.80	120.33	B	4.5		F	ATASCADERO, BIG SUR, COALINGA, KING CITY, PASO ROBLES, AND WESTHAVEN.
06/08/1934	05-50--?	35.80	120.33	D			F	IV AT ATASCADERO; ALSO FELT AT COALINGA AND SAN LUIS OBISPO.
06/08/1934	09-30--?	35.80	120.33	B	4.0		F	ATASCADERO AND PARKFIELD.
06/08/1934	15-30--?	35.80	120.33	C	3.5			
06/08/1934	16-30--?	35.80	120.33	D			F	PARKFIELD.
06/08/1934	23-23--?	35.80	120.33	B	4.0		F	NEAR PARKFIELD.
06/10/1934	06-47--?	35.80	120.33	C	3.0			
06/10/1934	08-03--?	35.80	120.33	B	4.5		F	NEAR PARKFIELD; IV AT SAN MIGUEL.
06/10/1934	20-02--?	35.80	120.33	D			F	IV AT SAN MIGUEL; ALSO PARKFIELD AND WOODY.
06/11/1934	03-25--?	35.80	120.33	C	3.0			
06/12/1934	10-47--?	35.80	120.33	C	3.5			
06/14/1934	14-55--?	35.80	120.33	C	4.0		F	IV AT ATASCADERO; ALSO FELT AT SAN MIGUEL AND TEMPLETON.
06/14/1934	15-54--?	35.80	120.33	C	4.0		F	III AT ATASCADERO AND SAN MIGUEL.
06/14/1934	19-26--?	35.80	120.33	C	4.5		F	ATASCADERO AND TEMPLETON.
06/14/1934	22-02--?	35.80	120.33	C	3.5		F	ATASCADERO.
06/15/1934	04-48--?	35.80	120.33	C	3.0			
06/16/1934	23-03--?	36.50	121.00	D	4.0		F	IV AT HOLLISTER AND MONTEREY, AND III AT GONZALES, PARKFIELD, AND SALINAS.
07/02/1934	18-44--?	35.80	120.33	B	3.0			
08/04/1934	-?-18--?	35.80	120.33	B	3.0			
08/21/1934	03-37--?	36.08	120.58	D			F	IV IN STONE CANYON.
08/25/1934	18-52--?	34.42	119.75	C	2.5			
08/26/1934	03-02--?	35.57	119.85	B	3.0			
09/06/1934	23-24--?	36.00	120.55	C	3.0			
09/16/1934	14-38--?	35.83	120.33	C	3.5			
10/07/1934	-?-18--?	34.55	120.78	C	3.5			

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
10/08/1934	04-57--?	34.50	119.58	C	2.0			
10/10/1934	10-52--?	34.55	120.78	C	3.0			
10/19/1934	15-39--?	35.80	120.33	C	3.0			
11/04/1934	22-17--?	34.53	119.67	B	3.0			
11/21/1934	01-02--?	34.58	119.62	B	2.5			
12/01/1934	13-05--?	36.00	121.50	D			F	15 MI. S OF PARAISO; V AT PIEDRAS BLANCAS LIGHT AND IV AT PARAISO.
12/02/1934	16-07--?	35.97	120.58	C	4.0		F	SAN MIGUEL.
12/03/1934	01-54--?	35.95	121.50	C	4.5		F	IV AT BRYSON, KING CITY, AND PARAISO; ALSO FELT AT PARKFIELD, PASO ROBLES, SAN LUCAS, AND SAN MIGUEL.
12/17/1934	11-10--?	34.58	120.33	B	4.5		F	VI AT LOS ALAMOS.
12/17/1934	13-51--?	34.58	120.33	C	2.5		F	LOS ALAMOS.
12/17/1934	15-16--?	34.55	119.67	C	2.5			
12/17/1934	15-35--?	34.58	120.33	C	2.5			
12/18/1934	03-09--?	34.58	120.33	C	4.0		F	LOS ALAMOS.
12/18/1934	04-34--?	34.58	120.33	C	3.0		F	LOS ALAMOS.
12/18/1934	05-28--?	34.58	120.33	C	3.0		F	LOS ALAMOS.
12/19/1934	20-39--?	34.28	119.50	B	2.5			
12/20/1934	12-37--?	34.58	120.33	C	2.5		F	LOS ALAMOS.
12/20/1934	12-39--?	34.58	120.33	C	3.0			
12/20/1934	22-21--?	34.58	120.33	C	3.0			
12/23/1934	16-08--?	34.58	120.33	C	2.5			
12/24/1934	10-22--?	34.58	120.33	B	3.0		F	LOS ALAMOS.
12/24/1934	16-26--?	35.93	120.48	B	5.0		F	IV AT LOS ALAMOS AND SHANDON; ALSO FELT AT KING CITY TEMPLETON.
12/25/1934	04-03--?	34.58	120.33	C	3.0			
01/06/1935	04-04--?	35.98	120.48	C	4.0		F	IV AT PARKFIELD; ALSO FELT AT SHANDON.
01/06/1935	04-25--?	35.90	120.45	D			F	IV AT PARKFIELD.
01/06/1935	04-40--?	35.98	120.48	C	4.0		F	IV AT PARKFIELD AND III AT SHANDON.
01/07/1935	-?-11--?	35.75	119.67	D	3.0			
01/23/1935	03-16--?	34.58	120.33	C	3.5		F	IV AT LOS ALAMOS.
01/27/1935	09-49--?	34.50	119.62	B	2.5			
02/18/1935	04-02--?	35.93	120.48	C	3.5			
02/19/1935	14-17--?	35.93	120.48	D	3.0			
02/28/1935	19-06--?	35.80	120.33	C	3.0			
03/03/1935	11-26--?	36.42	121.75	C	3.0			
03/06/1935	23-14--?	34.43	119.87	C	3.5		F	III AT SANTA BARBARA.
03/19/1935	03-59--?	34.55	120.78	B	4.0			OFF POINT ARGUELLO.
04/05/1935	10-13--?	35.93	120.48	C	3.5			
05/05/1935	12-58--?	34.58	119.68	C	2.5			
05/18/1935	04-36--?	34.58	120.33	B	3.5		F	IV AT LOS ALAMOS.
05/19/1935	03-44--?	34.58	120.33	C	3.0			
05/20/1935	23-44--?	34.58	120.33	C	3.0			
05/27/1935	16-08--?	35.37	120.97	C	3.0		F	III AT TEMPLETON.
06/10/1935	02-02--?	35.33	119.83	C	3.5			
06/18/1935	08-52--?	34.60	119.60	C	2.0			
06/23/1935	23-53--?	34.55	119.68	C	3.0			

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
06/30/1935	23-28--?	36.00	121.00	D	4.0		F	SE OF SALINAS; III AT HOLLISTER.
07/25/1935	04-16--?	35.80	120.33	C	3.0		F	V AT PARKFIELD.
07/28/1935	06--?--?	35.70	121.12	B	4.0		F	SAN SIMEON.
08/06/1935	19-05--?	34.62	119.62	C	3.0		F	SANTA BARBARA.
08/07/1935	22-30--?	34.55	120.78	C	3.5			
08/09/1935	17-14--?	36.17	120.98	C	3.5		F	PRIEST VALLEY.
08/31/1935	09-28--?	34.50	119.70	C	2.5			
10/18/1935	09-24--?	35.80	120.70	D	3.5		F	IV AT PARKFIELD - AFTERSHOCK.
10/22/1935	18-37--?	35.93	120.48	C	4.0		F	PARKFIELD.
10/25/1935	19-43--?	36.40	121.55	D			F	13 MI. W OF SOLEDAD; IV AT SAN BENITO.
10/26/1935	10-46--?	35.85	121.40	D			F	AFTERSHOCK.
12/22/1935	06-54--?	34.55	120.78	C	3.0			
02/03/1936	09-12--?	34.75	119.75	C	2.5			
02/21/1936	23-06--?	34.42	119.67	C	3.0			
02/22/1936	-?-18--?	34.42	119.67	C	3.0			
02/22/1936	-?-21--?	34.42	119.67	C	2.5			
02/22/1936	-?-23--?	34.42	119.67	C	3.0			
02/22/1936	04-55--?	34.42	119.67	C	3.0			
03/06/1936	03-45--?	35.90	120.40	D	3.0			
03/17/1936	01-55--?	36.50	120.92	C	4.0		F	IV AT CHUALAR, HOLLISTER, AND TRES PINOS.
03/18/1936	09-07--?	35.93	120.48	C	2.5			
03/27/1936	-?-58--?	34.55	120.78	C	3.0			
03/29/1936	09-26--?	34.50	119.62	C	2.5			
05/20/1936	17-22--?	35.93	120.48	C	3.0			
05/23/1936	04-41--?	36.17	120.92	C	4.0		F	IV AT KING CITY.
05/27/1936	19-55--?	36.50	121.17	C	4.5			SAN BENITO COUNTY.
06/24/1936	12-23--?	35.12	120.08	C	3.0		F	SAN LUIS OBISPO CO.; IV AT LOS ALAMOS.
07/13/1936	18-09--?	34.50	119.60	D	2.5			
07/22/1936	04-03--?	34.50	119.80	C	2.5			
07/30/1936	09-36--?	34.57	119.63	C	3.0			
09/07/1936	16-47--?	34.37	120.38	C	3.0			
09/09/1936	04-54--?	34.37	120.38	C	4.0		F	LOS ALAMOS.
09/10/1936	21-21--?	34.40	120.40	D	3.0			
09/12/1936	13-56--?	34.75	120.33	C	3.5			
09/15/1936	-?-09--?	34.50	120.50	D	2.5			
10/16/1936	15-30--?	34.83	120.58	C	4.0			NEAR CASMALIA.
10/16/1936	15-36--?	34.83	120.58	C	3.0			
10/17/1936	01-17--?	34.83	120.58	C	3.0			
10/19/1936	14-01--?	34.83	120.58	C	3.0			
11/01/1936	15-10--?	34.55	120.78	B	4.0			OFF POINT ARGUELLO.
11/02/1936	01-29--?	34.55	120.78	C	3.0			
11/05/1936	14-30--?	35.85	121.40	D			F	HOLLISTER.
11/08/1936	16-51--?	34.55	120.78	C	3.0			
11/08/1936	22-43--?	34.55	120.78	C	3.0			
11/18/1936	17-15--?	35.35	120.60	D			F	POZO, SAN LUIS OBISPO, AND SANTA MARGARITA.
11/18/1936	18-02--?	34.70	120.25	C	4.5		F	IV AT ARROYO GRANDE, ATASCADERO, BETTERAVIA, LOS ALAMOS OCEANO, POZO, SAN LUIS OBISPO, AND SANTA MARGARITA.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
11/22/1936	02-16--?	34.58	120.78	C	3.5			
11/25/1936	21-51--?	34.58	120.78	C	3.0			
12/23/1936	17-16--?	35.93	120.48	B	3.5			
12/26/1936	01-12--?	34.55	119.68	C	2.5			
01/12/1937	15-44--?	34.50	120.80	D	3.0			
01/28/1937	17-36--?	34.43	119.87	C	2.5			
02/16/1937	17-40--?	34.55	120.78	C	4.0			OFF POINT ARGUELLO.
02/17/1937	03-33--?	36.50	121.58	C	4.5		F	9 MI. SE OF PAICINE; FELT AT ANTELOPE, HOLLISTER, AND PANOCHE.
02/20/1937	09-58--?	35.93	120.48	C	4.0		F	PARKFIELD AND PASO ROBLES.
02/22/1937	18-10--?	36.17	121.53	C	4.0		F	KING CITY.
02/24/1937	13-37--?	34.50	119.70	C	2.0			
02/25/1937	03-20--?	34.50	119.70	C	2.0			
03/26/1937	21-35--?	34.60	119.70	C	3.5			
03/31/1937	17-43--?	34.50	119.70	C	3.0			
04/17/1937	08-30--?	34.60	119.70	C	2.5			
04/30/1937	08-16--?	34.50	119.70	D	2.5			
05/31/1937	15-33--?	36.50	120.70	C	3.0			
06/02/1937	09-32--?	34.40	119.70	C	2.5			
07/31/1937	14-18--?	34.22	119.55	C	3.0			
07/31/1937	15-14--?	34.22	119.55	C	2.5			
08/15/1937	19-01--?	36.50	120.70	D	3.0			
08/22/1937	01-56--?	35.00	121.00	D	3.5			
09/16/1937	02-48--?	35.93	120.48	B	3.5		F	NEAR PARKFIELD; FELT AT BRADLEY.
09/18/1937	13-29--?	36.50	121.50	D	4.0		F	9 MI. SE OF PAICINES; FELT AT CHUALAR, SALINAS, AND SPRECKLES.
09/22/1937	02-41--?	34.50	119.70	C	3.0			
09/29/1937	22-39--?	34.50	119.70	C	3.0			
10/13/1937	08-32--?	34.40	119.70	C	2.5			
11/01/1937	21-40--?	36.50	121.40	D			F	6 MI. N OF GONZALES.
11/03/1937	10--?--?	36.15	121.00	D			F	V AT SAN LUCAS; FELT ALSO AT KING CITY AND SAN ARDO.
11/22/1937	04-12--?	34.55	120.78	C	4.5		F	OFF POINT ARGUELLO; V AT BUELLTON, GOLETA, PISMO BEACH, POINT D SANTA MARIA, AND IV AT ARLIGHT, BETTERAVIA, BICKNELL, E, GAVIOTA, GUADALUPE, LOMPOC, LOS ALAMOS, LOS OLIVOS, SANTA URF.
11/22/1937	04-51--?	34.55	120.78	C	3.5			
11/28/1937	09-55--?	34.55	120.78	C	3.5			
12/03/1937	15-28--?	34.55	120.78	C	4.0		F	OFF POINT ARGUELLO; FELT AT GAVIOTA AND POINT CONCEPTION.
12/03/1937	21-13--?	34.55	120.78	C	3.5			
12/05/1937	01-36--?	36.00	121.00	D	3.5		F	19 MI. S OF LOS BANOS; V AT LOS BANOS.
12/05/1937	01-37--?	36.00	121.00	D	4.0			SAN BENITO COUNTY.
12/05/1937	02-05--?	36.00	121.00	D	3.0		F	19 MI. S OF LOS BANOS.
12/24/1937	11-57--?	34.50	120.80	D	4.0		F	OFF POINT ARGUELLO. FELT AT CASMALIA, LOS ALAMOS, POINT CONCEPTION.
12/25/1937	13-01--?	36.00	120.00	D	3.0			
01/01/1938	01-59--?	34.55	120.78	C	3.5			

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
01/18/1938	04-35--?	34.55	120.78	B	3.5			
01/24/1938	04-38--?	34.55	120.78	C	3.5			
01/25/1938	12-24--?	34.55	120.78	C	3.5			
02/01/1938	18-14--?	34.55	120.78	C	3.5			
02/20/1938	14--?--?	34.55	120.78	C	3.5			
02/21/1938	10-59--?	35.93	120.78	C	3.0			
03/04/1938	15-14--?	34.30	119.57	C	2.5			
03/04/1938	18-25--?	34.30	119.57	C	2.5			
04/12/1938	01-50--?	34.55	120.78	C	3.5			
05/10/1938	10-32--?	36.20	121.30	D	4.5		F	BIG SUR, HOLLISTER, KING CITY, PINNACLES, SALINAS, SOLEDAD, SOQUEL, AND TRES PINOS-6 SHOCKS FELT AT PINNACLES.
05/10/1938	10-41--?	36.20	121.30	D	4.0		F	SAN BENITO.
05/13/1938	19-34--?	36.20	121.30	D	4.0			MONTEREY COUNTY.
05/27/1938	22-03--?	36.20	120.00	D	3.5			
06/01/1938	05-17--?	34.55	119.68	D			F	SANTA BARBARA.
06/01/1938	06-17--?	34.55	119.68	D	3.0			
06/06/1938	02-55--?	34.50	119.67	C	3.0			
09/16/1938	06-11--?	36.40	121.20	D	4.0		F	PINNACLES.
09/27/1938	10-21--?	34.50	119.70	C	2.5			
09/27/1938	12-23--?	36.30	120.90	C	5.0		F	OVER AN AREA OF 9000 SQ. MI. OF WEST-CENTRAL CALIFORNIA, ALONG THE COAST AS FAR NORTH AS PESCADERO AND SOUTH TO SAN LUIS OBISPO. INLAND IT WAS FELT AT COALINGA, MENDOTA, AND STEVENSON, WITH A V AT BIG SUR, BRYSON, CHUALAR, GONZALES, GREENFIELD, HARMONY, HOLLISTER, JOLON, LOCKWOOD, PAICINES, PARAISO, PINNACLES, SAN ARDO, SAN BENITO, SAN LUCAS, SOLEDAD, AND SPRECKLES, AND IV AT BEN LOMOND, CAMBRIA, CARMEL, CASTROVILLE, DOS PALOS, GILROY, KING CITY, LOS BANOS, MENDOTA, MONTEREY, PASO ROBLES, PRIEST, SALINAS, SAN LUIS OBISPO, TRES PINOS, WATSONVILLE, ETC.
09/27/1938	16-20--?	36.45	121.25	D			F	PAICINES AND PINNACLES.
09/29/1938	12-12--?	34.55	120.78	C	4.0			OFF POINT ARGUELLO.
10/02/1938	18-45--?	34.33	119.58	C	4.0		F	SANTA BARBARA AND SUMMERLAND.
10/24/1938	13-40--?	36.45	121.25	D			F	HOLLISTER AND PINNACLES.
10/28/1938	10-07--?	35.80	120.33	C	3.5			
11/01/1938	22-46--?	35.12	120.08	C	3.0			
11/16/1938	13-39--?	35.80	120.33	C	3.0			
11/22/1938	15-30--?	35.93	120.48	B	4.5		F	NEAR PARKFIELD; FELT AT ATASCADERO, CAMBRIA, CRESTON, MORRO BAY, PARKFIELD, PASO ROBLES, SAN MIGUEL, AND SHANDON.
01/01/1939	-?-53--?	34.58	120.33	C	3.0			
01/21/1939	07-08--?	36.45	121.25	D			F	PINNACLES.
01/22/1939	15-52--?	34.40	119.70	C	2.5			
02/05/1939	03-30--?	35.65	120.65	D			F	PASO ROBLES.
02/09/1939	06-44--?	35.93	120.48	C	3.0		F	NEAR PARKFIELD.
02/12/1939	03-12--?	34.42	119.83	B	3.0		F	GOLETA AND SANTA BARBARA .
03/24/1939	02-49--?	34.55	120.78	C	3.5			

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
03/25/1939	03-45--?	36.45	121.25	D			F	PINNACLES.
03/30/1939	10-11--?	34.50	119.80	C	2.5			
05/02/1939	18-49--?	35.93	120.48	C	4.0		F	IV AT PARKFIELD.
05/03/1939	07-55--?	34.55	120.78	C	3.0			
05/03/1939	12-39--?	35.65	120.65	D			F	PASO ROBLES.
05/18/1939	23--?--?	35.80	120.33	C	3.0			
06/15/1939	21-12--?	34.50	119.70	C	2.5			
06/17/1939	04-30--?	34.75	120.25	D			F	LOS ALAMOS. REPORTS OF SEVERAL SHOCKS.
06/24/1939	12-55--?	35.85	120.85	D			F	BRADLEY.
06/24/1939	13-02--?	36.40	121.00	C	5.5		F	OVER AN AREA OF 10,000 SQ. MI. IN WEST-CENTRAL CALIFORNIA, ALONG THE COAST AS FAR NORTH AS HALF MOON BAY AND SOUTH TO ESTERO BAY. INLAND IT WAS FELT AT COALINGA, TRANQUILITY, AND VOLTA, WITH A VII AT HOLLISTER, VI AT KING CITY AND PAICINES, V AT CAYUCOS, SOLEDAD, AND SPRECKLES, AND IV AT PAICINES, V AT CAYUCOS, SOLEDAD, AND SPRECKLES, AND IV AT CAMBRIA, CARMEL, CASTROVILLE, CHUALAR, GILROY, GONZALES, LOCKWOOD, MILPITAS, MONTEREY, NIPOMO, PASO ROBLES, PINNACLES, SALINAS, SAN ARDO, SAN BENITO, SAN JUAN, SAN MIGUEL, SAN SIMEON, SANTA CRUZ, TRES PINOS, AND WATSONVILLE.
07/04/1939	10-49--?	36.40	121.00	C	4.0		F	HOLLISTER, PAICINES, AND SALINAS.
07/10/1939	18-33--?	36.40	121.25	D			F	PINNACLES.
07/24/1939	09-30--?	36.25	121.80	D			F	BIG SUR.
07/24/1939	13--?--?	36.00	121.15	D			F	JOLON.
09/06/1939	01-53-43	34.58	120.42	C	3.0			
09/07/1939	02-50-30	35.42	121.08	C	3.0		F	OFF SAN LUIS OBISPO CO.; FELT AT CAMBRIA.
09/08/1939	01-57--?	34.75	120.25	D			F	LOS ALAMOS.
09/08/1939	05--?--?	34.75	120.25	D			F	LOS ALAMOS.
09/12/1939	-?--?-47	34.25	119.75	C	3.0			
09/24/1939	11-57-40	36.40	121.00	D	3.5			
10/06/1939	04-39--?	35.80	121.50	D	3.5			
10/17/1939	19-21-41	34.55	120.78	C	3.5			
10/17/1939	20-42-43	34.55	120.78	C	4.0			OFF POINT ARGUELLO.
11/02/1939	14-02--?	34.40	120.50	D			F	POINT CONCEPTION LIGHT STATION.
11/04/1939	14-11-33	36.20	120.90	D	3.0		F	SALINAS AND SAN LUCAS.
12/14/1939	03-45-18	36.10	120.00	D	3.0			
12/25/1939	15-36-23	34.28	119.83	C	3.5			
12/28/1939	12-15-38	35.80	120.33	B	5.0		F	OVER AN AREA OF 15,000 SQ. MI. IN WEST-CENTRAL CALIFORNIA, ON THE COAST FROM SANTA CRUZ SOUTH TO POINT ARGUELLO, AND INLAND TO LOST HILLS AND FRESNO. V AT COALINGA, FRESNO, GREENFIELD, PRIEST, SAN ARDO, AND SAN LUCAS, AND IV AT APTOS, ATASCADERO, BIG SUR, CAMBRIA, CARMEL, CASTROVILLE, CAYUCOS, CHUALAR, GONZALES, HOLLISTER, KING CITY, MENDOTA, MONTEREY, MORRO BAY, PARKFIELD, PASO ROBLES, PINNACLES, SALINAS, SAN JUAN BAUTISTA, SAN LUIS OBISPO, SANTA CRUZ, SOLEDAD, TAFT, ETC.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
12/29/1939	04--?--?	36.40	121.25	D			F	PINNACLES.
12/30/1939	15-24-37	35.80	120.33	D	3.5		F	NEAR PARKFIELD. FELT AT SAN LUCAS.
02/27/1940	11-40-25	34.25	119.50	B	3.0			
05/21/1940	10-05-34	35.28	120.48	B	4.0		F	ATASCADERO, CAMBRIA, CAYUCOS, MORRO BAY, PASO ROBLES, PISMO BEACH, AND SAN LUIS OBISPO.
06/16/1940	09-25-04	34.55	120.78	C	4.0		F	OFF POINT ARGUELLO; FELT AT GUADALUPE AND LOS ALAMOS.
06/26/1940	08-56--?	36.08	120.32	C	3.5			
06/28/1940	04-06-42	34.55	120.78	C	3.0			
08/13/1940	22-07-29	36.23	120.32	B	4.0			(DEPT. OF WATER RESOURCES DATA.)
08/31/1940	08-52-46	34.55	120.78	B	3.5			
09/07/1940	10-36-30	36.50	121.50	D	3.5			
09/07/1940	10-38-36	36.50	121.50	D	3.5			
09/07/1940	13-02-06	36.50	121.50	D	4.5		F	CARMEL AND SALINAS.
10/20/1940	22-18-45	34.55	120.78	C	3.0			
11/10/1940	10-25-10	34.35	119.77	C	4.0		F	SANTA BARBARA CHANNEL; FELT AT GOLETA, PARADISE CAMP, AND SANTA BARBARA.
11/17/1940	21-23-43	35.00	119.50	C	3.0			
01/29/1941	08-54-01	34.48	119.53	B	3.0			
02/04/1941	03-19-12	34.55	119.68	C	3.0			
02/04/1941	03-42-09	34.55	119.68	C	3.0			
02/08/1941	15-58-50	34.55	119.68	C	3.5		F	SANTA BARBARA.
02/09/1941	23-49-18	34.50	119.70	C	2.0			
02/11/1941	06-43-30	34.27	119.57	B	3.5		F	SANTA BARBARA.
02/12/1941	20-10-24	34.40	119.70	C	3.0			
02/14/1941	22-19-06	34.40	119.70	C	2.5			
05/07/1941	16-17-34	34.55	120.78	C	3.5			
05/15/1941	03-29--?	36.15	120.35	D			F	COALINGA.
05/15/1941	06--?--?	36.15	120.35	D			F	COALINGA.
07/01/1941	07-50-57	34.33	119.58	A	6.0		F	SANTA BARBARA; FELT OVER AN AREA OF 20,000 SQ. MI. VIII AT CARPINTERIA AND SANTA BARBARA, VII AT GOLETA AND VENTURA, VI AT FILLMORE, KEYSTONE, LOS ALAMOS, OJAI, OXNARD, PORT HUENEME, SANTA PAULA, SUMMERLAND, AND WHEELER SPRINGS, AND V AT ACTON, ALTADENA, ARLIGHT, ARTESIA, ARVIN, BETTERAVIA, BUELLTON, BURBANK, CAMARILLO, CANOGA PARK, CASMALIA, CAYUCOS, CHATSWORTH, COMPTON, EL SEGUNDO, GAVIOTA, GLENDALE, HERMOSA BEACH, INGLEWOOD, LA CRESCENTA, LAGUNA BEACH, LANCASTER, LOMITA, LOMPOC, LONG BEACH, LOS ANGELES, LOS OLIVOS, MAYWOOD, MCKITTRICK, MONTALVO, MOORPARK, NEWBURY PARK, NEWPORT, NIPOMO, NORTH HOLLYWOOD, OCEANO, ORCUTT, PASADENA, PATTIWAY, IRU, POINT CONCEPTION, SANDBERG, SAN NICHOLAS ISLAND, SAN PEDRO, SANTA ANA, SANTA MARIA, SANTA MONICA, SANTA YNEZ, SIERRA MADRE, SIMI, STANTON, SUNLAND, SURF, TEHACHAPI, UPPER SESPE MOUNTAINS, VALYERMO, WHEELER RIDGE, AND WHITTIER.
07/01/1941	07-57--?	34.33	119.58	B	3.0			
07/01/1941	07-58--?	34.33	119.58	B	3.5			

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
07/01/1941	08-05--?	34.33	119.58	B	3.0			
07/01/1941	08-07--?	34.33	119.58	B	3.0			
07/01/1941	08-10--?	34.33	119.58	B	3.0			
07/01/1941	08-13--?	34.33	119.58	B	3.0			
07/01/1941	08-15--?	34.33	119.58	B	3.0			
07/01/1941	08-19--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57 (THIS DATE).
07/01/1941	08-21--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/01/1941	08-25--?	34.33	119.58	B	3.5			
07/01/1941	08-30--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
07/01/1941	08-48--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/01/1941	08-58--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/01/1941	09-05--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/01/1941	09-45--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/01/1941	10-25--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/01/1941	12-37--?	34.33	119.58	B	3.0			
07/01/1941	14-22--?	34.33	119.58	B	3.0			
07/01/1941	18-13--?	34.33	119.58	B	3.0			
07/01/1941	18-20--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/01/1941	19-48--?	34.33	119.58	B	3.0			
07/01/1941	20-15--?	34.33	119.58	B	3.5			
07/01/1941	22-51--?	34.33	119.58	B	3.5			
07/01/1941	23-54--?	34.33	119.58	B	4.5		F	AFTERSHOCK OF 07-50-57; FELT AT FILLMORE, GAVIOTA, LOS ALAMOS, AND SANTA BARBARA.
07/02/1941	-?-17--?	34.33	119.58	B	3.0			
07/02/1941	04-33--?	34.33	119.58	B	3.5			
07/02/1941	08-45--?	34.33	119.58	B	3.5			
07/02/1941	11-41--?	34.33	119.58	B	3.0			
07/02/1941	22-19--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/03/1941	-?-25--?	34.33	119.58	B	3.5			
07/03/1941	19-26--?	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07-50-57.
07/07/1941	01-06--?	34.33	119.58	B	3.0			
07/07/1941	06-25--?	34.33	119.58	B	3.5			
07/08/1941	19-37--?	34.33	119.58	B	3.0			
07/12/1941	16-18--?	34.33	119.58	B	4.5		F	AFTERSHOCK OF 07-50-57; FELT AT FILLMORE, GLENDALE, MONTROSE, SATICOY, SAUGUS, AND WHEELER SPRINGS.
07/12/1941	16-41--?	34.33	119.58	B	3.0			
07/12/1941	21-07--?	34.33	119.58	B	3.0			
07/12/1941	21-12--?	34.33	119.58	B	3.0			
07/13/1941	06-11--?	34.33	119.58	B	3.5			
07/16/1941	23-10--?	34.33	119.58	B	3.0			
07/17/1941	18-31--?	34.33	119.58	B	3.0			
07/27/1941	12-44--?	34.33	119.58	B	3.0			
07/31/1941	13-23--?	34.33	119.58	B	3.0			
08/02/1941	12-31-19	34.33	119.58	C	3.0			
08/09/1941	05-05-24	34.33	119.58	C	3.5			

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
08/12/1941	22-35-24	34.33	119.58	C	3.5			
08/19/1941	10-20-25	34.33	119.58	C	3.0			
08/25/1941	06-58-22	34.33	119.58	C	3.0			
08/27/1941	17-11-02	34.33	119.58	C	3.0			
08/29/1941	08-43-24	34.60	120.30	C	3.0			
09/08/1941	03-12-45	34.33	119.58	B	4.5		F	AFTERSHOCK OF 07/01/41, 07-50-57. V AT GOLETA AND SANTA BARBARA; FELT STRONGLY AT LOS ALAMOS AND SUMMERLAND.
09/08/1941	03-14-23	34.33	119.58	B	4.0		F	TWIN SHOCK OF 03-12-45; SAME "FELT" REPORT.
09/08/1941	04-45-16	34.33	119.58	B	3.5		F	SANTA BARBARA.
09/09/1941	03-23-17	34.33	119.58	B	3.5		F	SANTA BARBARA.
09/09/1941	13-44-46	34.33	119.58	B	3.0			
09/14/1941	01-45-18	34.33	119.58	B	4.0		F	AFTERSHOCK OF 07/01/41, 07-50-57.
09/14/1941	02-20-42	34.33	119.58	B	3.0			
09/15/1941	01-37-02	34.33	119.58	B	4.0		F	GOLETA, SANTA BARBARA, AND SUMMERLAND.
09/15/1941	01-55-18	34.33	119.58	B	3.0			
09/15/1941	02-49-06	34.33	119.58	B	3.5			
09/16/1941	07-27--?	34.33	119.58	B	3.5			
09/25/1941	05-12-56	34.33	119.58	B	4.0		F	GOLETA AND SANTA BARBARA.
10/07/1941	12-05-42	34.33	119.58		3.0			
10/19/1941	23-22-19	34.33	119.58	B	3.0			
11/05/1941	16-36--?	35.00	121.00	D	3.5		F	OFF POINT CONCEPTION; FELT AT SAN SIMEON.
11/17/1941	17-30-27	34.33	119.58	C	3.0			
11/18/1941	18-08-10	34.33	119.58	C	4.0		F	CARPINTERIA AND SANTA BARBARA.
11/21/1941	16-56-03	34.33	119.58	C	4.0		F	GOLETA AND SANTA BARBARA.
11/25/1941	20-01-48	34.33	119.58	C	3.0			
11/28/1941	06-33--?	35.00	120.00	D	3.5			
12/08/1941	-?-29-42	36.00	121.00	D	3.5			
12/22/1941	-?-54-09	35.93	120.48	C	4.0		F	NEAR PARKFIELD-NOT RECORDED ON BERKELEY NETWORK.
01/06/1942	09-20--?	36.15	120.65	D			F	PRIEST VALLEY-RECORDED AT TINEMAHA.
01/06/1942	09-23--?	36.15	120.65	D			F	PRIEST VALLEY-RECORDED AT TINEMAHA.
01/08/1942	18-21-05	34.13	119.58	C	2.5			
01/18/1942	11-35--?	36.40	121.25	D			F	PINNACLES.
01/18/1942	16-50--?	36.40	121.25	D			F	PINNACLES.
02/19/1942	18-33--?	36.40	121.25	D			F	PINNACLES.
03/09/1942	05-57-42	34.30	119.60		3.0			
03/25/1942	-?--?--?	36.40	121.25	D			F	PINNACLES; LIGHT SHOCK.
04/19/1942	04-02-47	34.30	119.60	D	3.0			
04/22/1942	05-32-52	35.30	119.50	D	3.0			
05/08/1942	17-19-13	34.33	119.58	C	3.0			
06/06/1942	06-42-11	34.35	119.85	C	3.0		F	GOLETA.
06/29/1942	21-07-30	35.60	120.80	D	4.0		F	IV AT CAMBRIA AND SAN LUIS OBISPO.
07/19/1942	10-42-07	36.40	121.10	D	1.6			SW OF LLANADA.
09/15/1942	10-36-33	36.13	122.18	B	3.0			SW OF KING CITY.
10/04/1942	10--?--?	34.60	120.00	D			F	IV AT SANTA YNEZ PEAK.
10/11/1942	23-48-23	36.48	121.40	C	1.9			FORESHOCK OF QUAKE ON OCTOBER 15 AT 13-53-56.
10/15/1942	13-53-56	36.48	121.40	B	4.3		F	IV AT BIG SUR, GONZALES, GREENFIELD, HOLLISTER, SALINAS, AND SOLEDAD.

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
10/18/1942	08--?--?	36.00	121.00	D			F	CAMBRIA.
10/18/1942	12-01-42	36.00	121.00	D			F	V AT CAMBRIA.
10/19/1942	10-23--?	34.50	119.65	D			F	V AT SANTA BARBARA.
10/20/1942	10-25--?	36.00	121.00	D			F	V AT CAMBRIA.
10/26/1942	01-09-01	36.40	121.60	D	1.8			DEPTH ABOUT 12 KM.
12/02/1942	11-46--?	34.33	119.58	C	3.5		F	V AT SANTA BARBARA.
12/06/1942	16-57-49	35.93	120.48	C	3.5			
01/24/1943	06-55-57	34.33	119.58	C	3.0			
03/16/1943	09-27-47	34.28	119.60	C	3.0			
04/01/1943	13-39-66	34.68	121.75	B	3.1			OFF COAST, WEST OF POINT ARGUELLO.
06/29/1943	02-50-53	36.50	121.10	D	3.1			SW OF LLANADA.
07/05/1943	16-30-29	36.38	121.83	C	3.9			SOUTH OF SALINAS.
07/15/1943	-?-44-42	36.00	120.15	D			F	NEAR AVENAL.
08/07/1943	16-59-47	34.28	119.57	C	3.5			
08/12/1943	15-56-33	34.75	121.15	C	3.5			
08/27/1943	08-16-53	34.43	119.87	C	3.5		F	IV AT SANTA BARBARA.
09/13/1943	12-40--?	35.65	120.65	D			F	PASO ROBLES, POSSIBLY GUN FIRE.
09/18/1943	17-07-16	34.37	119.58	C	3.0			
10/22/1943	12--?--?	36.00	120.90	D			F	SAN ARDO; 2 SHOCKS.
10/26/1943	22-10--?	34.75	120.25	D			F	LOS ALAMOS.
10/31/1943	17-54-06	35.80	120.40	D	3.5			
10/31/1943	20--?--?	36.40	121.00	D			F	LONOAK.
11/08/1943	11-33-46	36.00	119.92	C	3.0		F	KETTLEMAN HILLS; FELT AT AVENAL.
11/30/1943	21-57-18	36.30	120.50	D	4.0			NEAR COALINGA.
12/01/1943	04-51--?	36.50	121.10	D			F	SAN BENITO.
01/04/1944	18-06-40	34.10	120.40	D	3.3			
02/18/1944	16-29-37	34.10	119.52	C	2.1			
02/21/1944	13--?-11	36.17	120.93	C	3.8			WEST OF PRIEST.
03/06/1944	21-32-16	36.40	121.25	C	3.4			NE OF PARAISO.
04/03/1944	02-33--?	34.50	121.40	D	4.0			OFF POINT ARGUELLO.
04/12/1944	15-33-10	34.27	119.52	C	4.0		F	OFF CARPINTERIA; FELT EAST OF SANTA BARBARA.
06/13/1944	08-27-32	34.67	120.50	C	4.6		F	NEAR LOMPOC; VI AT LOS ALAMOS AND IV AT SANTA MARIA.
06/13/1944	08-46-43	34.67	120.50	C	4.0		F	AFTERSHOCK OF 08-27-32.
06/13/1944	11-07-24	34.67	120.50	C	4.4		F	AFTERSHOCK OF 08-27-32.
07/11/1944	22-33--?	36.50	121.10	D			F	SAN BENITO.
07/15/1944	19-22-37	34.37	119.62	C	3.1			
09/04/1944	02-47-46	35.00	120.00	D	3.4		F	LOS ALAMOS.
09/04/1944	05--?--?	35.00	120.00	D			F	LOS ALAMOS.
09/15/1944	14-12-42	34.70	120.20	D	2.6		F	KETTLEMAN HILLS REGION; FELT AT PARKFIELD.
09/18/1944	01-30--?	35.00	120.00	D	3.5			
11/04/1944	08-12-01	36.33	120.08	C	3.4			
11/08/1944	16-12-36	34.33	119.72	C	3.1			
11/28/1944	10-36--?	35.80	120.00	D	3.3			
11/30/1944	18-53-15	34.72	120.42	C	4.1		F	NEAR LOS ALAMOS; FELT AT LOS ALAMOS AND LOS OLIVOS.
12/02/1944	15-09-12	35.80	120.00	D	3.2			
01/27/1945	17-50-31	34.75	120.67	C	3.9			
02/25/1945	20-18-38	36.00	120.48	C	3.6			

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
04/15/1945	22-59-57	34.13	119.83	C	3.1			
06/11/1945	03-54-52	34.50	120.80	D	3.2			
07/11/1945	16-13--?	35.67	121.25	D	4.0		F	NEAR SAN SIMEON; IV AT CAMBRIA.
07/28/1945	02-33-48	34.70	120.10	D	4.2		F	EAST OF SANTA MARIA; IV AT LOS ALAMOS.
09/04/1945	12-38-31	34.32	119.63	C	3.2			
09/07/1945	11-34-20	35.83	120.75	C	4.2		F	NEAR BRADLEY; IV AT CAMBRIA, PARKFIELD, PASO ROBLES, AND SAN MIGUEL.
11/04/1945	-?-46-34	36.38	121.28	C	3.3			NEAR SOLEDAD.
02/09/1946	02-55-28	34.33	119.92	C	2.5			
02/10/1946	11-01-19	36.50	121.00	D	4.2		F	OVER AN AREA OF 2000 SQ. MI. IN WEST CENTRAL CALIFORNIA. V AT SAN BENITO, AND IV AT BIG SUR, CHUALAR, GREENFIELD, HOLLISTER, LONOAK, SAN LUCAS, SAN MIGUEL, SANTA CRUZ, AND SOLEDAD.
02/15/1946	12-07-00	35.90	121.45	D			F	PARKFIELD; LIGHT SHOCK.
04/19/1946	12-50--?	34.00	120.40	D			F	SANTA MARIA.
07/08/1946	19-59-44	34.83	120.53	C	3.2			
08/06/1946	04-55-07	34.95	120.18	C	2.8		F	E OF SANTA MARIA; FELT AT LOS ALAMOS.
09/02/1946	10-09-47	34.18	119.62	C	3.0			
09/09/1946	11-20--?	34.90	120.40	D			F	SANTA MARIA.
09/19/1946	06-35-44	35.83	119.67	C	3.2			
10/24/1946	18-26-50	34.37	119.62	C	2.7			
11/22/1946	09-47-59	34.83	120.68	D	3.0			
11/27/1946	14-44-51	35.50	120.92	C	4.3		F	NEAR CAYUCOS; V AT MORRO BAY AND SANTA MARGARITA; ALSO FELT ATASCADERO, LOS ALAMOS, PISMO BEACH, AND SAN LUIS OBISPO.
12/13/1946	-?-40-01	34.17	119.53	C	3.5			
01/06/1947	21-05-47	35.85	120.47	C	3.6			
01/13/1947	19-38-31	34.32	119.65	C	2.2			
01/14/1947	20-49-27	34.23	119.65	C	2.7			
01/18/1947	12--?-42	34.20	121.50	D	3.3			
01/19/1947	19-32--?	35.60	120.30	D	3.1		F	PASO ROBLES.
02/05/1947	06-14--?	38.23	120.65	B	5.0		F	VI AT LONOAK, V AT COALINGA, IDRIA, AND KING CITY, AND IV AT BIG SUR, HURON, PARKFIELD, SAN ARDO, AND WESTHAVEN.NEAR COALINGA - AFTERSHOCK OF 2/5/47 OF 06-14--?.
02/25/1947	11-45-18	36.20	120.50	D	4.2			
03/23/1947	16-04-51	35.15	121.30	D	3.7			
03/27/1947	09-16-46	35.00	121.00	D	4.2		F	OFF COAST; V AT LOMPOC.
04/29/1947	07-44--?	34.33	119.55	C	3.2			
06/25/1947	18-39-53	34.25	119.50	C	3.1		F	NEAR CARPINTERIA.
06/25/1947	13-41-21	34.25	119.50	C	3.6		F	NEAR CARPINTERIA.
06/25/1947	18-48-26	34.25	119.50	C	2.5			
06/25/1947	20-55-16	34.25	119.50	C	3.2		F	NEAR CARPINTERIA.
06/25/1947	20-55-54	34.25	119.50	C	3.8			
07/13/1947	05-35--?	36.08	121.10	D	3.4			SOUTH OF KING CITY.
07/14/1947	05-40-06	35.92	119.92	C	4.0		F	KETTLEMAN HILLS; IV AT KETTLEMAN CITY.
10/6/1947	18-39--?	36.50	121.23	A	3.2			EAST OF GONZALES.
12/14/1947	05-42--?	36.45	121.08	B	3.4			SW OF LLANADA.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
12/16/1947	09-21-03	36.25	120.77	C	3.6		F	IV AT SAN LUCAS.
12/18/1947	19-30-06	36.12	120.90	D			F	IV AT PARKFIELD.
12/25/1947	06-05--?	35.60	121.10	D			F	CAMBRIA.
12/25/1947	06-20--?	35.60	121.10	D			F	CAMBRIA.
01/11/1948	05-37-28	36.43	121.48	B	4.3		F	IV AT HOLLISTER.
02/01/1948	17--?-54	34.42	119.92	C	3.0			
02/15/1948	08-04-06	35.88	120.37	A	3.4			EAST OF PARKFIELD.
03/07/1948	07-46-22	36.10	120.40	D	3.0			NEAR COALINGA.
03/10/1948	23-24-34	34.43	119.73	C	2.6			
03/18/1948	09-35-05	34.40	119.60	C	2.8			
03/29/1948	02-40--?	35.85	121.40	D			F	IV AT HOLLISTER.
04/23/1948	15-23-43	34.10	120.93	C	3.7			
05/05/1948	06-47-06	34.45	119.72	B	2.7			
05/07/1948	12--?-32	36.20	121.90	D	3.0			WEST OF PRIEST.
05/09/1948	11-10--?	34.75	120.25	D			F	V AT LOS ALAMOS.
07/14/1948	11-05-37	34.67	120.92	C	3.2			
07/17/1948	05-26-31	34.55	120.05	C	3.4			
07/28/1948	01-30-57	36.05	120.53	C	3.1			SE OF PRIEST.
07/29/1948	13-16-23	35.12	120.47	C	3.4			
08/04/1948	10-22-57	35.92	120.33	C	3.6			
09/03/1948	23-42-26	34.33	119.53	C	3.9		F	SANTA BARBARA.
09/17/1948	15-41-01	34.40	119.62	C	3.1			
10/27/1948	03-05--?	34.75	120.25	D			F	IV AT LOS ALAMOS.
10/29/1948	03-04-59	34.10	120.40	D	3.4		F	V AT ARLIGHT AND POINT ARGUELLO LIGHT STATION.
11/02/1948	19-06-45	34.37	119.58	C	2.9			
12/04/1948	06-44-20	34.43	119.72	C	2.8			
12/04/1948	23-32-51	34.42	119.50	C	2.7			
12/20/1948	04-42-46	35.80	121.50	C	4.5		F	OFF COAST, NEAR PIEDRAS BLANCAS POINT; III AT SAN SIMEON.
12/31/1948	14-35-46	35.67	121.40	B	4.6		F	ALONG THE COAST FROM LOMPOC TO MOSS LANDING; VI AT SAN SIMEON AND V AT CAYUCOS, CRESTON, MOSS LANDING, AND PIEDRAS BLANCAS LIGHT STATION.
01/25/1949	04-29--?	34.90	120.40	D			F	V AT ORCUTT AND SANTA MARIA.
03/27/1949	06-31-16	34.25	119.62	C	2.6			
04/06/1949	14-07--?	35.00	120.00		2.6			
04/08/1949	13-17-07	34.60	120.35	C	3.2		F	IV AT LOS ALAMOS.
04/14/1949	01-46-12	34.28	119.52	C	2.6			
04/23/1949	09-18-09	36.38	121.37	C	3.7			NORTH OF PARAISO.
05/06/1949	04-23-46	34.50	121.00	C	3.4			
05/10/1949	06-20--?	35.90	120.40	D			F	SANTA MARIA - SLIGHT.
05/10/1949	11--?--?	35.90	120.40	D			F	SANTA MARIA - SLIGHT.
05/16/1949	03-01-03	34.72	120.02	C	3.2			
05/17/1949	23-57-55	35.63	121.15	D	4.1		F	IV AT SAN SIMEON.
06/27/1949	10-35-31	35.80	121.10	D	4.5		F	V AT SAN ARDO AND SAN MIGUEL; ALSO FELT AT PASO ROBLES, SAN LUIS OBISPO, AND SANTA MARGARITA.
07/21/1949	16-50--?	36.15	120.35	D			F	IV AT COALINGA.
07/21/1949	17-01--?	36.15	120.35	D			F	IV AT COALINGA.
07/24/1949	03-04-05	36.00	120.00	D	2.3			SE. KINGS C0. AFTER SHOCK AT 06-26--?, MAG. 2.0.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
07/27/1949	18-21-35	34.53	120.37	C	3.6			
08/01/1949	-?-07-24	36.90	121.20	D	3.0			SOUTH OF KING CITY.
08/07/1949	01-38-43	36.50	121.50	D	2.3			NO. MONTEREY CO.
08/10/1949	09-17-39	36.50	121.00	C	2.6			CENTRAL SAN BENITO CO.
08/22/1949	03--?--?	36.00	120.00	D			F	KETTLEMAN HILLS. FIFTH SHOCK IN 2 WEEKS.
08/26/1949	16-52-32	34.50	120.50	D	4.2		F	NEAR POINT CONCEPTION. VI AT ARLIGHT AND SURF. IV AT GUADALUPE, LOMPOC, AND LOS ALAMOS.
08/27/1949	14-15--?	34.50	120.50	D			F	ARLIGHT. SLIGHT SHOCK.
08/27/1949	14-51-46	34.50	120.50	D	4.9		F	NEAR POINT CONCEPTION. VI AT ARLIGHT, LOMPOC, AND SUDDEN. V AT COSMALIA, LOS ALAMOS, NIPOMO, SANTA BARBARA, AND SURF.
08/29/1949	12-07-20	36.00	120.10	D	3.0		F	IV IN AVENAL AND KETTLEMAN CITY.
10/28/1949	08-07-02	36.80	120.90	C	2.6			NW OF PRIEST.
11/17/1949	05-06-06	34.80	120.70	D	2.8		F	IV AT SANTA MARIA.
12/28/1949	09-17-12	36.20	120.70	D	2.6			NEAR PRIEST.
02/19/1950	08-29-44	34.50	120.70	D	3.5			
03/09/1950	23-43-19	36.35	121.22	C	3.2		F	NORTH OF KING CITY; V AT ROBLES DEL RIO.
03/22/1950	01-31-57	35.97	120.63	C	3.7			
03/29/1950	12-43-20	35.97	120.88	D	3.5			
04/15/1950	11-56-32	35.75	119.62	C	4.6		F	NE OF LOST HILLS; V AT ASH MOUNTAIN, (SEQUOIA NATIONAL PARK), KERNVILLE, AND SHAFTER, AND IV AT BUTTONWILLOW, JAWBONE AQUEDUCT STATION, LOST HILLS, THREE RIVERS, AND VISALIA.
04/21/1950	13-17-29	34.38	119.58	B	3.0		F	IV AT SANTA BARBARA.
04/26/1950	07-23-29	35.20	120.60	C	3.5		F	V AT SANTA MARIA; ALSO FELT AT ORCUTT.
04/26/1950	07-38--?	35.20	120.60	D			F	SANTA MARIA.
05/21/1950	18-59-03	34.57	119.63	C	2.6			
05/21/1950	19-26-48	35.88	119.73	C	3.4			
05/24/1950	01-46-57	36.43	120.77	C	2.9			SE OF LLANADA.
07/13/1950	15-01-47	34.33	119.50	C	2.8		F	OFF CARPINTERIA; V AT MONTECITO; ALSO FELT AT SANTA BARBARA AND NEARBY AREAS.
08/01/1950	21-08-43	36.20	122.23	B	2.0			OFF COAST, WEST OF BIG SUR.
08/02/1950	06-50-48	34.67	120.63	C	3.3			
08/23/1950	09-10--?	34.40	119.50	D			F	IV AT RINCON POINT; FELT AT CARPINTERIA.
09/24/1950	04-45--?	34.50	120.50	D			F	III AT ARLIGHT.
09/24/1950	12-23--?	34.22	119.58	C	3.3			
09/24/1950	21-51-44	36.20	120.50	D	2.9			EAST OF PRIEST.
10/20/1950	08-23-25	36.33	121.07	C	2.7			SOUTH OF KING CITY.
11/21/1950	04-30--?	30.90	120.40	D			F	SANTA MARIA.
03/02/1951	02-13-44	36.10	120.60	D	3.1			SE OF PRIEST
03/04/1951	13-32--?	34.90	120.40	D			F	IV AT SANTA MARIA; 2 SHOCKS.
03/05/1951	09-50--?	34.90	120.40	D			F	IV AT SANTA MARIA.
03/10/1951	05-35--?	34.50	120.50	D			F	IV AT ARLIGHT.
03/15/1951	13-50-43	35.02	120.48	C	3.8		F	IV AT LOS ALAMOS.
03/26/1951	06-07-34	34.62	119.50	C	3.5		F	IV AT OJAI AND SUMMERLAND; FELT AT VENTURA.
05/04/1951	03-28-36	36.20	120.20	D	3.1			FORESHOCK OF QUAKE AT 20-08-10.
05/04/1951	20-08-10	36.20	120.20	D	3.2			EAST OF COALINGA.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
05/06/1951	03-18-03	36.40	120.40	D	2.8			NORTH OF COALINGA.
05/25/1951	05-11-18	36.30	120.30	D	3.1			NORTH OF COALINGA.
05/29/1951	05-08-24	35.08	119.65	C	3.2		F	ELKHORN HILLS; IV IN CUYAMA VALLEY.
05/31/1951	06-28-42	36.30	120.20	D	2.7			NE OF COALINGA.
06/16/1951	19-01-17	34.40	120.08	C	3.3			
06/19/1951	06-13-47	35.97	120.42	C	3.6			SOUTH OF COALINGA.
07/01/1951	-?-13-19	36.20	120.95	B	3.2			EAST OF KING CITY.
07/07/1951	05-53-33	34.75	120.75	C	3.5			
08/02/1951	05-09-25	36.35	121.27	B	3.9		F	NEAR GREENFIELD; IV AT BIG SUR, AT 7 MI. S OF HOLLISTER, AND ROBLES DEL RIO.
08/08/1951	19-42--?	34.80	120.40	D			F	IV AT ORCUTT.
08/09/1951	09-20-48	36.15	121.75	C	2.2			NEAR BIG SUR.
08/25/1951	01-04-10	36.47	121.15	B	3.1			SW OF LLANADA.
08/28/1951	22-12-27	34.60	121.00	D	3.5		F	OFF POINT ARGUELLO; III AT LOS ALAMOS.
09/18/1951	02-30--?	36.25	121.80	D			F	IV AT BIG SUR.
09/19/1951	22-50--?	36.25	121.80	D			F	IV AT BIG SUR.
10/03/1951	13-44-33	35.92	120.52	C	3.8			
10/26/1951	16-25-40	34.42	119.73	C	3.0			
11/17/1951	03-19-48	34.70	120.50	D	2.5		F	NEAR LOMPOC; III AT LOS ALAMOS.
11/25/1951	23-15-39	35.33	119.50	B	3.8			
12/20/1951	04-13-06	36.00	120.05	C	3.7			
01/24/1952	-?-32-38	34.18	119.88	C	2.7			
01/30/1952	11-05-33	36.30	121.13	C	2.7			NEAR KING CITY.
01/31/1952	20-09-02	34.18	119.53	C	2.6			
01/31/1952	21-33-12	36.40	121.40	C	3.6			SOUTHEAST CF SOLEDAD.
02/09/1952	22-26-39	34.07	120.75	C	3.6			
03/25/1952	09-18-50	34.18	120.95	C	3.6			
04/02/1952	05-21-10	36.45	121.25	B	3.1			NEAR SOLEDAD.
05/07/1952	05-45--?	34.40	119.60	D			F	IV AT MONTECITO AND SUMMERLAND.
06/18/1952	04--?--?	34.60	120.65	D			F	IV AT POINT ARGUELLO LIFEBOAT STATION.
07/01/1952	15-29-24	34.30	119.80	D	3.1			
07/15/1952	06-07-55	36.42	121.00	C	2.5			ABOUT 15 MI. NE OF KING CITY.
07/27/1952	18-15-14	34.18	119.70	C	3.1			
07/27/1952	20-20-35	34.22	119.67	C	3.2			
07/27/1952	20-30-05	34.20	119.67	B	3.5			
08/07/1952	19-l6-12	34.33	120.68	C	3.6		F	OFF POINT CONCEPTION; IV AT LOS ALAMOS.
08/11/1952	21-42-29	34.17	119.67	C	3.1			
08/23/1952	20-10--?	34.85	119.50	D			F	IV AT VENTUCOPA - SECOND SHOCK AT 21-20--?.
08/30/1952	14-58-11	34.35	119.62	B	3.3			
09/01/1952	12-03--?	34.30	119.60	D	3.0			
09/12/1952	21--?-15	34.25	119.70	C	3.0			
09/14/1952	11-46-06	35.90	120.30	D	3.3			
10/09/1952	14-46-02	34.20	122.20	D	4.6			(DEPT. OF WATER RESOURCES DATA)

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
11/22/1952	07-46-37	35.73	121.20	B	6.0		F	6 MI. NORTH OF SAN SIMEON, NEAR BRYSON; FELT OVER AN AREA OF 20,000 SQ. MI. VII AT BRADLEY AND BRYSON, VI AT ARROYO GRANDE, ATASCADERO, CAMBRIA, CAMP COOKE, CARMEL VALLEY, CAYUCOS, CHUALAR, CRESTON, GORDA STATION, GUADALUPE, HARMONY, HEARST RANCH, KING CITY, LOCKWOOD, LONOAK, MORRO BAY, OCEANO, PARKFIELD, PASO ROBLES, PISMO BEACH, SALINAS, SAN ARDO, SAN LUIS OBISPO, SAN SIMEON, SANTA MARGARITA, AND TEMPLETON, AND V AT AVENAL, BEN LOMOND, BIG SUR, BUELLTON, BUTTONWILLOW, CARUTHERS, CASMALIA, CHOLAME, COALINGA, CORCORAN, DOS PALOS, HOLLISTER, HUASNA, KETTLEMAN CITY, LOMPOC, LOST HILLS, LUCIA, MARICOPA, MONTEREY, MOSS LANDING, NIPOMO, ORCUTT, PAICINES, RIVERDALE, SAN MIGUEL, SANTA CRUZ, SANTA MARIA, SHAFTER, STRATFORD, SUDDEN, AND SURF.
11/22/1952	08-02-40	35.73	121.20	B	3.2			SAN SIMEON AFTERSHOCK.
11/22/1952	08-29-47	35.73	121.20	B	3.1			SAN SIMEON AFTERSHOCK.
11/22/1952	08-53-04	35.73	121.20	B	3.4		F	SAN SIMEON AFTERSHOCK; IV AT ARVIN, CALIENTE, JOLON, LOST HILLS, MALIBU, MARICOPA, MCFARLAND, MIRACLE HOT SPRINGS, MORGAN HILL, NIPOMO, PISMO BEACH, AND SHAFTER.
11/22/1952	11-08-44	35.73	121.20	B	3.1			SAN SIMEON AFTERSHOCK.
11/22/1952	11-45-31	35.73	121.20	B	3.1			SAN SIMEON AFTERSHOCK.
11/22/1952	12-34-44	35.73	121.20	B	3.0			SAN SIMEON AFTERSHOCK.
11/22/1952	13-37-31	35.73	121.20	B	4.0		F	SAN SIMEON AFTERSHOCK; V AT CALIENTE, MIRACLE HOT SPRINGS, AND WHEELER SPRINGS.
11/22/1952	19-25-21	35.73	121.20	B	3.9			SAN SIMEON AFTERSHOCK.
11/22/1952	19-36-27	35.70	121.20	D	3.1			SAN SIMEON AFTERSHOCK.
11/22/1952	23-39-20	35.70	121.20	D	3.1			SAN SIMEON AFTERSHOCK.
11/23/1952	09-22-35	36.00	120.90	D	3.2			20 MI. SE OF KING CITY.
11/23/1952	18-40-19	35.67	121.17	C	4.2			SAN SIMEON AFTERSHOCK.
11/25/1952	19-17-54	36.20	120.00	D	3.2			
11/25/1952	20-14-45	35.73	121.20	C	3.6			SAN SIMEON AFTERSHOCK.
11/25/1952	21-59-17	35.73	121.20	C	4.4			SAN SIMEON AFTERSHOCK.
11/26/1952	13-32-09	35.73	121.20	C	3.5			SAN SIMEON AFTERSHOCK.
11/27/1952	17-37-05	35.70	121.20	D	3.3			SAN SIMEON AFTERSHOCK.
11/28/1952	10-22-33	35.90	121.20	D	3.0			SAN SIMEON AFTERSHOCK.
11/29/1952	16--?--?	36.00	121.15	D			F	IV AT JOLON - TIME MAY BE 04--?--? ON 11/30/1952.
11/29/1952	23-15-58	35.70	121.20	D	3.5			SAN SIMEON AFTERSHOCK.
12/05/1952	01-05-57	36.50	120.70	D	3.0			14 MI. SE OF LLANADA.
12/06/1952	23-50--?	35.66	120.65	D			F	IV AT PASO ROBLES; FELT AT ADELAIDA.
12/12/1952	-?-27-07	36.40	120.97	B	3.0		F	17 MI. NE OF KING CITY; III AT LONOAK.
12/25/1952	16-44-10	34.40	121.40	D	3.6			
01/12/1953	13-05-18	35.80	121.10	D	3.2			14 MI. NE OF SAN SIMEON.
01/24/1953	-?--?--?	35.90	121.00	D			F	TEN SHOCKS REPORTED FELT FROM 1/24 TO 1/31 AT BRYSON (E. WEFERLING RANCH).
01/29/1953	20-31-19	35.80	121.10	D	3.1			14 MI. NE OF SAN SIMEON.

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
02/03/1953	14-50-18	35.47	120.75	C	4.1		F	12 MI. NNW OF SAN LUIS OBISPO; V AT ATASCADERO, BRYSON, CRESTON, MORRO BAY, SANTA MARGARITA, AND IV AT CAYUCOS, PASO ROBLES, SAN LUIS OBISPO, AND TEMPLETON.
02/05/1953	02-54-12	35.90	121.00	D	2.8		F	IV AT BRYSON (E. WEFERLING RANCH).
02/15/1953	15-30--?	35.90	121.00	D			F	BRYSON (E. WEFERLING RANCH).
02/17/1953	08-06--?	35.90	121.00	D			F	III AT BRYSON (PLEYTO SCHOOL) - SEVERAL MILD SHOCKS REPORTED FELT DAILY SINCE SHOCK OF 11/21/52, 23-46-38 (NOT LISTED).
02/18/1953	14-10--?	35.90	121.00	D			F	BRYSON (E. WEFERLING RANCH) - MILD.
03/01/1953	18-53--?	35.90	121.00	D			F	V AT BRYSON.
03/04/1953	03-40--?	35.90	121.00	D			F	BRYSON (PLEYTO SCHOOL) - LIGHT.
03/15/1953	21--?-32	34.87	121.53	C	3.7			
03/18/1953	05-03--?	35.90	121.00	D			F	III AT BRYSON (PLEYTO SCHOOL).
03/29/1953	17-19-48	35.90	120.20	D	3.7			
04/08/1953	-?-59-20	34.80	120.60	D	3.6		F	NEAR CASMALIA; IV AT LOS ALAMOS.
04/15/1953	-?-29-10	35.83	121.07	C	3.1		F	14 MI. NNE OF SAN SIMEON; IV AT BRYSON.
04/15/1953	05-30--?	35.90	121.00	D			F	BRYSON - LIGHT.
04/29/1953	05-26-53	36.00	121.15	C	3.5		F	14 MI. S OF KING CITY - USCGS GIVES TIME AS 05-26-52, LOCATION AS N35.8 121.2W, REPORT AS NEAR BRYSON; V AT PLEYTO SCHOOL. 22 MI. NE OF KING CITY.
05/01/1953	22-16-51	36.40	120.80	D	3.0			
05/08/1953	08-15--?	34.65	120.45	D			F	III AT LOMPOC.
05/14/1953	03-36--?	36.00	120.00	D	3.3			
05/14/1953	09-36-09	35.75	121.08	B	3.7		F	9 MI. NE OF SAN SIMEON - USCGS GIVES N35.52 121.28W, OFF CAMBRIA; V AT BRYSON.
05/15/1983	07-15--?	35.90	121.00	D			F	IV AT BRYSON (PLEYTO SCHOOL).
05/28/1953	03-51-13	35.88	120.50	B	4.3		F	20 MI. SW OF COALINGA; IV AT PASO ROBLES AND III AT SAN MIGUEL.
05/28/1953	07-58-33	35.88	120.50	C	3.5		F	AFTERSHOCK OF 03-51-13; FELT AT SAN MIGUEL.
05/29/1953	10-20-16	35.90	121.20	D	2.9			20 MI. SOUTH OF KING CITY.
05/31/1953	23-51-17	36.10	120.40	D	3.2			NEAR COALINGA.
06/04/1953	11-40--?	35.50	120.50	D			F	V AT CRESTON - PROBABLY A BLAST.
06/06/1953	20-26-33	36.00	120.30	D	2.9			10 MI. SOUTH OF COALINGA.
06/19/1953	11-24-50	36.30	120.70	D	2.8			20 MI. EAST OF KING CITY.
06/22/1953	15-22-35	35.93	120.38	C	4.3		F	15 MI. WSW OF COALINGA; FELT AT COALINGA AND PASO ROBLES.
07/01/1953	22-17-20	34.60	121.35	D	3.2		F	OFF POINT ARGUELLO; IV AT POINT ARGUELLO LIGHT STATION.
08/14/1953	01-40-06	36.30	120.30	D	2.9			8 MI. NORTH OF COALINGA.
08/14/1953	09-22-50	36.50	121.20	D	2.3			20 MI. NORTH OF KING CITY.
09/02/1953	09-41-20	35.90	120.80	D	3.0			30 MI. SE OF KING CITY.
09/03/1953	11--?--?	35.50	120.50	D			F	CRESTON.
09/04/1953	03-54-25	35.90	120.32	C	3.5		F	15 MI. SOUTH OF COALINGA; IV AT CRESTON AND PASO ROBLES.
09/22/1953	07-36-58	36.40	121.20	D	3.8			NORTH OF KING CITY.
09/23/1953	06-21-51	35.70	121.10	D	3.5		F	NEAR SAN SIMEON; V AT BRYSON.
10/01/1953	03-56-15	36.25	121.83	C	3.4		F	25 MI. S OF MONTEREY; IV AT BIG SUR.
10/16/1953	03-45-35	35.95	120.53	C	3.4			SOUTHWEST OF COALINGA.
10/21/1953	16-02-38	34.32	119.70	B	4.0		F	OFF SANTA BARBARA; V AT SANTA BARBARA AND VICINTIY, AND IV AT GOLETA AND LOS PRIETOS RANGER STATION.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
10/24/1953	13-24-30	35.90	121.10	D	3.6			SOUTH OF KING CITY.
10/25/1953	08-43-25	36.50	121.50	D	3.2			NORTHWEST OF KING CITY.
11/02/1953	-?-52-06	36.40	121.30	D	3.4			NORTHWEST OF KING CITY.
01/04/1954	23-03-11	36.12	120.63	B	3.2			14 MI. WEST OF COALINGA.
01/05/1954	-?-23-23	35.93	120.00	C	3.0			SOUTHEAST OF COALINGA.
01/15/1954	22-02-18	36.50	121.23	C	2.6			NORTH OF KING CITY.
01/24/1954	19-06-45	35.78	121.08	C	3.1			30 MI. SOUTH OF KING CITY.
01/26/1954	09-43-22	34.50	120.33	C	3.8		F	W OF LAS CRUCES; III AT SANTA YNEZ.
03/09/1954	19-55-30	35.90	120.50	D	3.6		F	16 MI. SSE OF COALINGA; FELT NEAR PARKFIELD.
03/15/1954	22-43-50	35.00	120.70	D	3.4			
03/18/1954	12-07-53	35.40	120.90	D	3.0			NORTHWEST OF SAN LUIS OBISPO.
04/01/1954	12-04-38	36.05	120.20	C	3.3			6 MI. SOUTHEAST OF COALINGA.
04/09/1954	07-38-23	35.78	121.08	D	3.1			10 MI. NORTHEAST OF SAN SIMEON.
04/09/1954	14-58--?	35.90	121.00	D			F	IV AT BRYSON (PLEYTO SCHOOL); SECOND SHOCK REPORTED FELT AT 23-40--?.
04/20/1954	09-32-18	36.63	121.03	D	2.6			12 MI. NORTHEAST OF KING CITY.
05/10/1954	14-24-28	36.08	120.80	C	3.1		F	NE OF SAN ARDO - SLIGHT AT KING CITY.
06/04/1954	11-58-38	36.45	121.13	C	3.5			16 MI. SOUTHWEST OF LLANADA.
07/05/1954	07-25-39	36.20	121.80	D	3.2			30 MI. SOUTH OF MONTEREY.
08/13/1954	13-36-44	34.25	120.50	C	3.2			
08/13/1954	13-44-23	34.25	120.50	C	3.2			
08/19/1954	11-45-08	34.25	120.50	C	3.2			
08/21/1954	22-50-49	35.47	121.33	B	3.3			40 MI. SOUTH OF HOLLISTER.
08/22/1954	08-34-40	34.33	120.67	C	3.8			
08/22/1954	12-36-07	34.33	120.67	C	3.8			
12/22/1954	21-12-24	36.00	121.00	D	3.7		F	SE OF KING CITY; III AT KING CITY.
12/22/1954	21-12-28	36.00	120.60	D	3.8			
01/07/1955	14-50-22	34.40	119.60	D	3.0			
01/18/1955	13-30--?	36.20	121.85	D			F	IV REPORTED FELT AT BIG SUR.
02/05/1955	07-10-19	35.80	121.40	C	3.3			WEST OF SAN SIMEON.
02/27/1955	03-17-51	36.25	120.83	C	2.9		F	EAST OF KING CITY; IV IN PRIEST VALLEY.
03/02/1955	03-30--?	36.00	120.70	D			F	IV REPORTED FELT IN INDIAN VALLEY.
03/02/1955	15-59-01	36.00	120.93	B	4.8		F	18 MI. SE OF KING CITY; FELT OVER 7000 SQ. MI. OF W CENTRAL CALIF. USCGS MAG. 5.1. VI AT ADELAIDA, BRYSON, INDIAN VALLEY, SAN ARDO, SAN LUCAS, AND TEMPLETON.
03/02/1955	20-02-53	36.00	120.93	B	3.7			AFTERSHOCK OF QUAKE AT 15-59-01.
03/05/1955	08-46-36	36.10	121.10	D	2.0			SOUTH OF KING CITY.
03/06/1955	10-47-32	35.92	120.90	D	3.2			SOUTHEAST OF KING CITY.
04/04/1955	20-56-56	36.08	121.00	C	3.2			SOUTHEAST OF KING CITY.
04/27/1955	09-28-08	35.90	121.20	D	2.8			SOUTHWEST OF KING CITY.
05/14/1955	20--?--?	36.35	121.85	D			F	IV REPORTED FELT AT BIG SUR AND SANTA CRUZ.
05/16/1955	18-22-52	35.92	120.58	C	3.0			SOUTHWEST OF COALINGA.
05/30/1955	09-38-29	36.25	121.25	C	3.0			WEST OF KING CITY.
05/31/1955	01-45-53	36.40	121.25	B	3.0			NORTH OF KING CITY.
06/13/1955	14-55-12	36.30	121.30	C	2.5			NORTH OF KING CITY.
06/19/1955	05-36-33	35.62	121.10	C	2.5			SOUTHEAST OF SAN SIMEON.
07/06/1955	11-29-18	36.50	121.42	C	3.4			SOUTH OF HOLLISTER.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
07/06/1955	13-18-53	36.50	121.50	D	2.7			SOUTH OF HOLLISTER.
07/28/1955	12-07-52	36.50	121.40	D	2.6			SOUTH OF HOLLISTER.
09/21/1955	18-06-52	36.50	121.00	D	3.3			NORTH OF KING CITY.
10/22/1955	07-04-18	36.22	120.33	C	4.2		F	V AT AND 14 MI. NW OF COALINGA.
11/02/1955	19-40-06	36.00	120.92	A	5.2		F	55 MI. NNW OF SAN LUIS OBISPO; FELT OVER 7000 SQ. MI. OF COASTAL W CENTRAL CALIF. VI AT ADELAIDA RD. (14 MI. W OF PASO ROBLES), BRYSON, KING CITY, PASO ROBLES, SAN ARDO, SAN LUCAS, AND SAN MIGUEL.
11/18/1955	09-03-30	35.90	120.50	D	2.9			SOUTHWEST OF COALINGA.
11/19/1955	07-20--?	34.50	119.65	D			F	REPORTED FELT AT SANTA BARBARA.
11/19/1955	10-59-41	36.03	120.90	C	3.3			SOUTHEAST OF KING CITY.
11/21/1955	21-14-18	36.10	119.90	D	3.5			
12/11/1955	20-10-38	36.27	120.72	C	3.5			NORTHWEST OF COALINGA.
12/16/1955	14-43-11	36.03	120.87	C	3.8		F	SOUTHWEST OF KING CITY; FELT AT ATASCADERO, PASO ROBLES, AND SAN MIGUEL.
12/29/1955	13-33-17	36.45	121.25	C	3.4			NORTH OF KING CITY.
02/14/1956	22-15-08	36.50	121.10	D	2.8			SOUTHWEST OF LLANADA.
03/15/1956	15-26-11	36.50	121.20	D	2.6			SOUTHEAST OF HOLLISTER.
04/03/1956	09-26-02	36.45	121.23	B	2.7			SOUTH OF HOLLISTER.
04/10/1956	11-24-21	36.43	121.48	C	2.9			SOUTHEAST OF MONTEREY.
04/10/1956	20-53-21	36.30	121.00	D	2.9			NORTHEAST OF KING CITY.
05/01/1956	15-06-33	36.50	121.00	D	2.5			SOUTH OF HOLLISTER.
05/04/1956	08-16-14	35.75	121.07	B	3.1			NORTHEAST OF SAN SIMEON.
05/04/1956	08-16-16	35.95	120.93	D	3.5			
05/15/1956	10-45--?	34.90	120.40	D			F	REPORTED FELT AT SANTA MARIA.
06/11/1956	-?-48-37	36.00	120.97	C	3.2			SOUTHEAST OF KING CITY.
06/15/1956	23-42-03	36.30	121.80	D	2.8			SOUTH OF MONTEREY.
07/09/1956	23-15--?	35.10	120.50	D			F	III REPORTED FELT NEAR HUASNA.
07/23/1956	08-03-48	36.30	121.30	D	4.7		F	NW OF KING CITY; FELT OVER 4000 SQ. MI. OF COASTAL CENTRAL CALIF. V AT BIG SUR, CHUALAR, GONZALES, GREENFIELD, 7.5 MI. S OF HOLLISTER, KING CITY, PASO ROBLES, SAN BENITO, AND SAN JUAN BAUTISTA.
07/23/1956	08-20-37	36.50	121.40	D	3.1			AFTERSHOCK OF QUAKE AT 08-03-48.
07/31/1956	-?-40-43	34.15	119.60	C	3.2			
07/31/1956	17-25--?	35.10	120.50	D			F	IV REPORTED FELT AT HUASNA.
08/09/1956	-?-08-49	34.37	119.80	B	4.0		F	OFF SANTA BARBARA; IV AT LOS PRIETOS RANGER STATION.
08/10/1956	23-24-03	35.90	121.30	D	3.0			SOUTHWEST OF KING CITY.
08/20/1956	05-10-33	36.48	121.48	B	3.2		F	NEAR GONZALES; IV AT PINNACLES NATIONAL MONUMENT.
09/15/1956	-?-34-37	36.30	120.30	D	2.7			NORTH OF COALINGA.
10/10/1956	20-02-24	34.70	121.00	D	3.8			
11/12/1956	10-13--?	36.30	120.10	C	3.3			
11/16/1956	03-23-09	35.95	120.47	B	5.0		F	SW OF COALINGA; FELT OVER 8000 SQ. MI. FROM HOLY CITY TO BETTERAVIA TO FIREBAUGH. VI AT KING CITY, MEE RANCH (LONOAK), AND SAN LUCAS.
11/19/1956	13-53-53	35.98	120.57	C	3.3		F	SOUTHWEST OF COALINGA; III AT ADELAIDA (15 MI. WEST OF PASO ROBLES).
11/20/1956	03-42-44	34.70	120.50	C	3.6		F	IV AT LOS ALAMOS; III FELT AT 07-42--?, 11/21/1956.

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MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
12/11/1956	10-56-53	35.88	120.47	C	4.1			NEAR PARKFIELD.
12/28/1956	13-39-37	35.90	121.10	D	2.6			NORTHEAST OF SAN SIMEON.
01/01/1957	09-25--?	35.50	120.65	D			F	REPORTED FELT AT ATASCADERO.
01/29/1957	21-19-53	35.87	122.12	C	4.9		F	OFF COAST NW OF SAN SIMEON; FELT OVER 5000 SQ. MI. OF COASTAL CENTRAL CALIF. V AT BIG SUR, CAMBRIA, CARMEL VALLEY, HARMONY, KING CITY, LUCIA, MARINA, AND SEASIDE, AND IV GENERALLY FROM MOSS LANDING TO 20 MI. W OF COALINGA TO SAN LUIS OBISPO.
02/03/1957	07-57-12	34.50	121.20	C	3.9			
02/08/1957	04-45-38	36.50	121.20	D	2.8			NORTH OF KING CITY.
02/08/1957	21-20--?	36.50	122.00	D			F	SHARP SHOCK FELT MONTEREY PEN. (BSSA).
02/09/1957	08-10--?	35.50	120.65	D			F	IV REPORTED FELT AT ATASCADERO.
02/14/1957	-?-31-30	35.10	119.80	D	2.4			
02/14/1957	10-30-27	36.00	120.60	C	3.6			
02/16/1957	11-43-50	34.30	119.53	C	3.5			
03/09/1957	14-38-28	34.70	119.60	C	2.9			
03/09/1957	14-59-21	34.70	119.60	C	2.4			
04/05/1957	-?-40--?	34.75	120.25	D			F	IV REPORTED FELT AT LOS ALAMOS.
06/21/1957	20-46-42	35.10	120.90	D	3.7		F	OFF COAST; FELT AT SAN LUIS OBISPO AND MORRO BAY.
07/02/1957	09-18-22	34.37	119.88	B	3.4		F	W OF SANTA BARBARA; FELT AT SANTA BARBARA.
07/02/1957	12-59-05	34.37	119.88	B	3.3			
07/02/1957	13-58-28	34.37	119.88	B	3.2			
07/21/1957	01-29-20	36.43	121.22	B	3.1			NORTH OF KING CITY.
08/03/1957	09-31-22	36.25	120.88	C	2.5			EAST OF KING CITY.
08/18/1957	03-05-25	34.47	120.13	C	3.4			
08/18/1957	11-08-23	34.47	120.13	C			F	N OF GAVIOTA; FELT AT CACHUMA RESERVOIR.
08/21/1957	07-36-54	36.47	121.52	C	3.6			NORTHWEST OF KING CITY.
08/28/1957	01-13-57	34.58	121.00	C	3.5			
09/12/1957	21-36--?	35.50	121.00	D			F	II FELT AT P G AND E PLANT, MORRO BAY.
09/21/1957	06-54-26	36.40	121.10	D	2.8			NORTH OF KING CITY.
09/21/1957	15-32--?	35.50	121.00	D			F	II FELT AT P G AND E PLANT, MORRO BAY.
09/25/1957	23-33-31	36.50	121.50	D	2.7			SOUTH OF HOLLISTER.
10/01/1957	12-55-57	36.47	121.23	C	3.3			SOUTHWEST OF LLANADA.
10/05/1957	14-42--?	34.75	120.25	D			F	IV REPORTED FELT AT LOS ALAMOS.
10/19/1957	-?-04-38	36.10	120.87	B	3.3			SOUTHEAST OF KING CITY.
10/28/1957	11-41-02	34.33	120.00	C	2.8			
11/05/1957	23-50-52	34.72	120.33	C	3.4			
11/18/1957	01-11-42	36.38	121.23	C	3.1			NORTHWEST OF KING CITY.
11/18/1957	07-26-32	36.50	121.70	D	3.3			SOUTHEAST OF MONTEREY.
12/31/1957	22-32-55	36.40	121.00	D	2.9			NORTHEAST OF KING CITY.
01/07/1958	17-13-16	35.70	120.80	D	3.0			NORTH OF SAN LUIS OBISPO.
01/18/1958	08-12--?	35.55	120.65	D			F	REPORTED FELT AT PASO ROBLES.
01/21/1958	21-22-08	36.40	120.50	D	2.9			NORTHWEST OF COALINGA.
01/23/1958	07-06-46	34.38	119.58	B	2.6		F	E OF SANTA BARBARA; IV AT SANTA BARBARA.
01/28/1958	07-12-54	36.50	121.10	D	2.2			SOUTHWEST OF LLANADA.
03/26/1958	13-12-30	36.20	120.30	D	2.4			NEAR COALINGA.
03/27/1958	20-26-14	35.90	121.50	D	2.8			NORTHWEST OF SAN SIMEON.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
03/31/1958	17-38-23	36.50	121.10	D	2.7			SOUTHWEST OF LLANADA.
04/10/1958	08-32-33	36.45	121.12	C	2.9			SOUTHWEST OF LLANADA.
06/05/1958	17-12-50	36.40	121.10	D	3.1			NORTH OF KING CITY.
06/15/1958	07-02-33	36.50	121.38	C	2.9			FORESHOCK OF QUAKE AT 07-05-34.
06/18/1958	07-05-34	36.50	121.38	C	3.3			SOUTH OF HOLLISTER.
06/21/1958	01-03-31	36.40	120.40	D	2.1			SOUTHWEST OF FRESNO.
07/02/1958	17-56-26	36.50	121.30	D	2.8			SOUTHWEST OF LLANADA.
08/08/1958	18-43-01	36.30	121.20	D	2.7			FORESHOCK OF 13-43-15 - RECORDS MIXED.
08/08/1958	13-43-15	36.30	121.20	D	3.9		F	NORTHWEST OF KING CITY; IV AT BIG SUR.
08/18/1958	05-30-42	35.80	121.30	D	3.4			NEAR SAN SIMEON.
09/01/1958	11-31-42	36.10	120.80	D	3.2			SOUTHEAST OF KING CITY.
09/21/1958	07-24-55	36.35	121.12	C	4.0		F	NORTH OF KING CITY; VI AT SAN BENITO; ALSO FELT AT SOLEDAD.
09/21/1958	14-23-01	36.50	121.05	C	2.7			SOUTHWEST OF LLANADA.
10/03/1958	04-25-51	34.37	119.50	B	3.7		F	FROM CARPINTERIA TO GOLETA.
10/10/1958	13-05-16	35.93	120.50	B	4.5		F	SOUTHWEST OF COALINGA; FELT OVER AN AREA OF APPROXIMATELY 3500 SQ. MI. OF THE SOUTHWEST-CENTRAL REGION OF CALIFORNIA - APPEARS TO HAVE BEEN FELT MORE STRONGLY AT PARKFIELD THAN ELSEWHERE; V AT ADELAIDA, CAMP ROBERTS, COALINGA, HARMONY, LONE PINE INN, OILFIELD, PARKFIELD, PASO ROBLES, AND SAN ARDO.
10/15/1958	16-16-44	35.50	121.20	D	3.2			NEAR SAN SIMEON.
11/06/1958	20-11-57	36.08	120.88	C	3.1			SOUTHEAST OF KING CITY.
11/16/1958	09-34-04	34.50	119.83	C	4.0		F	NW OF SANTA BARBARA; FELT OVER 600 SQ. MI. FROM SANTA YNEZ TO VENTURA; V AT CARPINTERIA, GOLETA, AND SANTA BARBARA.
11/27/1958	06-04-26	36.37	121.15	C	3.9		F	WEST OF LLANADA; FELT SLIGHTLY AT CARMEL.
11/27/1958	13-39-01	36.20	120.80	D	3.1			EAST OF KING CITY.
12/15/1958	14-58-49	36.20	120.40	D	3.0			NEAR COALINGA.
12/15/1958	15-24-01	36.20	120.40	D	3.0		F	NEAR COALINGA; IV AT COALINGA.
12/30/1958	01-34-15	35.92	119.80	C	3.2			
01/11/1959	05-18-26	36.20	120.80	D	2.5			WEST OF COALINGA.
02/07/1959	05-51-02	36.10	120.00	D	3.0			SOUTHEAST OF KING CITY.
02/27/1959	21-35-01	36.25	120.75	C	3.1			SOUTHEAST OF LLANADA.
03/13/1959	02-44-27	35.80	120.30	D	2.5			SOUTH OF COALINGA.
03/14/1959	02-43-41	35.70	121.30	D	3.6			WEST OF SAN SIMEON.
03/20/1959	05-12-09	36.48	121.17	B	2.9			SOUTHWEST OF LLANADA.
03/25/1959	05-34-17	34.25	119.58	C	2.5		F	SANTA BARBARA CHANNEL; IV AT CARPINTERIA.
04/08/1959	07-41-57	36.37	121.20	B	3.4			NORTH OF KING CITY.
04/09/1959	14-03-11	36.38	121.15	C	2.5			NORTH OF KING CITY.
04/21/1959	09-36-23	36.40	120.40	D	3.0			NORTH OF COALINGA.
04/21/1959	12-31-10	36.10	121.10	D	2.2			NEAR KING CITY.
04/22/1959	19-04-25	36.20	120.90	D	2.6			NEAR KING CITY.
05/13/1959	14-28-10	36.48	121.03	C	2.6			SOUTHWEST OF LLANADA.
05/14/1959	01-34-09	36.50	121.20	D	2.4			SOUTHWEST OF LLANADA.
05/20/1959	10-15-55	36.30	120.40	D	2.6			NORTHWEST OF COALINGA.
06/01/1959	03-47-24	36.50	121.23	C	2.4			SOUTHWEST OF LLANADA.
06/20/1959	15-01-17	36.50	121.30	D	2.9			SOUTH OF VINEYARD.

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MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
06/21/1959	09-24-07	34.32	119.67	B	3.3			
07/18/1959	01-11-47	36.50	121.30	D	2.5			SOUTH OF VINEYARD.
08/05/1959	03--?-34	35.95	120.48	C	3.5		F	SOUTHEAST OF COALINGA (NEAR PARKFIELD; FELT STRONGEST AT PARKFIELD; IV FELT AT PASO ROBLES).
09/05/1959	05-45-34	36.50	121.70	D	3.8			SOUTHWEST OF VINEYARD.
10/01/1959	04-35-35	34.43	120.57	B	4.5		F	OFF POINT CONCEPTION; VI AT GAVIOTA PASS AND V AT GAVIOTA, GOLETA, AND LOMPOC.
10/01/1959	05-52-55	34.20	119.50	C	3.2			
10/11/1959	02-03-09	36.45	121.12	C	4.1		F	SOUTHWEST OF LLANADA; FELT AT SALINAS.
10/24/1959	23-12-54	36.47	121.40	C	3.2			SOUTH OF HOLLISTER.
10/25/1959	03-33-13	36.50	121.20	D	2.4			SOUTHEAST OF VINEYARD.
10/25/1959	03-34-02	36.50	121.32	C	3.0			SOUTH OF VINEYARD.
10/26/1959	09-56-01	36.40	121.10	D	3.0			SOUTHEAST OF VINEYARD.
11/25/1959	09-28-22	35.20	121.20	D	3.5			SOUTH OF KING CITY.
11/26/1959	07-02-05	36.40	121.40	D	2.7			SOUTH OF VINEYARD.
12/11/1959	05-55-26	35.60	120.60	D	3.5			SOUTHEAST OF VINEYARD.
12/25/1959	20-38-28	36.00	120.60	D	3.1			SOUTHEAST OF VINEYARD.
12/29/1959	14-53-08	35.75	120.30	C	3.5		F	NEAR CHOLAME; FELT AT PASO ROBLES.
01/02/1960	22-51-48	35.40	121.20	D	4.0			NW OF SAN LUIS OBISPO.
01/04/1960	12-18-20	36.20	120.70	D	3.2			WEST OF COALINGA.
02/14/1960	08-34-30	35.80	121.70	D	2.8			WEST OF SAN SIMEON.
02/25/1960	06-34-31	36.50	121.20	D	2.7			SOUTHWEST OF LLANADA.
02/28/1960	02-55-32	34.33	119.95	C	3.1			
03/21/1960	20-46-39	36.50	120.73	C	2.5			SOUTHEAST OF LLANADA.
03/26/1960	21-39-21	36.22	121.00	C	2.7			EAST OF KING CITY.
03/29/1960	11-46-42	36.50	121.10	C	2.4			SOUTHEAST OF VINEYARD.
03/31/1960	08-35-09	36.40	121.20	D	2.6			SOUTHEAST OF VINEYARD.
04/02/1960	13-02-10	35.97	120.33	C	2.7			SOUTH OF COALINGA.
04/02/1960	19-01-12	36.20	120.60	D	3.4			WEST OF COALINGA.
04/09/1960	08-01-14	36.50	121.13	B	3.6			SOUTHEAST OF HOLLISTER.
05/04/1960	09-44-32	36.42	120.72	C	3.4			SOUTHEAST OF LLANADA.
05/15/1960	06-07-23	36.43	121.27	C	2.5			SOUTH OF VINEYARD.
06/11/1960	17-39-48	36.30	120.90	D	3.7			SOUTHEAST OF VINEYARD, DIABLO RANGE.
06/19/1960	19-51-20	36.20	121.90	D	2.6			SOUTHWEST OF BIG SUR.
06/24/1960	18-13-12	36.45	121.22	B	3.5			SOUTHEAST OF VINEYARD.
07/14/1960	03-22-23	35.60	120.40	D	3.0			NORTHEAST OF SAN LUIS OBISPO.
07/20/1960	-?-59-36	35.80	119.80	D	2.8			NORTHEAST OF SAN LUIS OBISPO.
07/30/1960	02-16-29	36.43	120.28	C	2.5			SOUTHWEST OF FRESNO.
08/09/1960	08-59-47	36.20	120.20	D	3.2			EAST OF COALINGA.
08/10/1960	03-03-50	36.47	121.40	D	3.2			SOUTH OF VINEYARD.
08/26/1960	08-57-24	38.33	121.13	C	3.0			SOUTHEAST OF VINEYARD.
09/10/1960	01-18-22	36.47	121.05	C	2.7			SOUTHEAST OF HOLLISTER.
09/10/1960	20-49-12	36.45	121.28	D	2.8			SOUTHWEST OF LLANADA.
10/08/1960	-?-02-29	36.50	121.67	C	3.0			SOUTHWEST OF VINEYARD.
11/03/1960	07-13-40	36.43	121.07	C	2.7			SOUTH-SOUTHWEST OF LLANADA.
11/18/1960	04-36-44	36.38	121.20	C	3.0			NORTH-NORTHWEST OF KING CITY.

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MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
12/01/1960	14-23-49	34.33	119.85	B	3.2			OFF SANTA BARBARA.
12/15/1960	08-28-08	36.40	121.30	D	3.0			SOUTH OF HOLLISTER.
12/27/1960	03-57-55	36.00	121.10	D	3.3			SOUTH OF KING CITY.
01/06/1961	20-46-36	35.80	120.20	D	3.4			SE OF PARKFIELD.
02/02/1961	12-31--?	36.35	121.20	D	2.2			NORTHWEST OF KING CITY.
02/21/1961	15-46-58	34.37	119.53	C	2.8			SE OF SANTA BARBARA.
03/14/1961	04-15--?	36.40	121.20	D	3.4			SOUTHEAST OF VINEYARD.
03/29/1961	16--?-11	36.50	121.50	D	2.5			SOUTH OF VINEYARD.
04/07/1961	12-21-19	36.20	120.40	D	2.9			NORTH OF COALINGA.
04/08/1961	04-55-26	36.00	121.20	D	2.7			SOUTH OF KING CITY.
04/08/1961	09-29-47	36.10	120.43	B	3.4			NEAR COALINGA.
04/08/1961	12-52-16	36.12	120.43	C	2.7			AFTERSHOCK OF QUAKE AT 09-29-47.
04/11/1961	09-08-11	36.00	120.10	D	2.7			SOUTHEAST OF KING CITY.
04/12/1961	04-59-08	35.92	120.50	C	2.6			SOUTHWEST OF COALINGA.
04/19/1961	18-16-35	36.40	121.58	C	3.3			SOUTHEAST OF MONTEREY.
05/25/1961	14-19-05	36.33	121.00	C	3.4			NORTHEAST OF KING CITY.
05/25/1961	14-19-35	36.33	121.00	B	3.4			NORTHEAST OF KING CITY.
06/01/1961	06-47-20	36.33	121.32	B	2.7			NORTHWEST OF KING CITY.
06/01/1961	14-11-30	36.45	121.20	C	2.6			NORTH OF KING CITY.
06/18/1961	12-50-59	36.18	120.83	C	2.1			EAST OF KING CITY.
06/25/1961	13-15-26	36.48	121.35	C	3.6		F	SOUTH OF HOLLISTER; FELT IN HOLLISTER AREA. INTENSITY IV 7.5 MI. SOUTH OF HOLLISTER AT HARRIS RANCH.
06/26/1961	11-30-22	35.77	122.00	C	2.5			OFF SAN SIMEON COAST.
07/22/1961	18-01-55	36.40	121.20	C	4.0		F	NORTHEAST OF PARAISO; FELT AT PINNACLES NATIONAL MONUMENT (ABOUT 25 MI. SOUTHEAST OF HOLLISTER).
07/31/1961	-?-07-09	35.82	120.37	C	4.7		F	SAN LUIS OBISPO; FELT OVER AN AREA OF 5000 SQ. MI. OF WEST CENTRAL CALIFORNIA. INTENSITY V AT ATASCADERO, CHOLAME, CRESTON, PARKFIELD, SAN LUIS OBISPO, AND TEMPLETON.
08/01/1961	06-12-54	36.43	120.85	C	3.1			SOUTH OF LLANADA.
08/17/1961	17-14-45	36.33	120.95	B	3.1			NORTHEAST OF KING CITY.
09/14/1961	15-12-20	34.32	119.63	C	2.7			
09/14/1961	15-14-38	34.32	119.63	C	2.8			
09/27/1961	02-02-06	36.33	121.25	C	2.7			EAST OF PARAISO.
09/29/1961	15-39-58	36.33	120.88	B	2.4			SOUTH OF LLANADA.
10/12/1961	06-31-11	35.80	121.30	D	2.3			NORTH OF SAN SIMEON.
10/29/1961	11-47-33	36.33	120.92	C	2.0			EAST OF PARAISO.
11/05/1961	10-43-57	36.03	120.10	D	2.0			EAST OF LLANADA.
11/29/1961	04-49-03	35.15	120.13	C	3.0			SOUTHEAST OF KING CITY.
12/06/1961	03-27-30	36.43	121.85	B	2.4			SOUTH OF MONTEREY.
12/14/1961	07-28-44	36.48	121.08	B	2.1			SOUTHWEST OF LLANADA.
01/04/1962	03-56-10	36.40	121.40	C	3.0	11		NORTHWEST OF KING CITY.
01/31/1962	08-33-15	34.88	120.68	C	3.6			
02/01/1962	06-37-57	34.88	120.68	C	4.5		F	WEST OF GUADALUPE; FELT OVER AN AREA OF 3000 SQ. MI. V AT ARROYO GRANDE, AVILA BEACH, CASMALIA, GROVER CITY, GUADALUPE, HALCYON, OCEANO, POINT ARGUELLO, AND SHELL
02/01/1962	07-58-12	34.38	120.68	C	3.7			
02/04/1962	11-43-34.1	36.42	121.27	C	3.2	12		

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
02/07/1962	13--?-70	34.30	122.10	D	3.9			
03/05/1962	07-44-01	34.60	121.60		4.5		F	OFF COAST NEAR LOMPOC; V AT MORRO BAY AND PISMO BEACH.
03/06/1962	03-40-22	34.60	121.60	D	3.6			
03/10/1962	08-07-21	34.60	121.60	D	4.2			OFF COAST NEAR LOMPOC.
03/10/1962	13-40-48	34.60	121.60	D	4.0			OFF COAST NEAR LOMPOC.
03/10/1962	15-24-21	34.60	121.60	D	3.5			
03/12/1962	21-32-09	34.60	121.60	D	3.9			
03/23/1962	22-10-18	34.28	120.20	C	2.9			
03/24/1962	03-38-41.8	36.20	119.78	B	3.4	19		SOUTH OF FRESNO.
04/02/1962	03-06-03.2	36.25	120.10	B	3.7	16	F	EAST OF COALINGA; V IN TEHACHAPI.
04/15/1962	08-41-02.3	36.42	120.62	B	4.7	23	F	SOUTHEAST OF LLANADA; V AT IDRIA.
05/04/1962	20-52-32	35.27	119.55	B	2.8			
05/05/1962	-?-55-20	34.20	121.50	D	3.3			
09/03/1962	17-53-33.1	36.47	121.07	C	2.6	8	F	SOUTHWEST OF LLANADA; FELT IN HOLLISTER.
09/11/1962	01-34-31	36.03	121.23	B	3.3	16		SOUTHWEST OF KING CITY.
09/16/1962	18-12-35	34.48	119.68	B	4.0		F	NEAR SANTA BARBARA; V AT LOS PRIETOS.
09/16/1962	18-17-09	34.48	119.68	C	2.2			
09/16/1962	18-31-17	34.52	119.77	B	2.9			
09/21/1962	05-07-18	34.47	119.58	B	3.0			
09/29/1962	19-47-32	34.47	119.70	B	2.9			
10/13/1962	17-49-39.5	36.35	120.42	B	3.7	17		NORTHEAST OF PRIEST.
12/15/1962	-?-40-20.9	36.47	120.63	B	2.9	13		NORTH OF PRIEST.
01/09/1963	06-04-25.7	35.98	120.35	B	3.2	14	F	SE OF PRIEST; III AT WHEELER RIDGE.
02/09/1963	02-52-14.5	35.98	121.69	C	2.8	8		OFF COAST S OF BIG SUR.
02/12/1963	03-44-30.9	36.50	121.32	B	2.6	10		S OF VINEYARD.
02/22/1963	15-56-21.9	35.11	121.44	C	3.3	15		OFF COAST, SW OF MORRO BAY.
02/22/1963	15-56-36.0	35.67	120.83	D	3.6			
04/04/1963	01--?-58	35.80	121.50		2.5	6		NW OF SAN SIMEON.
04/10/1963	01-38-56.8	36.42	121.05		2.9	11		SW OF LLANADA.
04/11/1963	14-02-31.8	36.20	120.87		2.9	13		NW OF PRIEST.
04/20/1963	16-37-33.0	36.38	120.96		3.0	14		SOUTH OF LLANADA.
05/10/1963	10-17-57.1	36.37	120.98		2.5	9		SOUTH OF LLANADA.
06/01/1963	05-19--0.2	34.33	119.54	B	2.0			
07/02/1963	12--?-24.9	34.86	119.80	C	2.0			
07/04/1963	03-20-41.0	34.77	120.02	C	3.2			
07/06/1963	23-32-30.4	34.78	120.63	B	3.3			
08/15/1963	21-02-32.2	35.97	121.02		3.6	15		NEAR JOLON; FORESHOCK OF FOLLOWING--
08/15/1963	21-21-32.1	35.91	121.06		3.9	18	F	NEAR JOLON; FELT AT HARRIS RANCH.
08/16/1963	08-12-13.6	36.06	121.01		3.2	10		NEAR JOLON; AFTERSHOCK OF PRECEDING.
09/06/1963	03-54-34	36.22	121.48		2.6	8		WEST OF PARAISO.
11/01/1963	14-05-56.0	35.56	120.23		3.4	9		EAST OF ATASCADERO.
11/01/1963	14-06--0.4	35.75	120.47	C	3.2			
11/18/1963	07-31-38.5	36.22	120.30	C	3.5		F	IV 15 MI. NE OF SAN MIGUEL.
11/18/1963	10-54-45.4	36.38	120.32		2.7	11		NE OF COALINGA.
11/19/1963	03-33-09.2	36.42	121.03		2.9	10		SW OF LLANADA.
12/12/1963	17-10-48.5	34.98	119.51	C	3.1			
02/10/1964	05-47-25.0	35.75	120.94		3.9	19		NE OF PASO ROBLES.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
03/20/1964	13-15-51.0	36.40	121.03		2.6	7		SW OF LLANADA.
04/28/1964	15-01-48.3	36.23	121.08		2.8	7		NEAR KING CITY.
05/07/1964	17-53-58.3	36.43	120.54		2.5	5		N OF PRIEST.
06/06/1964	11-47-39.0	34.63	121.40	D	4.3			
06/20/1964	09-21-51.4	34.13	120.67	C	3.1			
07/24/1964	07-09-35.9	36.47	121.18		2.9	15		NE OF PARAISO.
08/30/1964	03-41-10.4	36.29	121.94		2.9	7		OFF COAST NW OF POINT SUR.
09/12/1964	01-45-53.5	36.08	120.49		3.1	10		SE OF PRIEST.
10/17/1964	23-43-22.6	36.21	120.92		3.3	14		NW OF PRIEST.
11/08/1964	01-19-19.0	36.00	120.00		4.0	15		E OF AVENAL.
11/08/1964	13-45-51.1	36.34	121.32		3.1	16		NEAR PARAISO.
11/18/1964	01-47-34.0	35.98	121.13		2.7	8		SW OF KING CITY.
11/25/1964	12-49-41.8	36.21	120.78		2.8	15		NW OF PRIEST.
12/05/1964	13-55-57.5	36.02	121.08		2.6	12		W OF SAN ARDO.
12/11/1964	03-35-38.8	34.24	119.76	B	3.5			
12/25/1964	11-21-13.2	35.97	121.18		2.6	5		N OF LAKE NACIMIENTO.
12/27/1964	18-58-59.4	36.46	121.06		2.6	7		SW OF LLANDA.
01/13/1965	04-20-48.2	36.45	120.58		2.6	9		NE OF PRIEST.
01/26/1965	08-34-30.7	35.72	120.54		3.0	12		SE OF PRIEST.
01/26/1965	08-36-36.6	35.92	120.27	C	3.1			
01/26/1965	08-38-16.4	36.04	120.26	C	3.1			
02/21/1965	18-39-18.3	35.67	120.43		3.1	12		E OF PASO ROBLES.
03/28/1965	02-32-21.0	36.20	120.40		3.5			(USCGS)
04/06/1965	20-49-24.4	35.95	121.46		2.5	7		N OF SAN SIMEON.
04/08/1965	01-05-40.6	36.03	121.40		3.0	10		N OF SAN SIMEON.
04/09/1965	12-50-19.3	36.03	120.64		3.0	10		S OF PRIEST.
04/18/1965	03-58-52.4	36.50	121.23		2.7	7		NEAR PINNACLES NATIONAL MONUMENT
04/24/1965	07-29-47.1	34.91	120.14	C	3.6			
05/12/1965	17-55-08.7	35.49	121.17		3.0	6		SW OF SAN SIMEON.
06/07/1965	15-06-47.6	36.50	121.13		2.5	10		NEAR PINNACLES NATIONAL MONUMENT.
06/20/1965	02-56-43.5	36.33	120.37		2.7	11		N OF COALINGA.
06/30/1965	15-21-27.7	36.35	120.71		2.5	9		N OF PRIEST.
07/23/1965	05-31-52.7	35.71	121.23		3.4	13		N OF SAN SIMEON.
07/24/1965	15-25-57.4	36.36	120.98		2.5	7		SW OF LLANADA.
08/01/1965	06-47-27.3	36.23	120.85		2.5	7		NW OF PRIEST.
08/01/1965	13-28-32.9	36.23	120.84		2.5	6		AFTERSHOCK OF 06-47-27.3.
08/13/1965	07-36-08.4	36.46	121.08		2.6	9		SW OF LLANADA.
08/13/1965	13-46-16.5	34.35	119.63	B	3.7		F	IV AT CARPINTERIA AND SANTA BARBARA.
08/13/1965	21-28-51.8	36.48	121.13		2.4	8		W OF LLANADA.
08/15/1965	23-06-52.5	36.00	120.20		4.0		F	AT PAICINES.
08/21/1965	20-09-35.4	36.46	121.07		2.5	8		SW OF LLANADA.
09/06/1965	18--?-57.8	35.96	120.36	C	3.4			
09/12/1965	08-50-05.5	36.49	121.12		2.5	7		W OF LLANADA.
09/19/1965	15-42-07.8	35.98	120.34	C	4.8		F	V AT ARMONA, AVENAL, CHOLAME, KETTLEMAN CITY, AND STRATFORD.
10/22/1965	02-29-22	36.00	121.70		2.7	6		OFF COAST, W OF KING CITY.
12/02/1965	22-29-13.0	36.20	121.68		2.8	9		W OF PARAISO.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
01/28/1966	01-49-47.4	35.83	120.45		3.0		F	PARKFIELD SEQUENCE; MC EVILLY, ET AL, (1967) THE PARKFIELD, CALIFORNIA EARTHQUAKE OF 1966, BULL. SEISM. SOC. AM.
02/01/1966	-?-20-44.3	36.03	120.57		2.9			PARKFIELD SEQUENCE - SEE 01/28/1966 AT 01-49-47.4.
02/14/1966	-?-24-03.9	36.02	120.57		2.4			PARKFIELD SEQUENCE - SEE 01/28/1966 AT 01-49-47.4.
02/25/1966	01-34-38.0	36.05	120.63		2.4			PARKFIELD SEQUENCE - SEE 01/28/1966 AT 01-49-47.4.
03/31/1966	21-38-45.2	36.05	120.60		2.5			PARKFIELD SEQUENCE - SEE 01/28/1966 AT 01-49-47.4.
04/05/1966	20-44-58.7	36.24	120.85		2.7	9		10 KM NW OF PRIEST (UC BERKELEY SEISMOGRAPH STATION (SS)).
04/12/1966	15-31-39.8	36.07	120.70		2.3			PARKFIELD SEQUENCE.
05/11/1966	17-37-01.1	35.98	120.57		2.3			PARKFIELD SEQUENCE.
05/23/1966	08-07-37.6	36.02	120.57		2.5			PARKFIELD SEQUENCE.
05/23/1966	08-11-07.0	36.02	120.57		2.2			PARKFIELD SEQUENCE.
05/27/1966	15-36-03.7	35.98	120.49		2.7			PARKFIELD SEQUENCE.
06/18/1966	16-32-17.6	35.96	120.53		2.0			PARKFIELD SEQUENCE.
06/20/1966	23-19-18.8	36.33	120.96		2.8	9		NE OF KING CITY.
06/24/1966	21-42-50.4	36.50	120.85		3.1	10		SE OF LLANADA.
06/28/1966	01--?-31.5	35.95	120.52		3.1		F	PARKFIELD SEQUENCE; FELT AT CHOLAME, PARKFIELD, VALLETON, AND WORK RANCH.
06/28/1966	01-14-55	35.95	120.50		1.8			PARKFIELD SEQUENCE.
06/28/1966	04-08-55.2	35.97	120.50		5.1			PARKFIELD SEQUENCE FIRST MAIN SHOCK (FELT REPORTS FOR THE 2 MAIN SHOCKS ARE NOT SEPARATED.) FELT OVER 20,000 SQ. MI., MINOR SURFACE FAULTING ALONG SAN ANDREAS FAULT FROM PARKFIELD TO CHOLAME (20 MI.), MAXIMUM DISPLACEMENT 4 IN. VII AT CHOLAME AND PARKFIELD, VI AT ANNETTE, BITTERWATER VALLEY, COALINGA, HIDDEN VALLEY RANCH, PASO ROBLES, SAN LUIS OBISPO, SAN MIGUEL, SHAFTER, SHANDON, SLACK CANYON, VALLETON, WAITI RANCH, AND WORK RANCH, AND V AT ADELAIDA, ALPAUGH, ARROYO GRANDE, ATASCADERO, AVILA BEACH, BAKERSFIELD, BAYWOOD PARK, BRYSON, BURREL, BUTTONWILLOW, EARLIMART, FELLOWS, FRAZIER PARK, GREENFIELD, HARMONY, INDIAN VALLEY, KETTLEMAN CITY, KING CITY, LAPANZA, LOST MARICOPA, MEE RANCH, MORRO BAY, MOSS LANDING, MUSICK, NIPOMO, OCEANO, OLD RIVER, PANOCHE, PINE CANYON, PISMO BEACH, POZO, PRIEST VALLEY, SAN ARDO, SAN JOAQUIN, SAN LUCAS, SAN SIMEON, SIMMLER, STRATFORD, TEMPLETON, AND VANDENBURG A.F.B.
06/28/1966	04-09-53	35.95	120.50					PARKFIELD SEQUENCE.
06/28/1966	04-18-34.0	35.95	120.53		2.6		F	PARKFIELD SEQUENCE - FELT AT CANTUA CREEK AND SOQUEL.
06/28/1966	04-26-13.4	35.95	120.50		5.5		F	PARKFIELD SEQUENCE - SECOND MAIN SHOCK.
06/28/1966	04-26-28	35.95	120.50					PARKFIELD SEQUENCE.
06/28/1966	04-26-34	35.95	120.50					PARKFIELD SEQUENCE.
06/28/1966	04-27-37	35.95	120.50					PARKFIELD SEQUENCE.
06/28/1966	04-27-58	35.95	120.50					PARKFIELD SEQUENCE.
06/28/1966	04-28-19	35.95	120.50					PARKFIELD SEQUENCE.
06/28/1966	04-28-36	35.95	120.50		4.5			PARKFIELD SEQUENCE.
06/28/1966	04-28-46	35.95	120.50					PARKFIELD SEQUENCE.

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
06/28/1966	04-29-13	35.95	120.50					PARKFIELD SEQUENCE.
06/28/1966	04-31-55	35.95	120.50		3.0			PARKFIELD SEQUENCE.
06/28/1966	04-32-50	35.95	120.50		3.5		F	PARKFIELD SEQUENCE - FELT AT CANTUA CREEK, CHOLAME, AND HERNANDEZ.
06/28/1966	04-34-59.1	35.81	120.40		3.0			PARKFIELD SEQUENCE.
06/28/1966	04-39-08.1	35.95	120.50		3.0		F	PARKFIELD SEQUENCE - FELT AT PARKFIELD AND WORK RANCH.
06/28/1966	04-42-33.6	35.83	120.38		2.4			PARKFIELD SEQUENCE.
06/28/1966	04-43-54.8	35.95	120.57		2.7			PARKFIELD SEQUENCE.
06/28/1966	04-46-22	35.95	120.50		3.0			PARKFIELD SEQUENCE.
06/28/1966	04-51-43	35.95	120.50		2.4			PARKFIELD SEQUENCE.
06/28/1966	05--?-59.5	35.85	120.40		3.1			PARKFIELD SEQUENCE.
06/28/1966	05-03-44.7	35.88	120.45		2.4			PARKFIELD SEQUENCE.
06/28/1966	05-09-48.3	35.83	120.13		2.5			PARKFIELD SEQUENCE.
06/28/1966	05-12-42.5	35.92	120.47		2.9			PARKFIELD SEQUENCE.
06/28/1966	05-17-05	35.95	120.50		2.1			PARKFIELD SEQUENCE.
06/28/1966	05-21-05	35.95	120.50		2.0			PARKFIELD SEQUENCE.
06/28/1966	05-29-14.9	35.92	120.48		2.1			PARKFIELD SEQUENCE.
06/28/1966	05-37-04.6	35.88	120.44		2.5			PARKFIELD SEQUENCE.
06/28/1966	05-40-19.4	35.94	120.48		2.7			PARKFIELD SEQUENCE.
06/28/1966	05-45-59.1	35.75	120.33		3.2			PARKFIELD SEQUENCE.
06/28/1966	05-48-26	35.95	120.50		2.2			PARKFIELD SEQUENCE.
06/28/1966	05-51-34.0	35.86	120.44		2.1			PARKFIELD SEQUENCE.
06/28/1966	05-52-06	35.95	120.50		2.3			PARKFIELD SEQUENCE.
06/28/1966	05-52-58	35.95	120.50		2.4			PARKFIELD SEQUENCE.
06/28/1966	05-56--?	35.95	120.50		2.1			PARKFIELD SEQUENCE.
06/28/1966	06-11-03.5	35.81	120.35		2.6			PARKFIELD SEQUENCE.
06/28/1966	06-32-17.9	35.94	120.52		3.4		F	PARKFIELD SEQUENCE - FELT AT CHOLAME, COALINGA, AND PARKFIELD.
06/28/1966	06-35-11.4	35.80	120.38		3.0			PARKFIELD SEQUENCE.
06/28/1966	06-39-31.2	35.90	120.47		2.2			PARKFIELD SEQUENCE.
06/28/1966	07-01-03.8	35.92	120.48		2.2			PARKFIELD SEQUENCE.
06/28/1966	07-33-52.7	35.90	120.45		2.7			PARKFIELD SEQUENCE.
06/28/1966	07-41-43	35.95	120.50		2.3			PARKFIELD SEQUENCE.
06/28/1966	07-45-48.3	35.90	120.47		3.0		F	PARKFIELD SEQUENCE - FELT AT CHOLAME AND PARKFIELD.
06/28/1966	08-14-48.6	35.83	120.42		2.4			PARKFIELD SEQUENCE.
06/28/1966	08-47-52.4	35.85	120.42		2.0			PARKFIELD SEQUENCE.
06/28/1966	08-54-49.5	35.92	120.50		2.3			PARKFIELD SEQUENCE.
06/28/1966	08-59-52.3	35.85	120.42		2.5			PARKFIELD SEQUENCE.
06/28/1966	09-31-26.5	35.77	120.35		2.4			PARKFIELD SEQUENCE.
06/28/1966	09-35-54.3	35.77	120.36		2.2			PARKFIELD SEQUENCE.
06/28/1966	09-56-09.7	35.83	120.40		2.5			PARKFIELD SEQUENCE.
06/28/1966	10-15-53.3	35.92	120.53		2.1			PARKFIELD SEQUENCE.
06/28/1966	10-20-16.4	35.85	120.42		2.3			PARKFIELD SEQUENCE.
06/28/1966	10-23-22.8	35.55	120.42		2.0			PARKFIELD SEQUENCE.
06/28/1966	10-23-22.8	35.94	120.48		2.5			PARKFIELD SEQUENCE.
06/28/1966	10-46-22.9	35.94	120.50		2.0			PARKFIELD SEQUENCE.
06/28/1966	11-15-13.9	35.85	120.42		2.0			PARKFIELD SEQUENCE.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
06/28/1966	11-28-41.4	35.85	120.38		2.0			PARKFIELD SEQUENCE.
06/28/1966	11-30-14.0	35.90	120.47		2.2			PARKFIELD SEQUENCE.
06/28/1966	12-31-52.1	35.94	120.48		2.5			PARKFIELD SEQUENCE.
06/28/1966	12-52-22.0	35.97	120.53		2.3			PARKFIELD SEQUENCE.
06/28/1966	13-48-22	35.97	120.53		2.7			PARKFIELD SEQUENCE.
06/28/1966	14-13-09.3	35.94	120.48		2.6			PARKFIELD SEQUENCE.
06/28/1966	14-21-36.3	35.94	120.48		2.2			PARKFIELD SEQUENCE.
06/28/1966	14-51-53.6	35.90	120.47		2.3			PARKFIELD SEQUENCE.
06/28/1966	18-12-19.4	35.92	120.50		2.3			PARKFIELD SEQUENCE.
06/28/1966	18-22-32.4	35.92	120.50		2.0			PARKFIELD SEQUENCE.
06/28/1966	18-54-55.3	35.88	120.45		2.5			PARKFIELD SEQUENCE.
06/28/1966	19-59-37.8	35.92	120.47		2.8			PARKFIELD SEQUENCE.
06/28/1966	20--?-38.7	35.92	120.48		2.5			PARKFIELD SEQUENCE.
06/28/1966	20-46-56.4	35.77	120.40		3.1		F	PARKFIELD SEQUENCE - FELT AT BAR B RANCH AND WORK RANCH.
06/28/1966	22-01-13.9	35.85	120.44		2.0			PARKFIELD SEQUENCE.
06/28/1966	22-37-56.7	35.88	120.42		2.0			PARKFIELD SEQUENCE.
06/28/1966	23-57-22.3	35.77	120.35		2.5			PARKFIELD SEQUENCE.
06/29/1966	-?-17-32.6	35.85	120.44		2.3			PARKFIELD SEQUENCE.
06/29/1966	02-19-39.9	35.92	120.52		3.6		F	PARKFIELD SEQUENCE - FELT AT CHOLAME, PARKFIELD, AND WORK RANCH.
06/29/1966	04-06-40.3	35.92	120.53		2.8			PARKFIELD SEQUENCE.
06/29/1966	07-28-59.4	35.92	120.48		2.3			PARKFIELD SEQUENCE.
06/29/1966	08-55-52.4	35.88	120.45		2.9			PARKFIELD SEQUENCE.
06/29/1966	09-20-50.1	35.78	120.36		2.5			PARKFIELD SEQUENCE.
06/29/1966	10-13-44.0	35.97	120.50		2.3			PARKFIELD SEQUENCE.
06/29/1966	10-56-58.8	35.75	120.33		3.0			PARKFIELD SEQUENCE.
06/29/1966	12-30-09.0	35.94	120.50		2.4			PARKFIELD SEQUENCE.
06/29/1966	13-11-59.7	35.82	120.38		3.1		F	PARKFIELD SEQUENCE - FELT AT CHOLAME AND PARKFIELD.
06/29/1966	15-18-38.9	35.95	120.33		2.0			PARKFIELD SEQUENCE.
06/29/1966	15-34-22.2	35.92	120.48		2.3			PARKFIELD SEQUENCE.
06/29/1966	16-03-30.1	35.86	120.45		2.1			PARKFIELD SEQUENCE.
06/29/1966	17-10-28.3	35.82	120.36		2.0			PARKFIELD SEQUENCE.
06/29/1966	19-53-25.9	35.95	120.53		5.0		F	PARKFIELD SEQUENCE - FELT AT ADELAIDA, BITTERWATER, CHOLAME, COALINGA, FRESNO, MEE RANCH, MORRO BAY, SAN LUIS OBISPO, SAN MIGUEL, SANTA MARGARITA, SHANDON, AND WORK RANCH.
06/29/1966	20-44-40.0	35.74	120.28		2.5			PARKFIELD SEQUENCE.
06/29/1966	23-48-12.0	35.74	120.28		2.3			PARKFIELD SEQUENCE.
06/30/1966	01-17-36.1	35.86	120.45		4.1			PARKFIELD SEQUENCE.
06/30/1966	03-36-16.8	35.92	120.47		2.6			PARKFIELD SEQUENCE.
06/30/1966	05-04-12.9	35.88	120.45		2.0			PARKFIELD SEQUENCE.
06/30/1966	06-07-21.5	35.94	120.48		2.4			PARKFIELD SEQUENCE.
06/30/1966	06-23-32.4	35.90	120.47		2.1			PARKFIELD SEQUENCE.
06/30/1966	07-37-12.1	35.90	120.47		2.0			PARKFIELD SEQUENCE.
06/30/1966	08-01-38.4	35.90	120.47		2.9			PARKFIELD SEQUENCE.
06/30/1966	11-07-55.1	35.78	120.33		2.8			PARKFIELD SEQUENCE.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
06/30/1966	13-26-05.7	35.78	120.35		2.3			PARKFIELD SEQUENCE.
06/30/1966	13-29-56.6	35.86	120.40		2.0			PARKFIELD SEQUENCE.
06/30/1966	13-40-50.9	35.83	120.38		2.1			PARKFIELD SEQUENCE.
06/30/1966	16-05-02.7	35.97	120.50		2.3			PARKFIELD SEQUENCE.
06/30/1966	19-06-17.5	35.86	120.42		2.1			PARKFIELD SEQUENCE.
07/01/1966	09-41-21.9	35.94	120.52	3.2			F	PARKFIELD SEQUENCE - FELT AT WORK RANCH.
07/02/1966	12-08-34.8	35.79	120.33		3.7		F	PARKFIELD SEQUENCE - FELT AT PARKFIELD.
07/02/1966	12-16-15.8	35.81	120.35		3.4		F	PARKFIELD SEQUENCE - FELT AT PARKFIELD.
07/02/1966	12-25-06.8	35.80	120.35		3.1		F	PARKFIELD SEQUENCE - FELT AT PARKFIELD.
07/05/1966	18-54-54.5	35.92	120.48		3.0		F	PARKFIELD SEQUENCE - FELT AT PARKFIELD.
07/25/1966	22-49-39	36.40	120.30		2.5	4		NE OF COALINGA.
07/27/1966	08-12- 0.2	35.90	120.48		3.0			PARKFIELD SEQUENCE.
08/03/1966	12-39-05.8	35.80	120.38		3.4		F	PARKFIELD SEQUENCE; V AT CHOLAME, PARKFIELD, AND WORK RANCH.
08/04/1966	-?-54-24.5	35.74	121.35		3.0	8		NW OF SAN SIMEON.
08/07/1966	17-03-24.9	35.94	120.55		3.0			PARKFIELD SEQUENCE.
08/19/1966	22-51-20.1	35.90	120.45		3.3			PARKFIELD SEQUENCE.
09/07/1966	-?-20-50.5	35.83	119.94		3.2	9		SE OF COALINGA.
09/18/1966	15-09-55.7	35.74	120.35		3.1			PARKFIELD SEQUENCE.
10/27/1966	12-06-03.9	35.94	120.50		3.8		F	PARKFIELD SEQUENCE; V AT ATASCADERO, AVENAL, COALINGA, PARKFIELD, SAN MIGUEL, TEMPLETON, AND WORK RANCH.
11/05/1966	13-31-31.2	35.94	120.50		3.3			PARKFIELD SEQUENCE.
11/18/1966	23-39-42.3	35.75	120.33		3.3			PARKFIELD SEQUENCE.
12/30/1966	10-23-48	36.47	120.40		2.5	4		N OF COALINGA.
01/08/1967	23-03-50.9	35.90	120.40		2.8	8		35 KM SE OF PRIEST (UC BERKELEY SS).
01/09/1967	23-18-59.5	35.86	120.10		3.1	9		SE OF COALINGA.
02/01/1967	13-55-54.1	35.70	120.25		3.0	8		NE OF SAN LUIS OBISPO.
02/26/1967	15-17-53.9	36.40	121.06		2.5	9		SW OF LLANADA.
03/13/1967	21-59-48.4	36.00	120.61		3.1	8	F	15 KM S OF PRIEST (UC BERKELEY SS). IV AT SAN MIGUEL; FELT AT INDIAN VALLEY AND RANCHITO CANYON.
03/21/1967	02-24-28.3	36.21	120.85		2.8	8		17 KM NW OF PRIEST (UC BERKELEY SS).
03/23/1967	11-39-56.4	36.16	120.18		3.0	5		20 KM E OF COALINGA.
04/13/1967	09-06-42.5	36.15	120.80		2.7	8		13 KM W OF PRIEST (UC BERKELEY SS).
05/17/1967	14-16-52.2	35.95	120.73		3.0	6		30 KM S OF PRIEST (UC BERKELEY SS).
06/03/1967	20-10-53.0	35.71	121.48		2.6	7		OFF COAST NW OF SAN SIMEON.
06/06/1967	06-11-38.5	35.81	120.43		3.0	10	F	40 KM SE OF PRIEST (UC BERKELEY SS); IV AT WORK RANCH; FELT IN INDIAN VALLEY, SOUTHERN MONTEREY COUNTY, AND VINEYARD CANYON.
06/13/1967	12-54-10.7	35.81	121.50		3.3	10		OFF COAST, 35KM NW OF SAN SIMEON.
07/24/1967	07-08-52.9	35.96	120.50		3.7	9		PARKFIELD AREA.
07/28/1967	14-44-40.1	35.75	121.38		3.0	6		NEAR SAN SIMEON.
08/01/1967	22-14-13.0	35.75	121.40		2.7	6		NW OF SAN SIMEON.
08/08/1967	18-11-20.3	36.42	120.42		2.5	7		N OF COALINGA.
08/12/1967	18-57-40.4	35.80	120.45		4.1	18	F	PARKFIELD AREA; V AT ESTRELLA AREA, HOG CANYON ROAD TO PARKFIELD, AND SHANDON, AND IV AT CHOLAME.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
08/12/1967	23-21-07.8	36.11	120.80		2.8	6		SE OF KING CITY.
08/12/1967	23-22-05.3	36.13	120.76		2.5	7		SE OF KING CITY.
08/17/1967	23-12-02.7	35.91	121.50		2.6	5		NW OF SAN SIMEON.
08/25/1967	02-28-14.4	35.81	121.27		2.7	6		NW OF SAN SIMEON.
08/25/1967	16-35-27.8	36.05	120.00		3.2	7		SE OF COALINGA.
08/25/1967	16-40-50.2	36.01	119.95		3.0	7		SE OF COALINGA.
08/31/1967	18-10-40.4	35.86	121.35		2.8	7		NW OF SAN SIMEON.
09/09/1967	21-35-05.6	35.81	121.63		2.4	3		OFF SHORE SAN SIMEON.
10/14/1967	12-02-43.6	36.50	120.61		2.7	5		NEAR MT. CIERVO.
10/21/1967	12-05-21.8	35.83	120.46		3.1	7		PARKFIELD AREA.
10/25/1967	23-05-30.5	35.73	121.45		2.6	4		NEAR SAN SIMEON.
11/11/1967	22-10-06.8	36.50	120.81		3.3	9		S OF PANOCHE VALLEY.
11/11/1967	22-33-47.5	36.48	120.78		2.8	6		S OF PANOCHE VALLEY.
11/12/1967	07-11-20.4	36.48	120.80		2.6	7		S OF PANOCHE VALLEY.
11/14/1967	-?--?-51.7	35.78	120.53		3.1	3		PARKFIELD.
11/25/1967	15-27-43.4	36.46	121.06		2.5	6		BEAR VALLEY.
12/21/1967	05-13-11.3	35.36	120.85		2.6	3		S OF SAN SIMEON.
12/21/1967	19-08-53.8	35.91	119.53		3.1	5		NW OF DELANO.
12/21/1967	23-58-60.2	35.93	120.56		3.0	3		PARKFIELD.
12/31/1967	23-48-13.5	35.75	120.45		4.3	3	F	PARKFIELD AREA; V AT CRESTON, PARKFIELD, SALINAS DAM, SAN MIGUEL, SHANDON, TEMPLETON, AND WORK RANCH.
02/03/1968	19-07-26.4	35.73	121.25		2.8	5		NEAR SAN SIMEON.
02/23/1968	20-20-57.9	35.86	121.31		2.5	7		EAST OF HOLLISTER.
03/25/1968	11-32-07.4	36.37	120.70		3.6	8	F	SE OF LLANADA; MAXIMUM INTENSITY V.
03/28/1968	04-53-26.5	36.36	120.19		3.1	5	F	SE OF COALINGA; FELT AT AVENAL - INTENSITY IV.
04/14/1968	06-20-54.6	36.18	121.65		2.5	6		SE OF MONTEREY.
04/23/1968	15-09-14.9	35.52	120.82		3.4	7		SE OF SAN SIMEON.
04/27/1968	14-32-37.4	36.22	120.83		2.7	7		NW OF PRIEST (UC BERKELEY SS).
04/28/1968	06-31-32.9	35.46	120.83		3.5	7		NW OF SAN LUIS OBISPO.
05/31/1968	07-07-37.9	35.80	120.60		3.0	5		S OF COALINGA.
06/11/1968	11-43-28.1	35.90	121.70		3.3	9		OFFSHORE, NW OF SAN SIMEON.
06/22/1968	12-50-50.1	36.43	121.04		2.9	9		S OF LLAN
07/03/1968	17-52-52	35.80	121.50		2.5	7		NW OF SAN SIMEON.
07/29/1968	04-27-51.9	36.38	120.69		2.7	9		N OF PRIEST (UC BERKELEY SS).
07/29/1968	05-29-19.9	36.37	120.70		2.8	9		N OF PRIEST (UC BERKELEY SS).
07/31/1968	-?-49-25.4	36.37	120.70		2.9	9		N OF PRIEST (UC BERKELEY SS).
08/19/1968	16-30-18.2	36.40	121.91		3.3	9		S OF CARMEL.
09/01/1968	21-56-24.4	36.45	121.02		2.7	8		E OF PINNACLES NATIONAL MONUMENT.
11/06/1968	08-58-23.2	35.88	120.45		2.8	10	F	NEAR PARKFIELD; FELT NEAR SAN MIGUEL.
11/10/1968	04-06-03.9	35.70	121.18		3.2	9		NEAR SAN SIMEON.
11/17/1968	01-03-47.0	36.29	120.94		3.0	6		NEAR KING CITY.
12/11/1968	12-19-52.4	35.81	120.48		3.0	10		NEAR PARKFIELD.
12/16/1968	01-14-10.9	36.17	120.85		2.7	7		W OF PRIEST (UC BERKELEY SS).
01/09/1969	09-42-47.2	35.94	120.57		3.8	7	F	CHOLAME VALLEY; FELT IN PARKFIELD AND SLACK CANYON - MAXIMUM INTENSITY V.
02/04/1969	-?-45-25	36.40	120.38		3.0	4		NORTH OF COALINGA.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
06/19/1969	07-05-08	36.12	119.58		3.5	8	F	NEAR TULARE; FELT IN CORCORAN, DINUBA, HANFORD, IVANHOE, LEMON COVE, STRATHMORE, AND TIPTON. MAXIMUM INTENSITY IV.
06/24/1969	14-25-37	36.42	120.13		3.0	4		SOUTHWEST OF FRESNO.
07/16/1969	04-06-35	35.83	120.28		3.2	7		15 KM SOUTHEAST OF PARKFIELD.
09/06/1969	13-44-45	35.30	121.10		3.8	10	F	50 KM WEST OF SAN LUIS OBISPO.
09/16/1969	03-32-24	36.18	120.80		2.5	8		13 KM WEST OF PRIEST (UC BERKELEY SS).
10/02/1969	06--?-58.9	36.32	120.32		3.3	10		10 KM NORTH OF COALINGA.
11/17/1969	20-49-10.4	36.43	121.05		4.4	10	F	NNE OF KING CITY; FELT IN MONTEREY - SWAYED BUILDINGS IN SALINAS
11/19/1969	06-23-50	36.45	121.52		4.2	8	F	GONZALES AND SALINAS VALLEY; FELT IN SALINAS AND SANTA CRUZ - RATTLED WINDOWS IN MONTEREY.
11/26/1969	-?-06-59	36.48	120.60		2.5	6		50 KM NORTHEAST OF KING CITY.
11/30/1969	15-11-54	35.30	120.90		2.5	10		20 KM EAST OF KING CITY; 2 SMALL FORESHOCKS RECORDED.
12/10/1969	13-25-31	35.75	120.40		3.5	7		40 KM SOUTH OF COALINGA.
12/14/1969	19-07-57	35.92	120.68		3.2	9		20 KM NORTH OF PASO ROBLES.
01/29/1970	02-49-12.9	36.11	120.99		2.5	6		20 KM SOUTHWEST OF KING CITY.
02/01/1970	21-19-45.7	36.41	121.08		2.6	12		30 KM EAST OF PARAISO.
02/08/1970	-?-14-13.3	36.40	120.97		2.7	13		25 KM SOUTH OF LLANADA.
02/09/1970	16--?-46.1	35.77	120.35		3.1	16		60 KM SOUTH OF PRIEST (UC BERKELEY SS).
02/14/1970	15-44-58.0	36.09	120.64		2.8	14		5 KM SOUTH OF PRIEST (UC BERKELEY SS).
04/18/1970	13-16-53.4	36.49	120.01		3.0	15		35 KM SOUTHWEST OF FRESNO.
04/21/1970	22-29-25.9	35.66	120.43		3.0	8		65 KM SOUTH OF PRIEST (UC BERKELEY SS).
04/23/1970	03-25-18.9	35.97	121.45		2.5	10		25 KM SOUTHWEST OF KING CITY.
05/27/1970	10-42-19.3	35.99	120.91		3.4	8		40 KM SOUTHWEST OF PRIEST (UC BERKELEY SS).
07/20/1970	23-24-55	35.95	121.57		2.5	5		8 KM SOUTH OF LOPEZ POINT - OFFSHORE.
07/21/1970	05-24-16.1	35.99	121.57		2.5	5		5 KM SOUTHEAST OF LOPEZ POINT.
08/05/1970	06-47-36.4	35.82	119.94		2.9	8		KETTLEMAN HILLS.
08/05/1970	16-51-45.7	36.23	121.69		3.0	11		25 KM SOUTHWEST OF PARAISO.
08/13/1970	05-06-19.8	36.17	121.70		3.7	11		20 KM WEST OF LOPEZ POINT.
09/05/1970	11-29-11	36.20	120.10		3.1	4		EAST-NORTHEAST OF COALINGA.
09/10/1970	23-45-59	36.40	120.50		3.2	11		30 KM NORTHWEST OF COALINGA.
09/11/1970	15-20-08	35.98	120.05		3.3	9		8 KM EAST OF AVENAL.
09/16/1970	18-22-10.7	35.96	121.27		2.6	7		NEAR MILPITAS.
10/07/1970	17-57-06.3	36.30	121.40		2.5	9		30 KM NORTHWEST OF KING CITY.
12/01/1970	06-05-59	35.38	121.13		3.3	7	F	25 KM WEST OF MORRO BAY; INTENSITY V AT BRYSON - NO DAMAGE.
12/12/1970	22-29-20	35.65	121.55		2.5	6		30 KM WEST OF SAN SIMEON.
01/02/71	06-27-37.5	35°55.1'	120°32.2'		3.0			10 km NW of Parkfield
01/16/71	05-33-27.8	36°00'	120°12'		3.1			Kettleman Hills
01/26/71	21-53-53	35°12'	120°42'		3.0			Near San Luis Obispo.
01/31/71	12-22-49.5	35°55.6'	120°30.6'		3.0			NW of Parkfield; sharp, rapid jolting at Shandon.
04/05/71	01-40-34.2	36°24.8'	120°59.0'		3.0			20 km SE of Pinnacles National Monument.
04/19/71	09-35-58.8	36°13.7'	120°50.3'		3.0			25 km E of King City.
04/29/71	02-13-15.7	36°30.3'	120°32.5'		3.0			40 km NW of Coalinga.
06/20/71	12-41-39.8	35°3'	120°20'		3.4			Near Cholame.
07/06/71	09-24-35	35°34'	121°35'		3.0			SW of San Simeon.

TABLE 2.5-1

MM/DD/YY	HR/MN/SE	NORTH LAT	WEST LONG	QUALITY	MAG.	STA. REC.	FELT	MAXIMUM INTENSITY - COMMENTS
07/21/71	09-14-26.2	36°13.7'	120°50.8'		3.2			Near Coalinga.
08/06/71	20-03-16.3	36°00.8'	120°02.2'		3.0			Near Coalinga.
10/06/71	14-43-30.6	35°51.3'	120°22.5'		3.5			S of Coalinga; intensity IV at Cholame, Parkfield, and Shandon.
10/21/71	22-09-45.4	35°58.8'	120°50.2'		3.7			SE of King City; intensity V at San Ardo (small objects shifted) and intensity IV at Jolon, King City, Lockwood, Pine Canyon, and San Lucas.
11/07/71	14-03-30.4	35°31.2'	119°50.2'		4.0			SE of Coalinga.
11/18/71	04-03-52.4	36°14.5'	120°50.6'		3.4			NE of King City.
11/30/71	09-45-42.8	36°03.6'	119°53.4'		3.0			SE of Coalinga.

END OF SELECTED EARTHQUAKES

END OF QUAKES PROGRAM FOR SELECTION OF EARTHQUAKES

TABLE 2.5-2

SUMMARY, REVISED EPICENTERS OF REPRESENTATIVE SAMPLES OF EARTHQUAKES OFF THE COAST OF CALIFORNIA NEAR SAN LUIS OBISPO

Date	Event Number	Original Hypocenter / Revised Hypocenter Lat.	Long.	Distance Hypocenter Moved, km	Error Ellipse km	Mag., M_L
May 27, 1935	1	35.370 35.621	120.960 121.639	66NW	7 x 14	3.0
Sept. 7, 1939	6	35.420 35.459	121.070 121.495	40W	8 x 8	3.0
Oct. 6, 1939	7	35.800 36.232	121.500 121.763	54NW	16 x 31	3.5
July 11, 1945	8	35.670 35.809	121.250 121.408	21NW	7 x 24	4.0
Mar. 23, 1947	12	35.150 34.577	121.300 121.137	66S	12 x 24	3.7
Mar. 27, 1947	15	35.000 34.739	121.000 120.896	32SW	20 x 20	4.2
Dec. 20, 1948	9	35.800 35.683	121.500 121.364	16SE	9 x 38	4.5
Dec. 31, 1948	10	35.670 35.598	121.400 121.226	17SE	8 x 29	4.6
Nov. 22, 1952 Bryson Earthquake	17	35.730 35.830 35.836	121.190 121.170 121.204	U.C. Berkeley Richter (1969) 12N	7 x 24	6.0
Mar. 13, 1954	21	35.000 34.960	120.690 120.490	19E	9 x 18	3.4
Mar. 5, 1955	23	35.600 35.863	121.400 121.149	38NE	15 x 29	3.3
June 21, 1957	25A	35.100 35.255	120.900 120.951	15NW	10 x 19	3.7
Jan. 2, 1960	26	35.400 35.778	121.190 121.066	44NE	15 x 29	4.0
Feb. 1, 1962	52	34.880 35.031	120.670 120.846	22NW	6 x 16	4.5

TABLE 2.5-2

Date	Event Number	Original Hypocenter / Revised Hypocenter Lat.	Long.	Distance Hypocenter Moved, km	Error Ellipse km	Mag., M_L
Mar. 5, 1962	54	34.600 34.622	121.590 121.416	17E	8 x 10	4.5
Mar. 10, 1962	54A	34.600 34.667	121.590 121.372	22NE	6 x 20	4.2
Feb. 22, 1963	28	35.110 34.730	121.440 121.400	42S	7 x 28	3.3
Sept. 6, 1969	31	35.300 35.355	121.090 121.033	9NE	5 x 10	3.6
Oct. 22, 1969	56	34.830 34.649	121.340 121.471	23SW	14 x 50	5.4

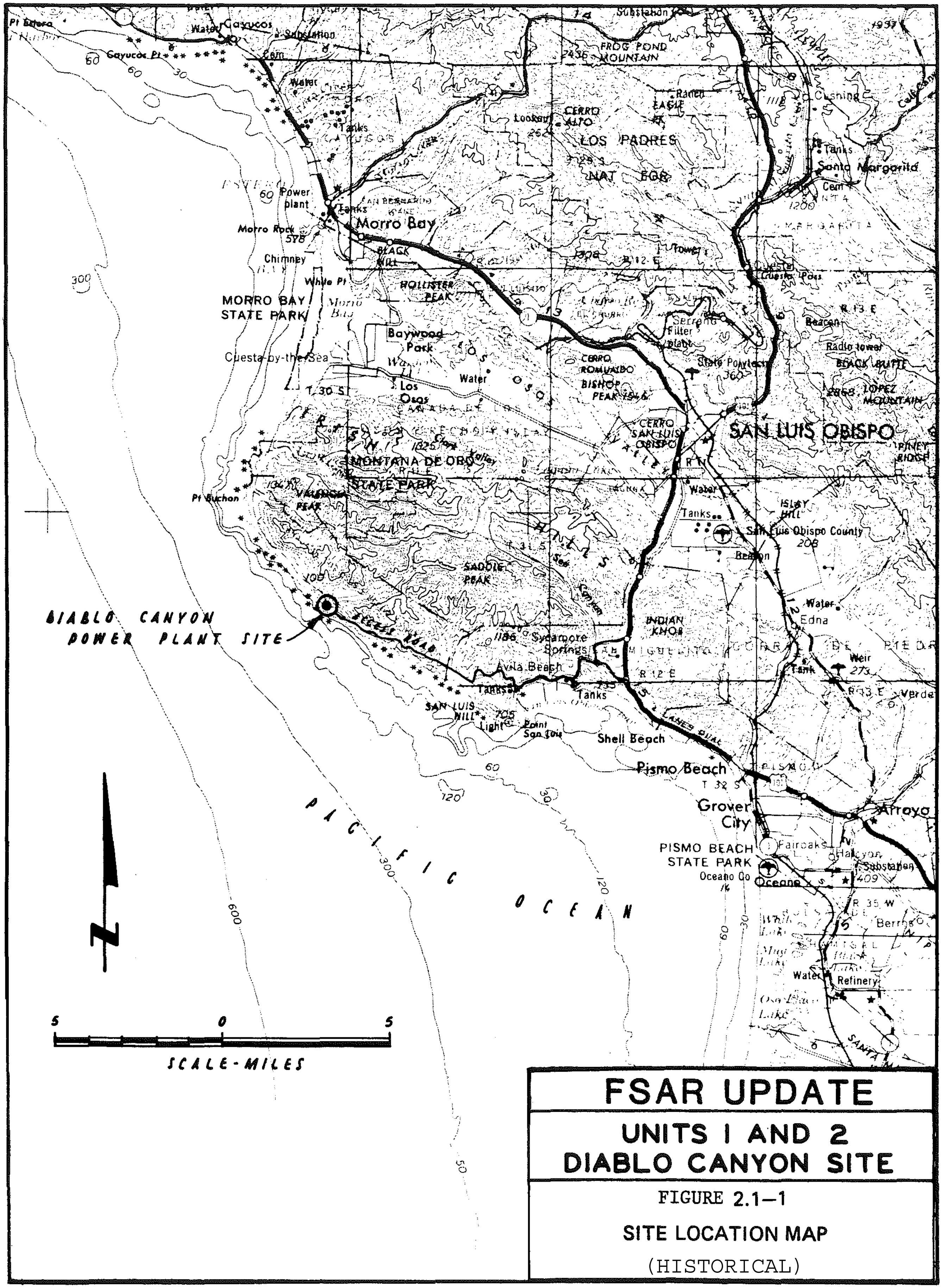
TABLE 2.5-3

DISPLACEMENT HISTORY OF FAULTS IN THE SOUTHERN COAST RANGES OF CALIFORNIA

Fault	Distance From Diablo Site, miles	Time of Principal Activity	Youngest Formation Cut By Fault	Oldest Formation Capping Fault
San Andreas	45	Mid-Tertiary - present		Currently active
Faults in ground between San Andreas and Sur-Nacimiento-Rinconada, La Panza, Cuyama, Red Hills, East Huasna	18-45	Tertiary	Pleistocene (possible Holocene) (Ref. 14)	Not Known
Sur-Nacimiento (zone)	18	Late Mesozoic, (Benioff-subduction zone)	Pleistocene (possible Holocene) (Ref. 14)	Late Quaternary terrace deposits (Ref. 11)
West Huasna-Suey	11	Late Tertiary	Post late-Miocene	Late Quaternary terrace deposits (Ref. 36)
Edna	4.5	Late Tertiary	Plio-Pleistocene (Paso Robles Fm)	Late Pleistocene (Ref. 20)
Miguelito	5	Late Tertiary	Early Pliocene (Miguelito Member of Careaga Fm) (Ref. 21)	Poss. capped by mid-Pliocene Squire Member of Careaga Fm; Plio-Pleistocene Paso Robles Fm

TABLE 2.5-3

Fault	Distance From Diablo Site, miles	Time of Principal Activity	Youngest Formation Cut By Fault	Oldest Formation Capping Fault
Faulting in the Mesozoic rocks near Pt. San Luis	4	Mesozoic	Mesozoic	Late Pleistocene (Ref. 20)
Unnamed faults near Pt. San Simeon	35	Probable Tertiary	Not known; possible Holocene	Not known
Offshore structural zone	4.5	Late Tertiary	Possible Holocene (Ref. 19) (northern part)	Holocene-upper Pliocene (Ref. 19) (southern part)
Faults in the Santa Maria Basin	40	Not known	Possible Pleistocene (orcutt Fm) (Ref. 23)	Pleistocene-Holocene



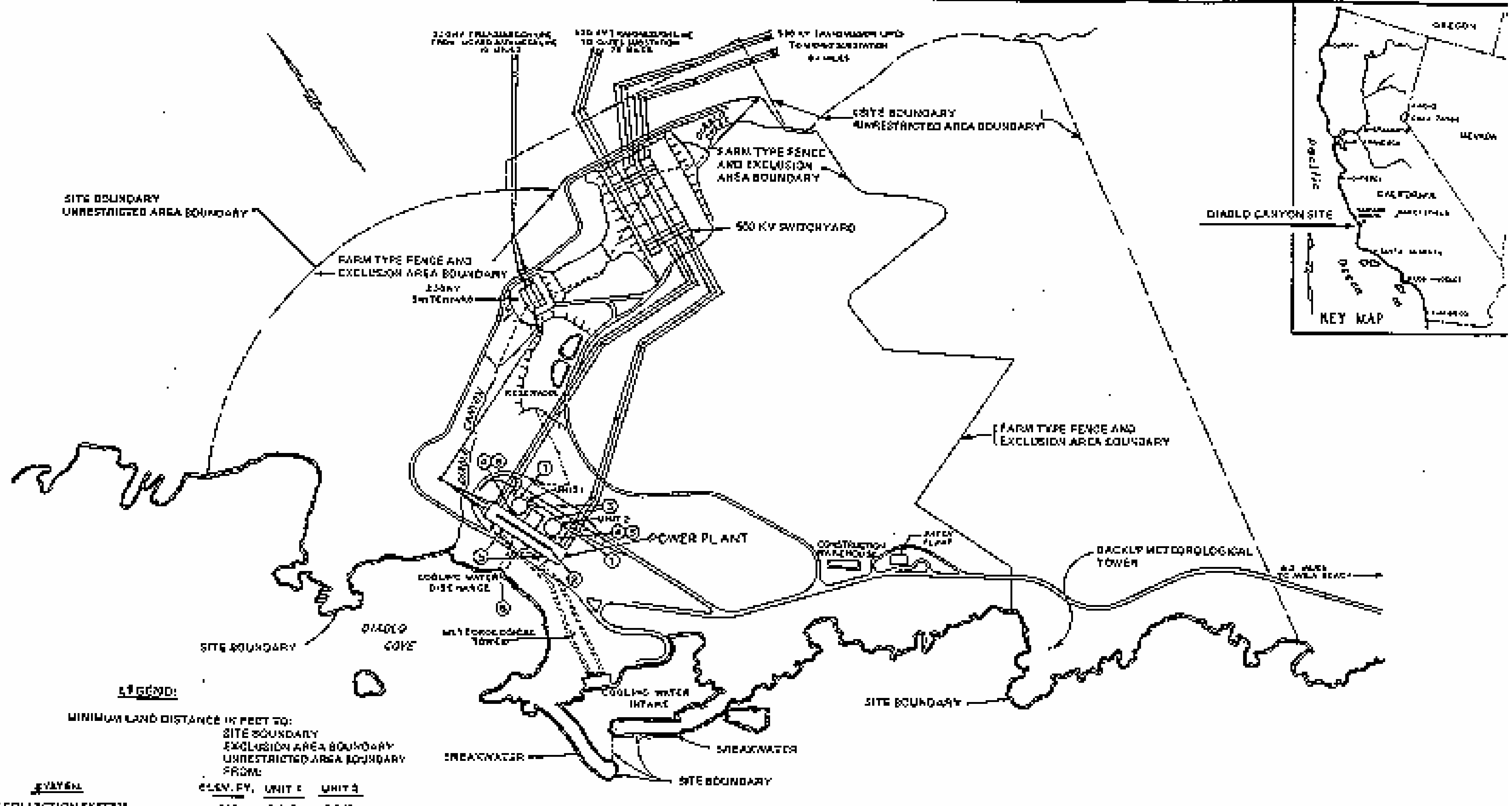
FSAR UPDATE

UNITS 1 AND 2 DIABLO CANYON SITE

FIGURE 2.1–1

SITE LOCATION MAP

(HISTORICAL)



LEGEND:

MINIMUM LAND DISTANCE IN FEET TO:
SITE BOUNDARY
EXCLUSION AREA BOUNDARY
UNRESTRICTED AREA BOUNDARY
FROM:

SYSTEM	ELEV. FT.	UNIT 1	UNIT 2
① GAS COLLECTION SYSTEM	310	2,640	2,040
② VENT COLLECTION SYSTEM	310	2,640	2,040
③ CONTAINMENT PURGE EXHAUST	310	2,640	2,040
④ REFUELING AREA AND AUX. BLDG. VENT EXHAUST	310	2,640	2,640
⑤ CONDENSER AIR EJECTOR EXHAUST	316	2,640	2,640
⑥ GLAND STEAM EXHAUSTER BLOWER DISCHARGE	310	2,640	3,340
⑦ TURB. BLDG. VENT EXHAUST	222	2,480	3,100
⑧ STEAM GENERATOR BLOWDOWN TANK VENT	137	2,860	2,550
⑨ MAIN STEAM RELIEF VALVE AND PCV DISCHARGES	165	2,425	2,785
⑩ REHEAT SAFETY VALVE DISCHARGE	EAST 150	2,405	2,700
	WEST 123	2,500	2,700
⑪ LIQUID DISCH. TO OCEAN	0	2,630	2,630

FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

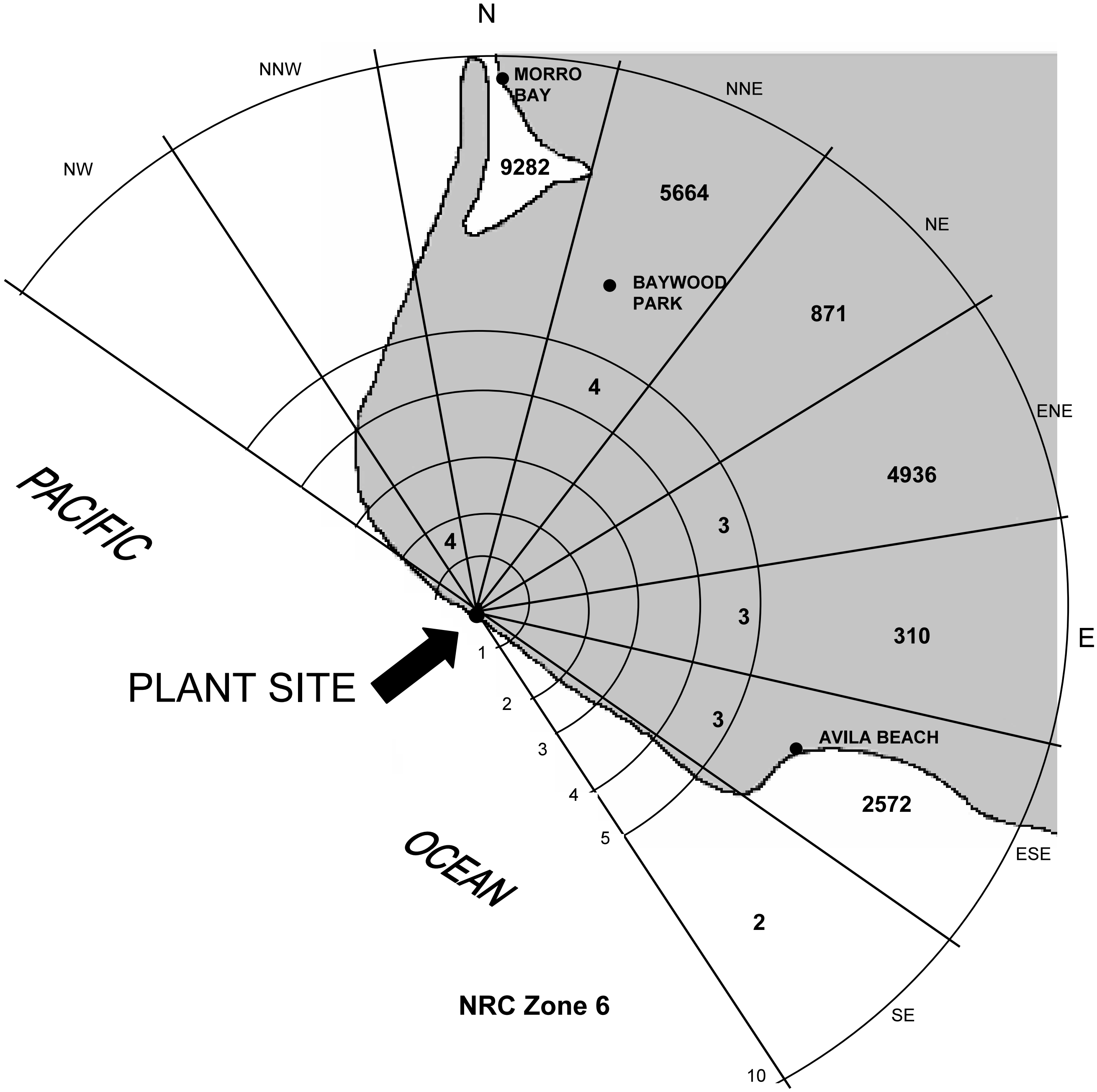
FIGURE 2.1-2
SITE PLAN AND
GASEOUS/LIQUID EFFLUENT
RELEASE POINTS

FSAR UPDATE

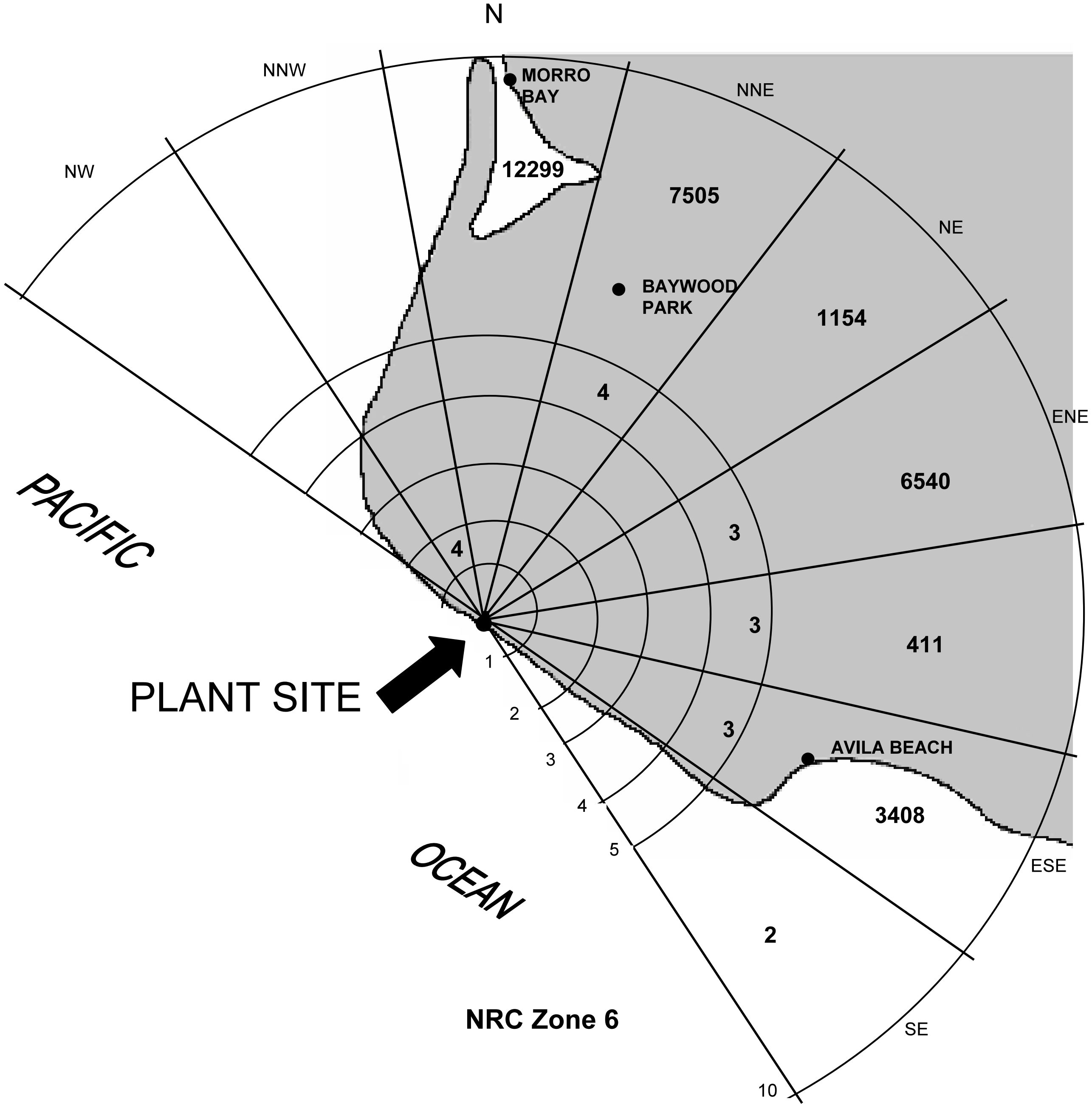
UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.1-3

AERIAL PHOTOGRAPH OF THE SITE
(HISTORICAL)



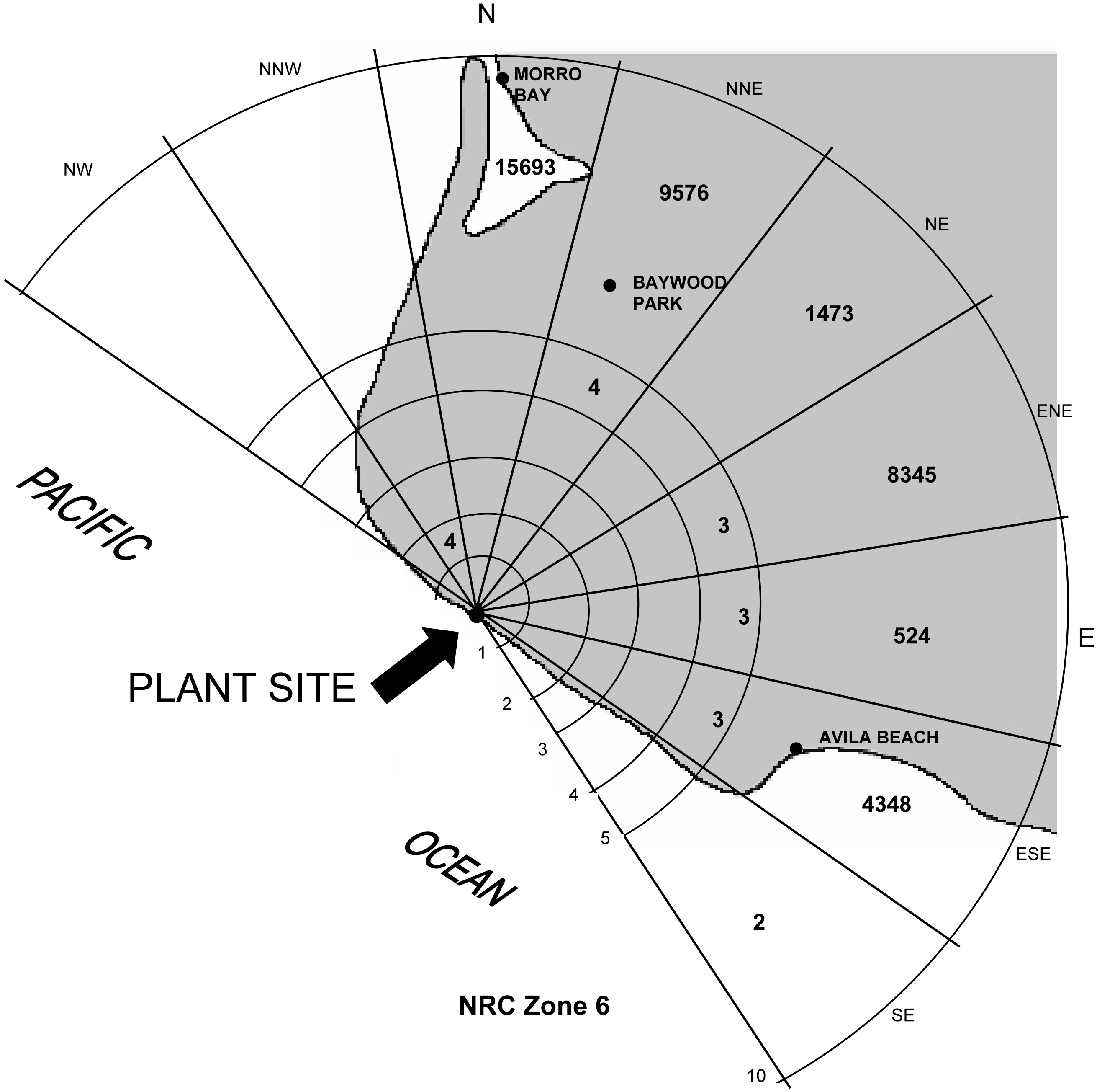
FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.1-4 POPULATION DISTRIBUTION 0 TO 10 MILES 2000 CENSUS (HISTORICAL)



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

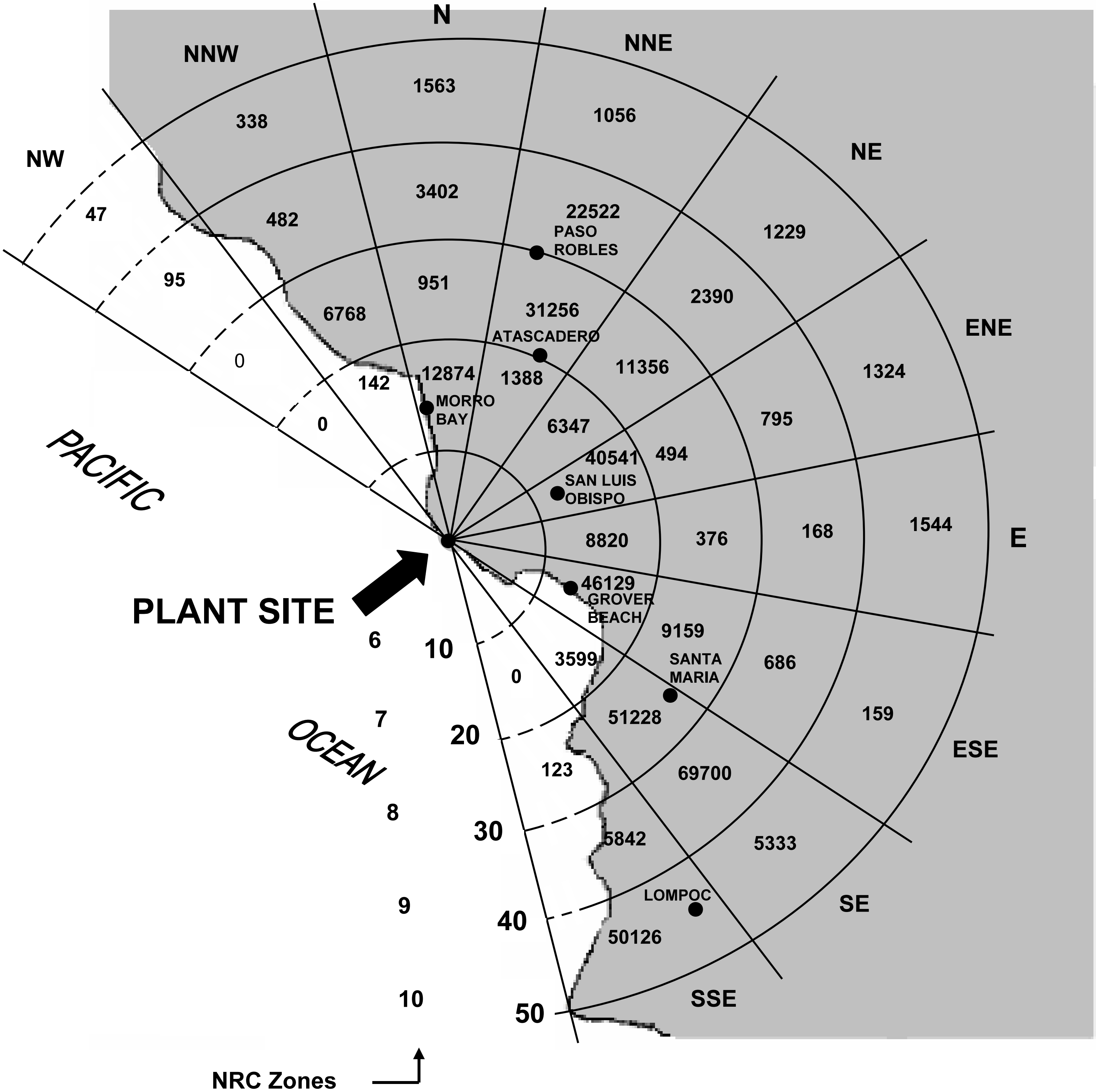
FIGURE 2.1-5
POPULATION DISTRIBUTION
0 TO 10 MILES
2010 PROJECTED
(HISTORICAL)



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

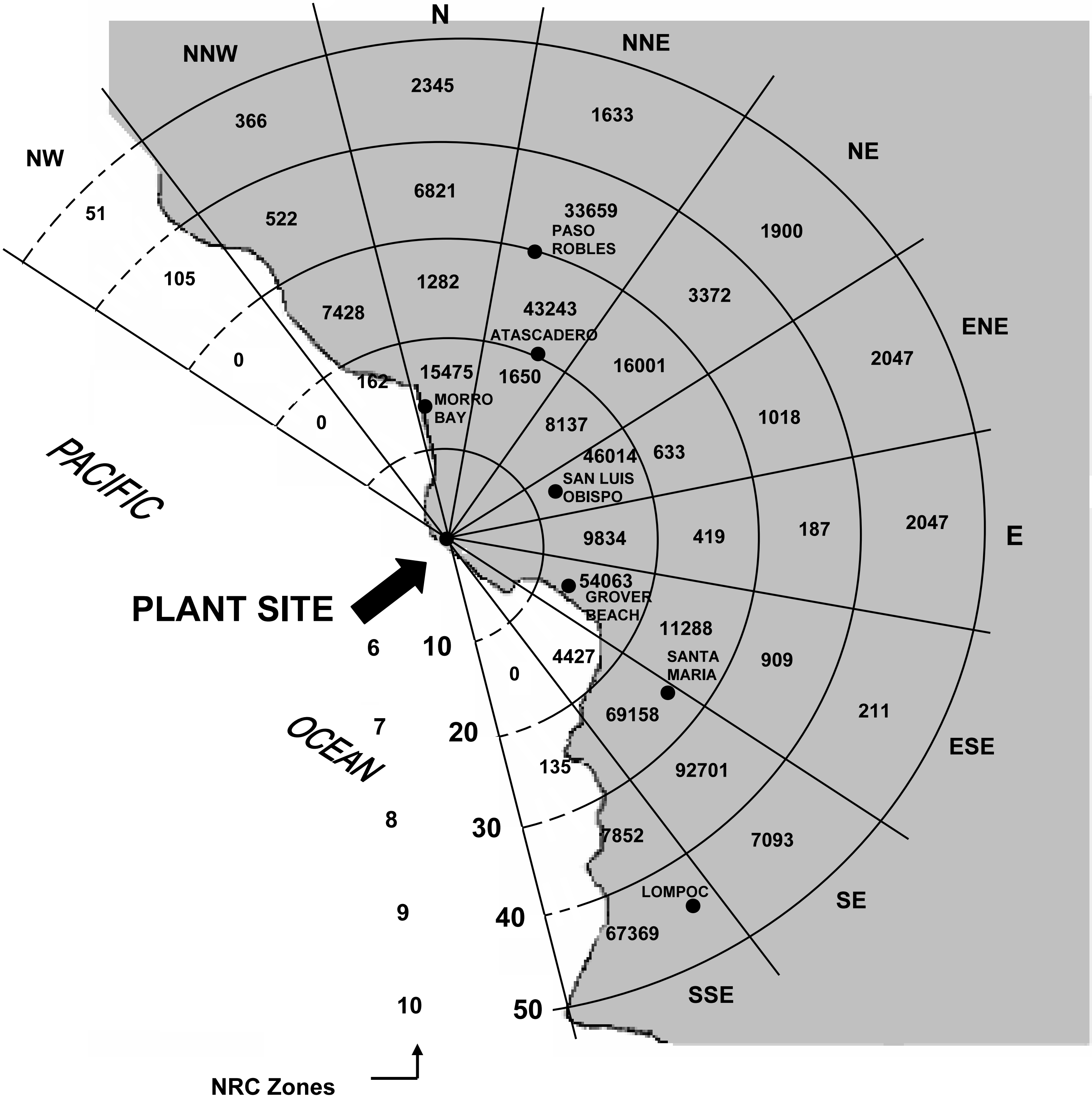
FIGURE 2.1-6
POPULATION DISTRIBUTION
0 TO 10 MILES
2025 PROJECTED
(HISTORICAL)



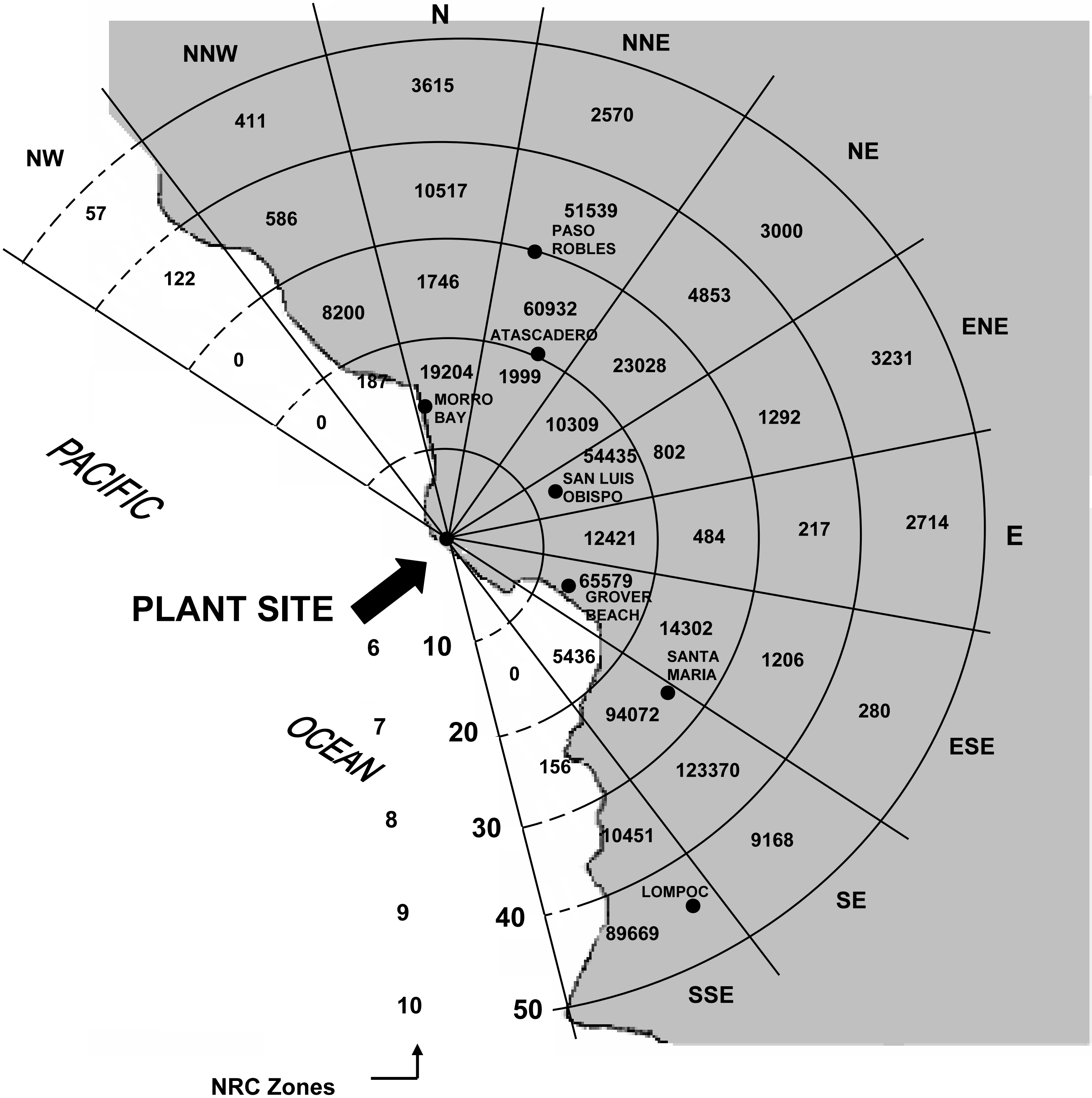
FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.1-7
POPULATION DISTRIBUTION
10 TO 50 MILES
2000 CENSUS
(HISTORICAL)



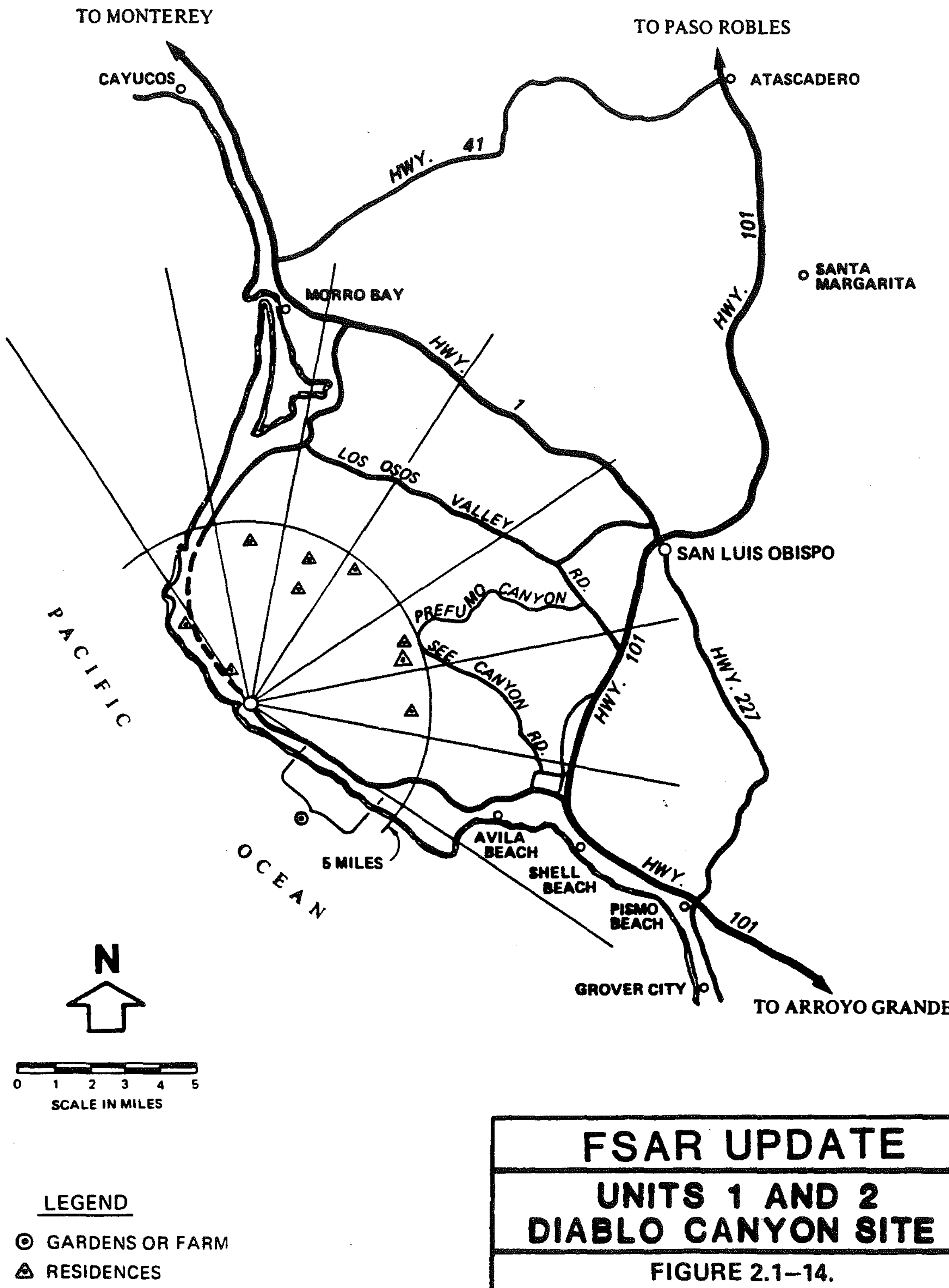
FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.1-8 POPULATION DISTRIBUTION 10 TO 50 MILES 2010 PROJECTED (HISTORICAL)



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.1-9
POPULATION DISTRIBUTION
10 TO 50 MILES
2025 PROJECTED
(HISTORICAL)

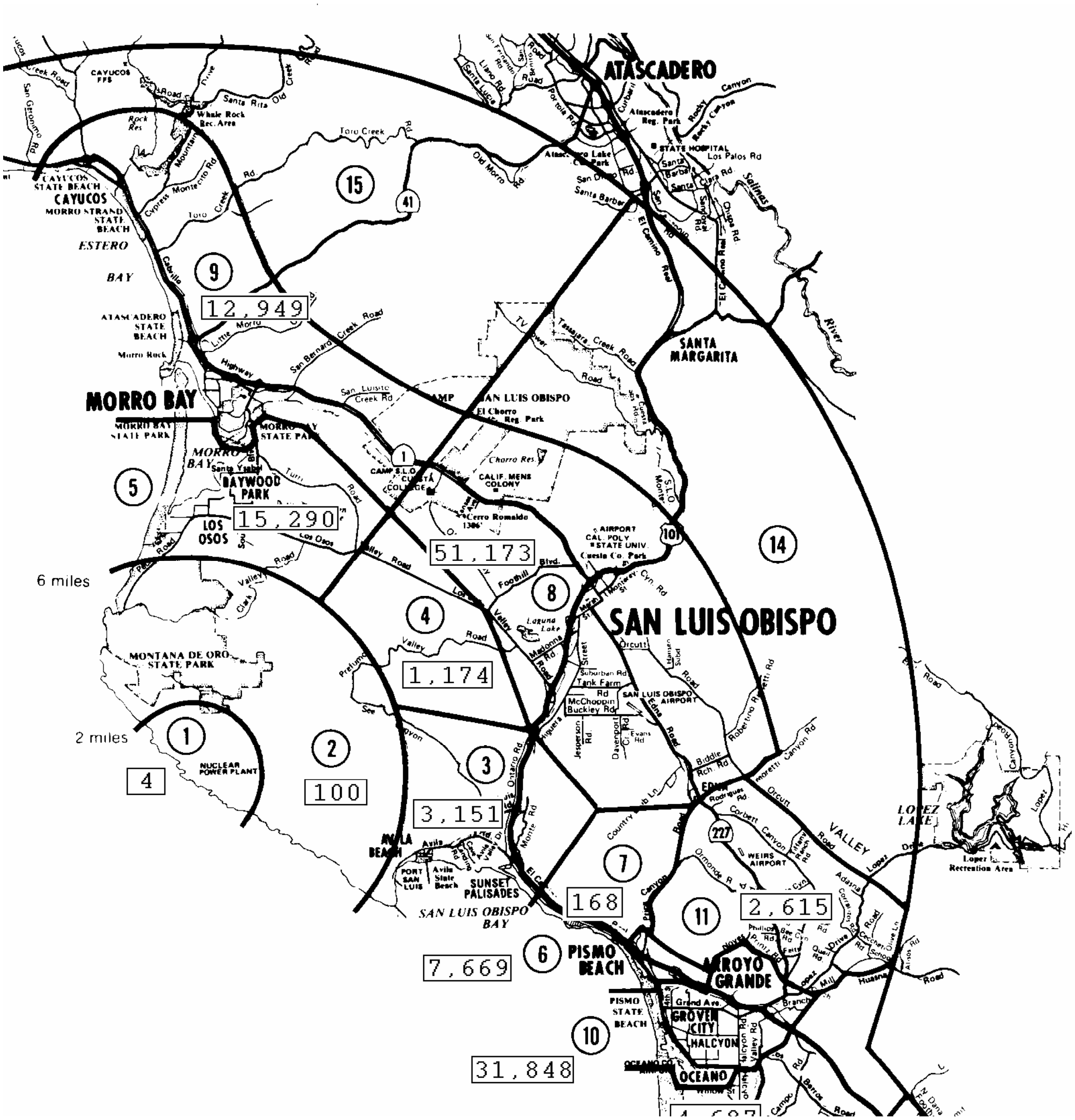


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.1–14.

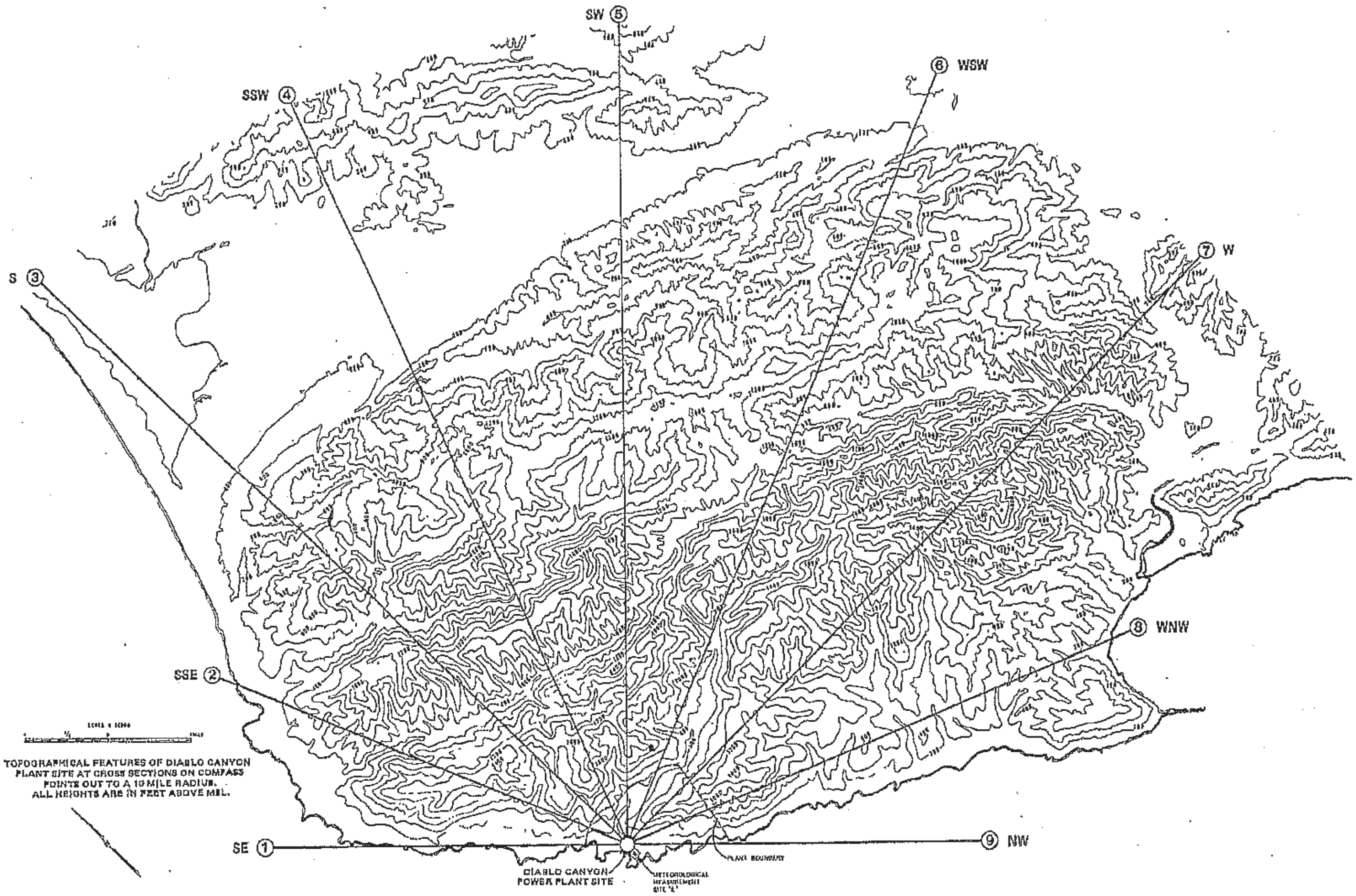
1985 LAND USE CENSUS
(HISTORICAL)



FSAR Update

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.1-15
LOW POPULATION ZONE
(HISTORICAL)

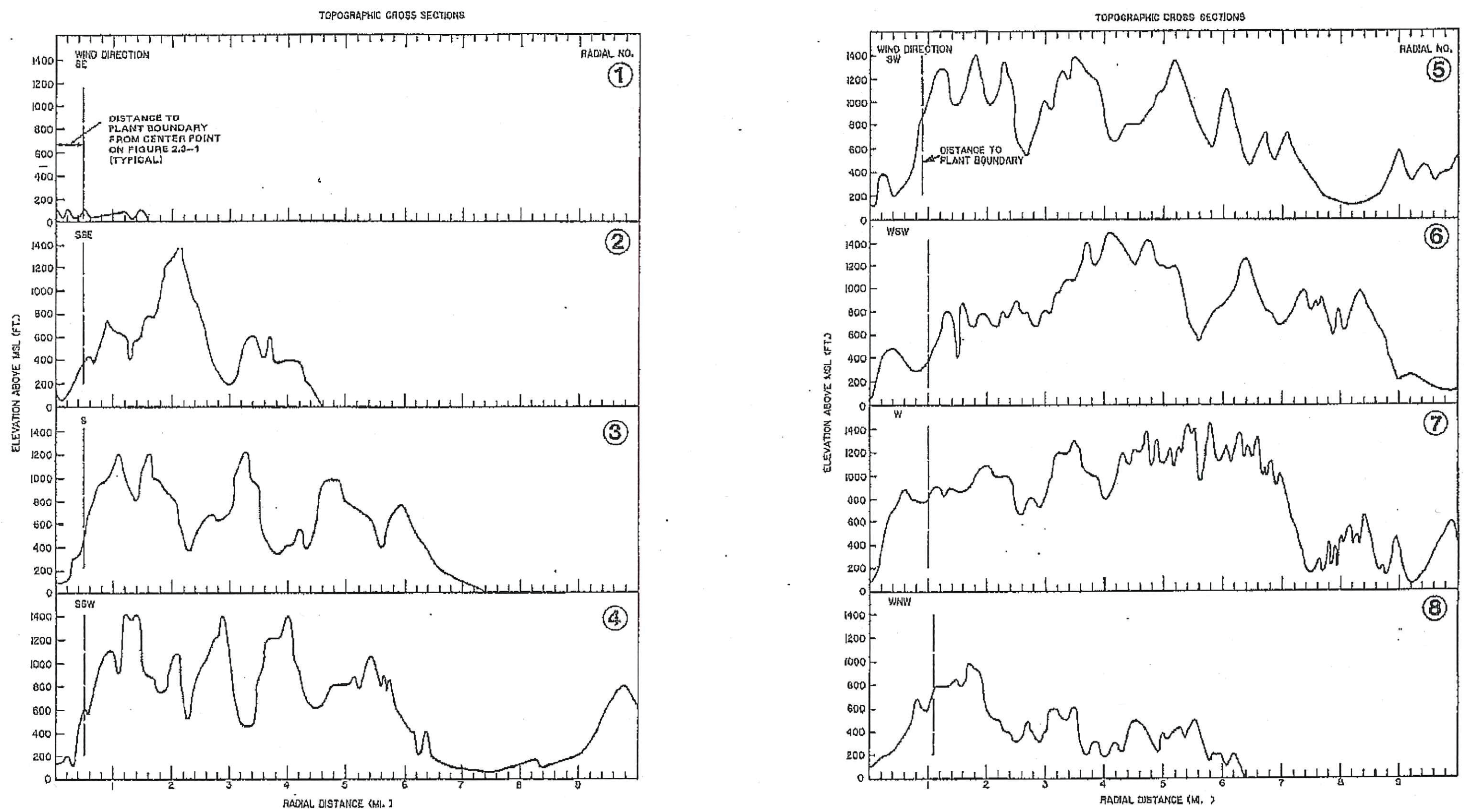


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.3-1

TOPOGRAPHICAL FEATURES AT CROSS SECTIONS TO A 10 MILE RADIUS (SECTIONS SHOWN ON FIGURE 2.3-2)



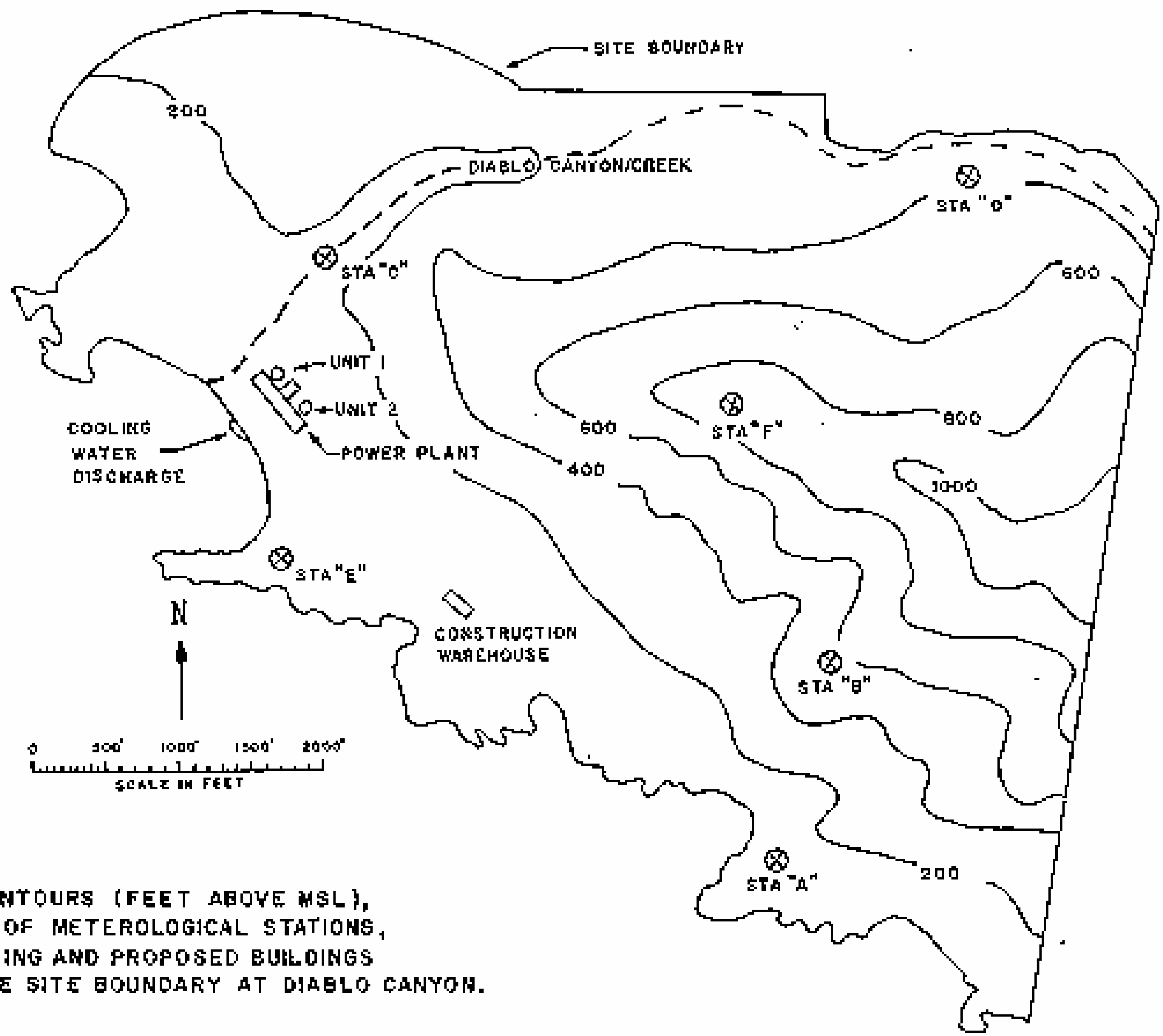
TOPOGRAPHICAL FEATURES OF DIABLO CANYON PLANT SITE AT CROSS SECTIONS ON COMPASS POINTS OUT TO A 10 MILE RADIUS. ALL HEIGHTS ARE IN FEET ABOVE MSL.

FSAR UPDATE

UNITS 1 AND 2 DIABLO CANYON SITE

FIGURE 2.3-2

TOPOGRAPHICAL FEATURES AT CROSS SECTIONS TO A 10 MILE RADIUS (SECTIONS CUT ON FIGURE 2.3-1)

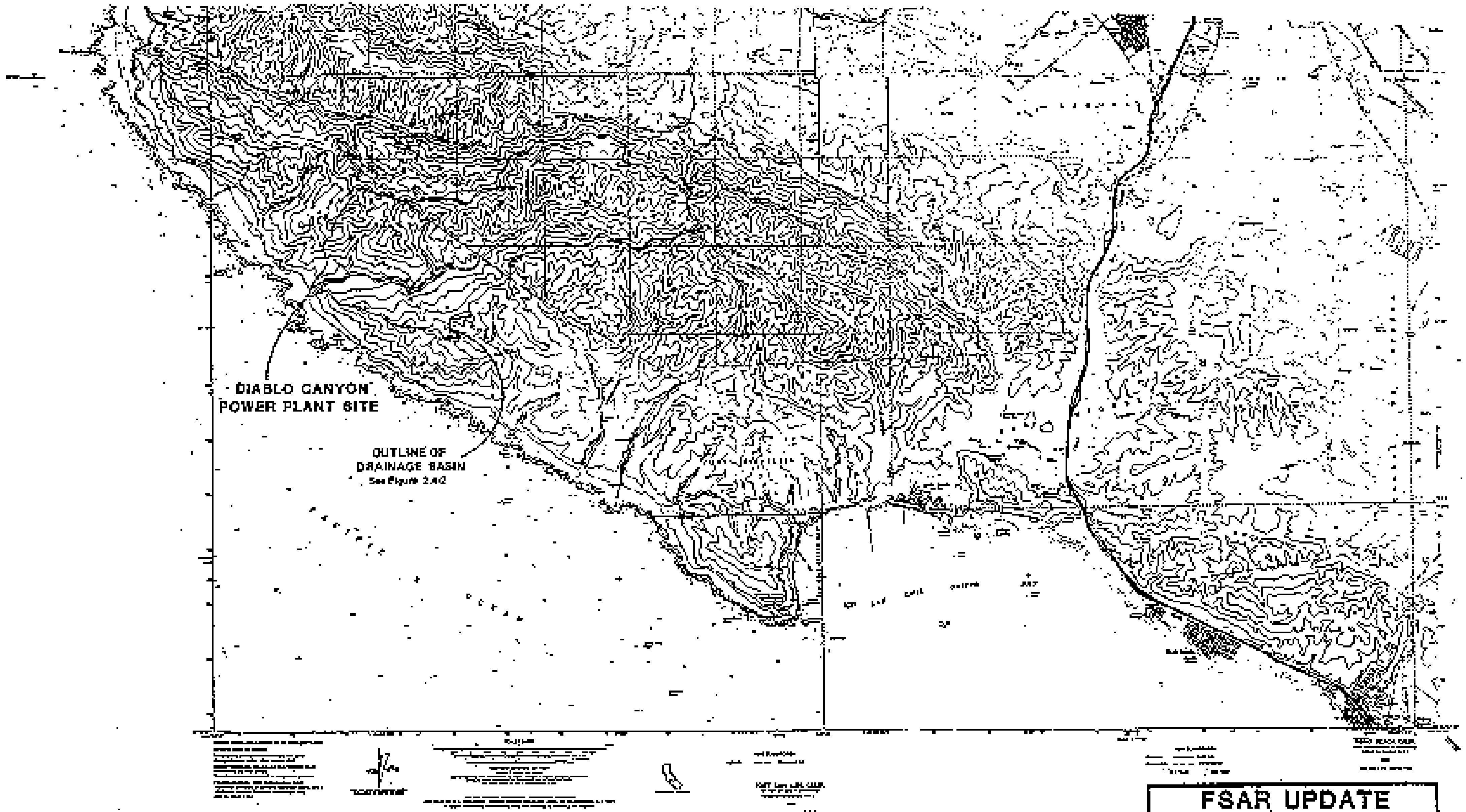


NOTE:

HEIGHT CONTOURS (FEET ABOVE MSL), LOCATION OF METEROLOGICAL STATIONS, AND EXISTING AND PROPOSED BUILDINGS WITHIN THE SITE BOUNDARY AT DIABLO CANYON.

FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.3-3 LOCATION OF METEROLOGICAL STATIONS WITHIN THE SITE BOUNDARY

FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.3-4 LOCATION OF METEOROLOGICAL MEASUREMENT SITES AT DIABLO CANYON AND VICINITY

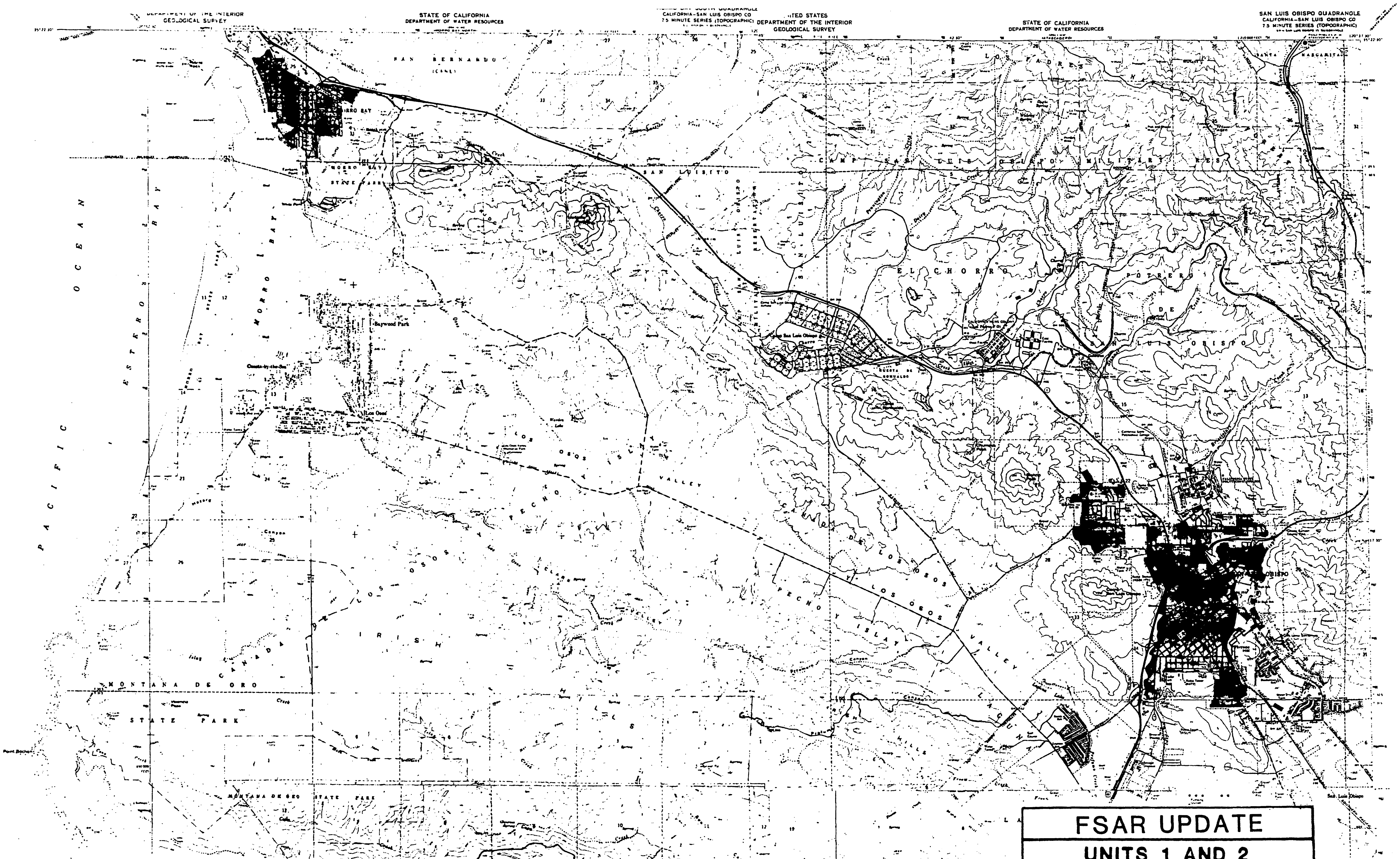


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.4-1

PLANT SITE LOCATION
DRAINAGE AND TOPOGRAPHY
(SHEET 1 OF 2)

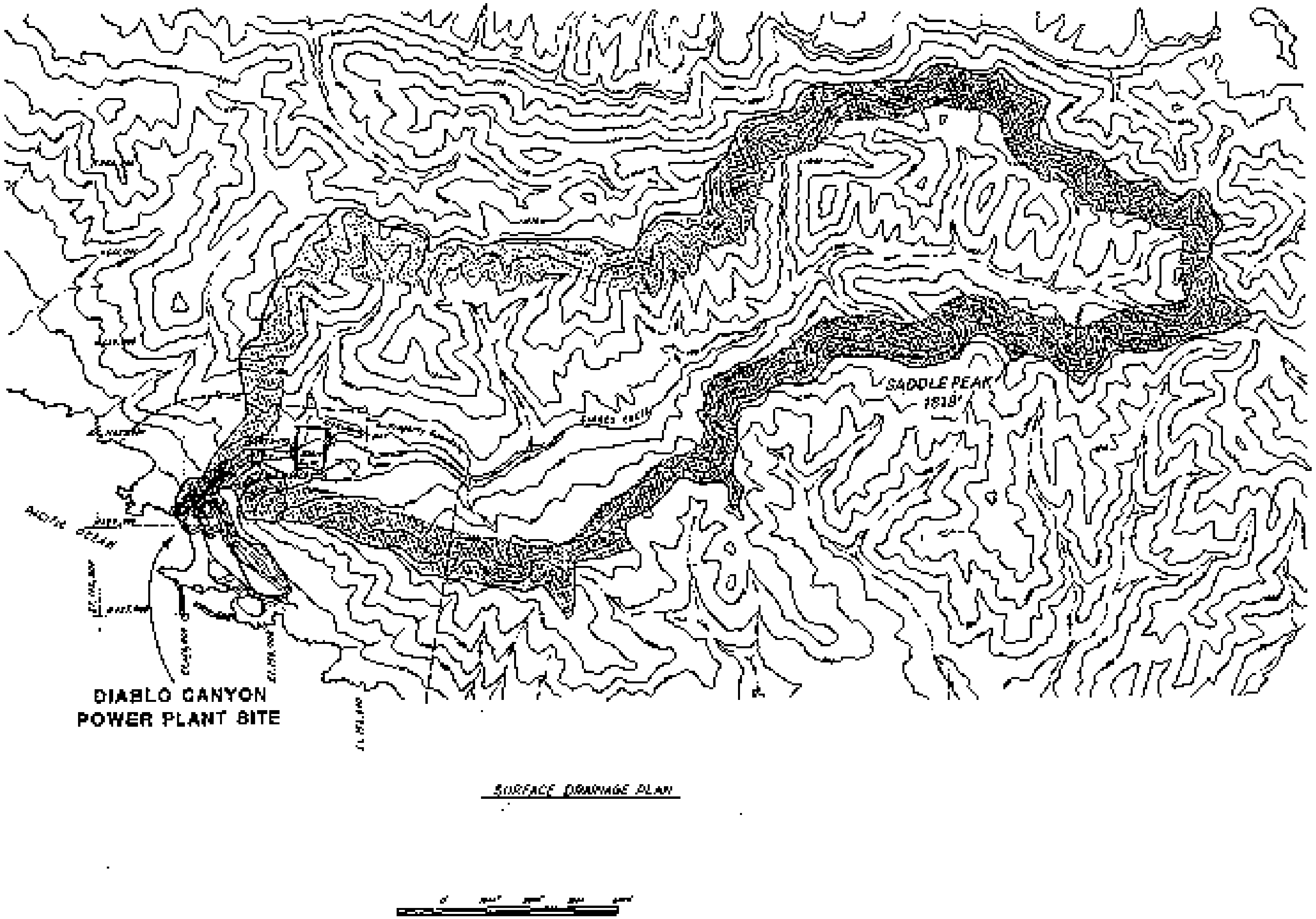


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.4-1

PLANT SITE LOCATION
DRAINAGE AND TOPOGRAPHY
(SHEET 2 OF 2)

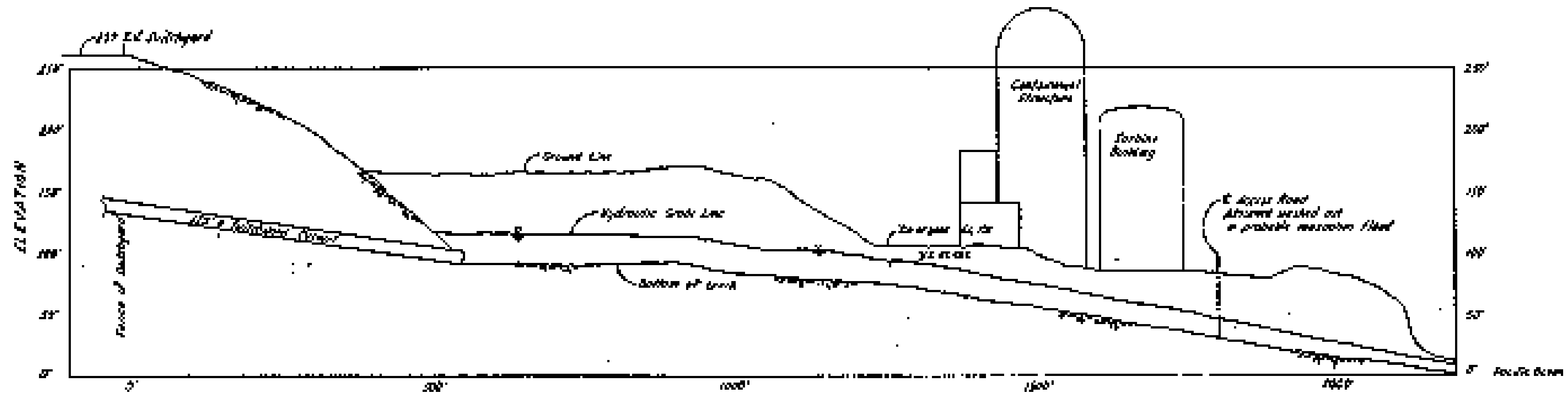


NOTES:

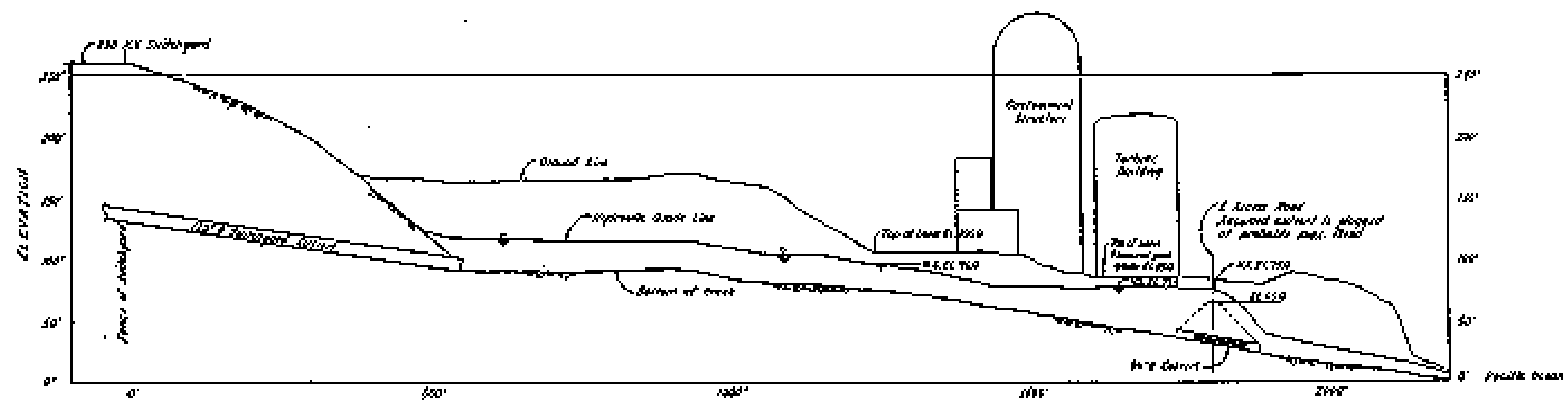
1. GRID COORDINATES SHOWN ARE BASED ON CALIF. STATE COORDINATE SYSTEM
2. DATUM FOR ELEVATIONS SHOWN IS MEAN SEA LEVEL
3. ARROW INDICATES DIRECTION OF RUN OFF.
4. TOPOGRAPHY PHOTOGRAMMETRICALLY REPRODUCED FROM USGS PORT SAN LUIS 7.5 MINUTE QUADRANGLE.

FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.4-2 SURFACE DRAINAGE PLAN

Revision 11 November 1996



PROFILE - DIABLO CREEK
FROM FOOT OF 230 KV SWITCHYARD TO PACIFIC OCEAN



PROFILE - DIABLO CREEK
FROM FOOT OF 230 KV SWITCHYARD TO PACIFIC OCEAN

FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.4-3

DIABLO CREEK FROM FOOT OF 230 KV SWITCHYARD TO PACIFIC OCEAN

Revision 11 November 1996

DIABLO CANYON PROJECT JAN. 19-20, 1969 OPTIMIZATION
RUNOFF FROM LOS BERROS CREEK
RAIN FROM DIABLO & 250 TOWER

INPUT DATA

NHT	M	IPLOT	NCLRK
1	0	1	0

DA	TR	VAR1	VAR2	VAR3	VAR4	VAR5	VAR6	VAR7	QRECSN
15.00	60.	1.42	0.0	0.0	0.0	0.0	0.0	0.0	240.

FLAG1	FLAG2	FLAG3	FLAG4	FLAG5	FLAG6	FLAG7	FLGNH1	FLGNH2	RTIOR
0.	0.	0.	0.	0.	0.	0.	0.	0.	1.56

INPUT DATA

NP	VARNH1	VARNH2	STRTQ	NOO	ICA	RCA	ICB	RCB	N
21	0.0	0.0	15.	66	0	0.0	0	0.0	1

MODIFIED INPUT DATA

NP	VARNH1	VARNH2	STRTQ	NOO	ICA	RCA	ICB	RCB	N
21	0.50	0.50	15.	66	0	0.0	0	0.0	1

DA	TR	VAR1	VAR2	VAR3	VAR4	VAR5	VAR6	VAR7	QRECSN
15.00	60.	1.42	1.00	1.50	0.0	2.00	0.03	0.30	240.

FLAG1	FLAG2	FLAG3	FLAG4	FLAG5	FLAG6	FLAG7	FLGNH1	FLGNH2	RTIOR
0.	0.	0.	0.	0.	0.	0.	0.	0.	1.56

OPTIMIZATION RESULTS

DA	TR	VAR1	VAR2	VAR3	VAR4	VAR5	VAR6	VAR7	QRECSN
15.00	60.	2.44	2.02	1.00	0.0	4.24	0.62	0.29	240.

FLAG1	FLAG2	FLAG3	FLAG4	FLAG5	FLAG6	FLAG7	FLGNH1	FLGNH2	RTIOR
0.	0.	0.	0.	0.	0.	0.	0.	0.	1.56

UNIT HGR.NO= 27 LAG= 2.595 CP= 0.366

366.	1031.	1367.	1274.	1039.	848.	691.	564.	460.	375.
306.	250.	204.	166.	135.	110.	90.	73.	60.	49.
40.	33.	27.	22.	18.	14.	12.			

NP	VARNH1	VARNH2	STARTQ	NOC	ICA	RQA	IQB	RQB	STRIK
21	0.14	0.59	15.	66	0	0.0	0	0.0	0.14

FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.4-4
OPTIMIZATION OF FIT
DIABLO - LOS BERROS
(SHEET 1 OF 3)

LOS BERROS CREEK OPTIMIZATION

PERIOD	RAIN	LOSS	EXCESS	COMP Q	OBS Q
1	0.01	0.01	0.0	14.	15.
2	0.13	0.10	0.03	34.	36.
3	0.02	0.02	0.0	17.	40.
4	0.08	0.08	0.0	33.	55.
5	0.07	0.07	0.0	12.	49.
6	0.27	0.14	0.13	41.	51.
7	0.14	0.09	0.05	154.	146.
8	0.08	0.08	0.0	203.	190.
9	0.08	0.07	0.01	201.	234.
10	0.02	0.02	0.0	197.	150.
11	0.03	0.03	0.0	154.	118.
12	0.07	0.07	0.0	170.	115.
13	0.15	0.08	0.07	161.	112.
14	0.05	0.05	0.0	161.	150.
15	0.29	0.08	[illegible]	210.	215.
16	0.07	0.05	0.01	273.	300.
17	0.03	0.03	0.0	291.	322.
18	0.12	0.06	[illegible]	290.	450.
19	0.24	0.05	0.19	361.	502.
20	0.16	0.06	0.10	571.	575.
21	0.02	0.02	0.0	611.	600.
22				574.	505.
23				453.	426.
24				394.	335.
25				322.	341.
26				264.	319.
27				240.	290.
28				210.	265.
29				220.	246.
30				216.	235.
31				201.	220.
32				192.	210.
33				184.	197.
34				178.	187.
35				161.	178.
36				161.	170.
37				154.	162.
38				147.	158.
39				141.	152.
40				132.	145.
41				129.	141.
42				123.	135.
43				118.	128.
44				113.	122.
45				108.	118.
46				103.	114.
47				95.	109.
48				94.	105.
49				90.	100.
50				86.	95.
51				83.	90.
52				79.	84.
53				76.	80.
54				72.	74.
55				69.	70.
56				66.	65.
57				63.	60.
58				60.	55.
59				58.	50.
60				55.	45.
61				53.	46.
62				51.	35.
63				48.	30.
64				46.	28.
65				44.	25.
66				42.	20.
TOTAL	5.03	4.32	0.71	12364.	13167.

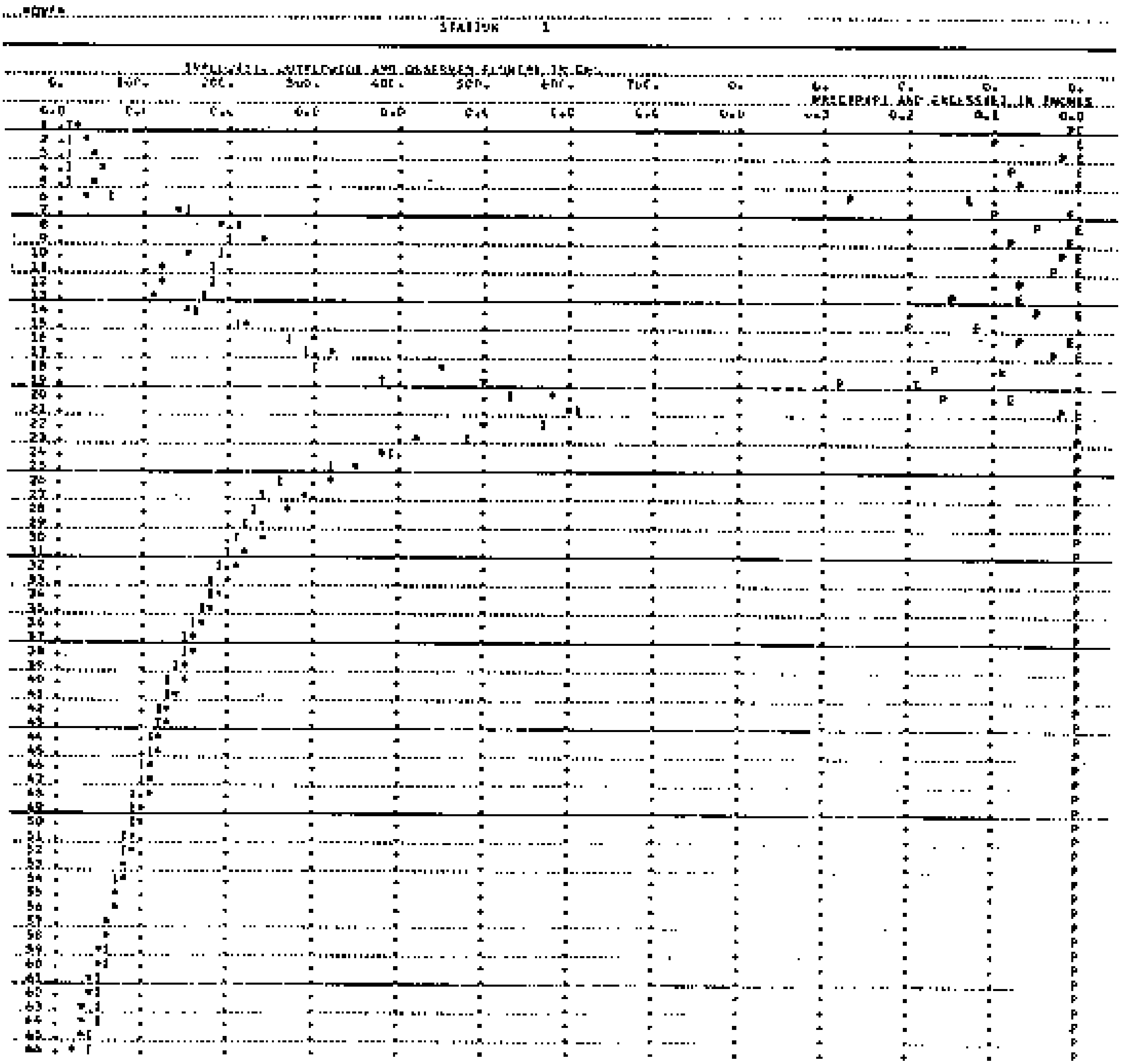
PEAK OBSERVED = 600.00 PEAK HR = 21
PEAK COMPUTED = 611.03 PEAK HR = 21

COMPUTED VOL. = 593. AC.FT.
OBSERVED VOL. = 652. AC.FT.
RATIO OF VOL. FIT = 1.0[illegible]
RATIO OF PEAK FIT = 0.98
LOSS PERCENTAGE = 85.62

FSAR UPDATE

UNITS 1 AND 2 DIABLO CANYON SITE

FIGURE 2.4-4
OPTIMIZATION OF FIT
DIABLO – LOS BERROS
(SHEET 2 OF 3)



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.4-4
OPTIMIZATION OF FIT
DIABLO - LOS BERROS
(SHEET 3 OF 3)

D E S I G N   F L O O D   H Y D R O G R A P H

DIABLO CANYON CREEK, 24HR PMP
LOSS RATES EQUAL 50% OF OPTIMIZED RESULTS
RAIN AND RAINFALL DISTRIBUTION FROM HMR 36

INPUT DATA - BASIN CHARACTERISTICS

DA	TR	VAR1	VAR2	VAR3	VAR4	VAR5	VAR6	VAR7	DSECSN
5.19	60.	0.96	2.02	1.00	0.0	8.48	0.01	0.29	240.

NP	NCLAX	VARNH1	VARNH2	STARTQ	STRTK	RTIOR
25	0	0.07	0.30	0.0	0.07	1.56

OUTPUT

UNIT HGR,NO= 11   LAG= 1.735   CP= 0.565

686.   1091.   644.   390.   224.   132.   78.   46.   27.   16.
9.

DESIGN FLOOD HYDROGRAPH   DIABLO CANYON CREEK 24HR PMP

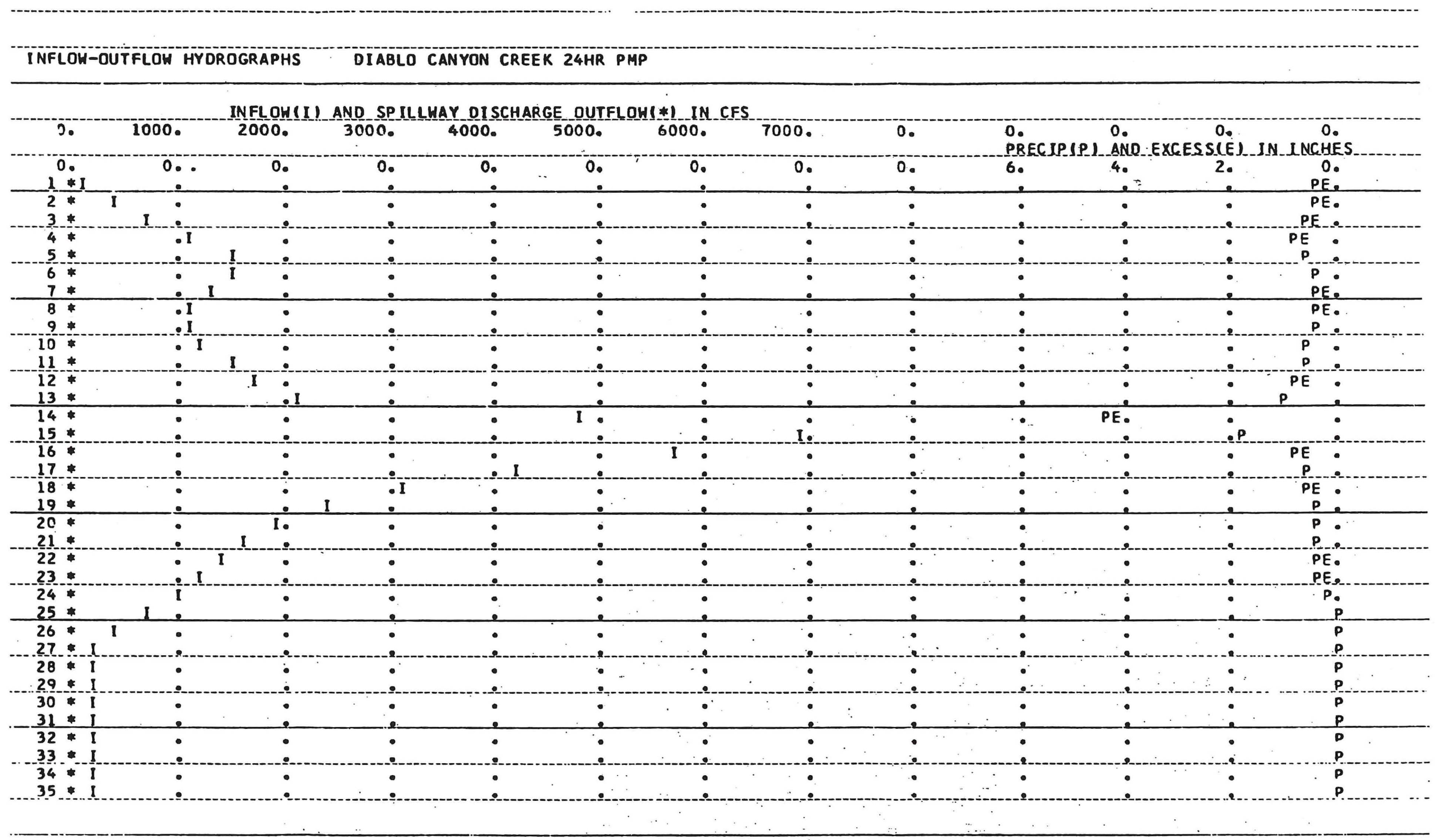
PERIOD	RAIN	LOSS	EXCESS	COMP Q
1	0.30	0.09	0.21	142.
2	0.30	0.07	0.23	383.
3	0.50	0.07	0.43	678.
4	0.70	0.07	0.63	1131.
5	0.60	0.06	0.54	1474.
6	0.40	0.05	0.35	1481.
7	0.30	0.05	0.25	1287.
8	0.30	0.05	0.25	1108.
9	0.40	0.05	0.35	1069.
10	0.60	0.05	0.55	1255.
11	0.60	0.05	0.55	1493.
12	0.70	0.04	0.66	1690.
13	1.00	0.06	0.94	2081.
14	4.30	0.09	4.21	4757.
15	1.80	0.07	1.73	6878.
16	0.70	0.05	0.65	5685.
17	0.60	0.05	0.55	4173.
18	0.50	0.05	0.45	3148.
19	0.40	0.04	0.36	2410.
20	0.40	0.04	0.36	1908.
21	0.40	0.04	0.36	1611.
22	0.30	0.04	0.26	1370.
23	0.30	0.04	0.26	1162.
24	0.20	0.04	0.16	972.
25				653.
26				381.
27				240.
28				230.
29				220.
30				210.
31				201.
32				192.
33				184.
34				176.
35				168.
TOTAL	16.60	1.34	15.26	52191.

PERCENT LOSS = 8.08 %
PERIOD OF MAXIMUM INFLOW = 15
MAXIMUM INFLOW = 6878. CFS
UNIT MAXIMUM INFLOW = 1325. CFS/SQ.MILE

FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.4-5
DESIGN FLOOD HYDROGRAPH
(SHEET 1 OF 3)



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.4-5
DESIGN FLOOD HYDROGRAPH
(SHEET 2 OF 3)

DEFINITION OF SYMBOLS

DA	-	CONTRIBUTING DRAINAGE AREA IN SQUARE MILES
TR	-	RAINFALL AND RUNOFF INTERVAL IN MINUTES
VAR 1	-	CLARK'S TIME OF CONCENTRATION T_C IN HOURS
VAR 2	-	RATIO OF CLARK'S R TO T_C
VAR 3	-	SHAPE FACTOR FOR SYNTHETIC TIME-AREA CURVE
VAR 4	-	RATIO OF IMPERVIOUSNESS OF DRAINAGE AREA
VAR 5	-	RATIO OF K ON STRAIGHT LINE PORTION OF LOSS RATE CURVE TO K AT 10 INCHES MORE ACCUMULATED LOSS
VAR 6	-	RECOVERY LOSS INDEX IN INCHES, SUBTRACTED FROM ACCUMULATED LOSS EVERY PERIOD
VAR 7	-	EXPONENT OF RAIN IN LOSS COMPUTATION
QRECSN	-	FLOW BELOW WHICH RECESSION RATES ARE MAINTAINED AS A MINIMUM
NP	-	NUMBER OF OBSERVED PRECIPITATION PERIODS IN STORM
NCLRK	-	INDICATOR, CALLS FOR THE NUMBER OF TIME-AREA ORDINATES
VAR NH1	-	LOSS RATE INDEX - VALUE OF K ON STRAIGHT LINE PORTION OF LOSS RATE CURVE WHEN ACCUMULATED LOSS IS 1/2 OF STORM LOSS. ALSO KNOWN AS VAR 8
VAR NH2	-	ACCUMULATED LOSS INCREMENT DURING INITIAL LOSS PERIOD. ADDS AN INCREMENT OF 0.2(VAR(NH2)) TO K WHEN ACCUMULATED LOSS IS ZERO, DECREASING TO ZERO WHEN ACCUMULATED LOSS IS VAR(NH2). ALSO KNOWN AS VAR 9
STRTQ	-	FLOW IN CFS AT START OF FIRST TR PERIOD OF STORM
RTIOR	-	RATIO OF RECESSION FLOW TO THAT 10 TR UNITS LATER
LAG	-	SNYDER'S T_P IN HOURS
	-	TIME IN HOURS FROM CENTER OF MASS OF EXCESS RAINFALL TO PEAK OF UNIT HYDROGRAPH
CP	-	SNYDER'S C_P

FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

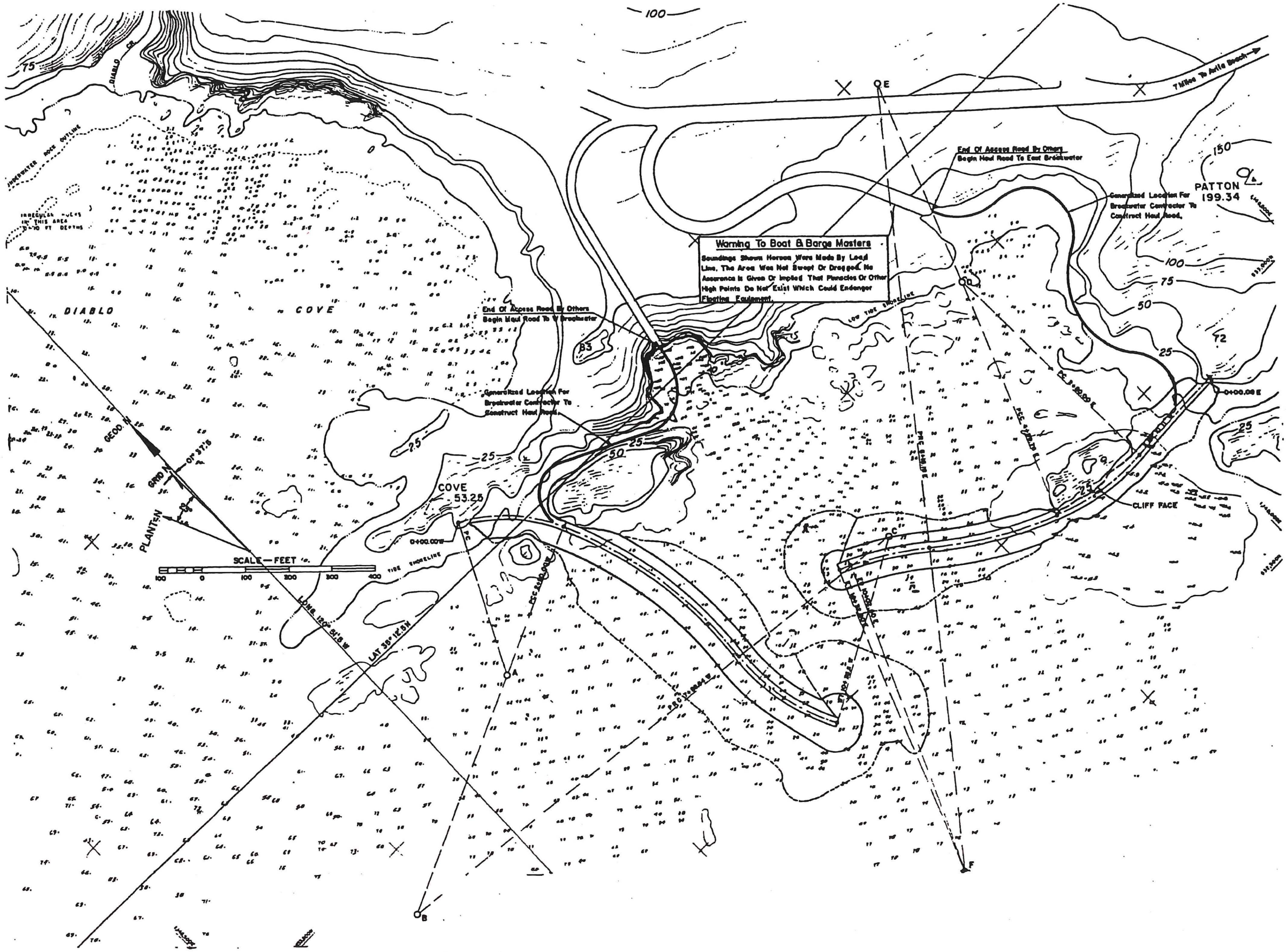
FIGURE 2.4-5
DESIGN FLOOD HYDROGRAPH
DEFINITION OF SYMBOLS
(SHEET 3 OF 3)

Intake Basin Breakwaters For Diablo Canyon Site

Pacific Gas & Electric Company

NOTES–

1. Soundings refer to Mean Lower Low Water Datum.
2. Contours shown above "Low Tide Shoreline" refer to Sea Level Datum and are from an aerial survey made before power plant excavation was started. Bidders shall ascertain by visit to the site, before submitting bids, what effect the site excavations have, if any, on the cost of the work to be done in building the breakwaters.
3. To convert elevations from one datum to the other, apply the following: $Elev_{MLLW} = Elev_{SLD} + 2.6$ Ft.
4. Coordinate positions shown refer to California Coordinate System, Zone 5, a Lambert Conformal Projection. Conversion of arbitrary Plant Grid System is made as follows:
   $N_L = 576{,}067.06 + .9205049\,N_P + .3907311\,D_P$
   $D_L = 1{,}161{,}806.12 + .9205049\,D_P - .3907311\,N_P$

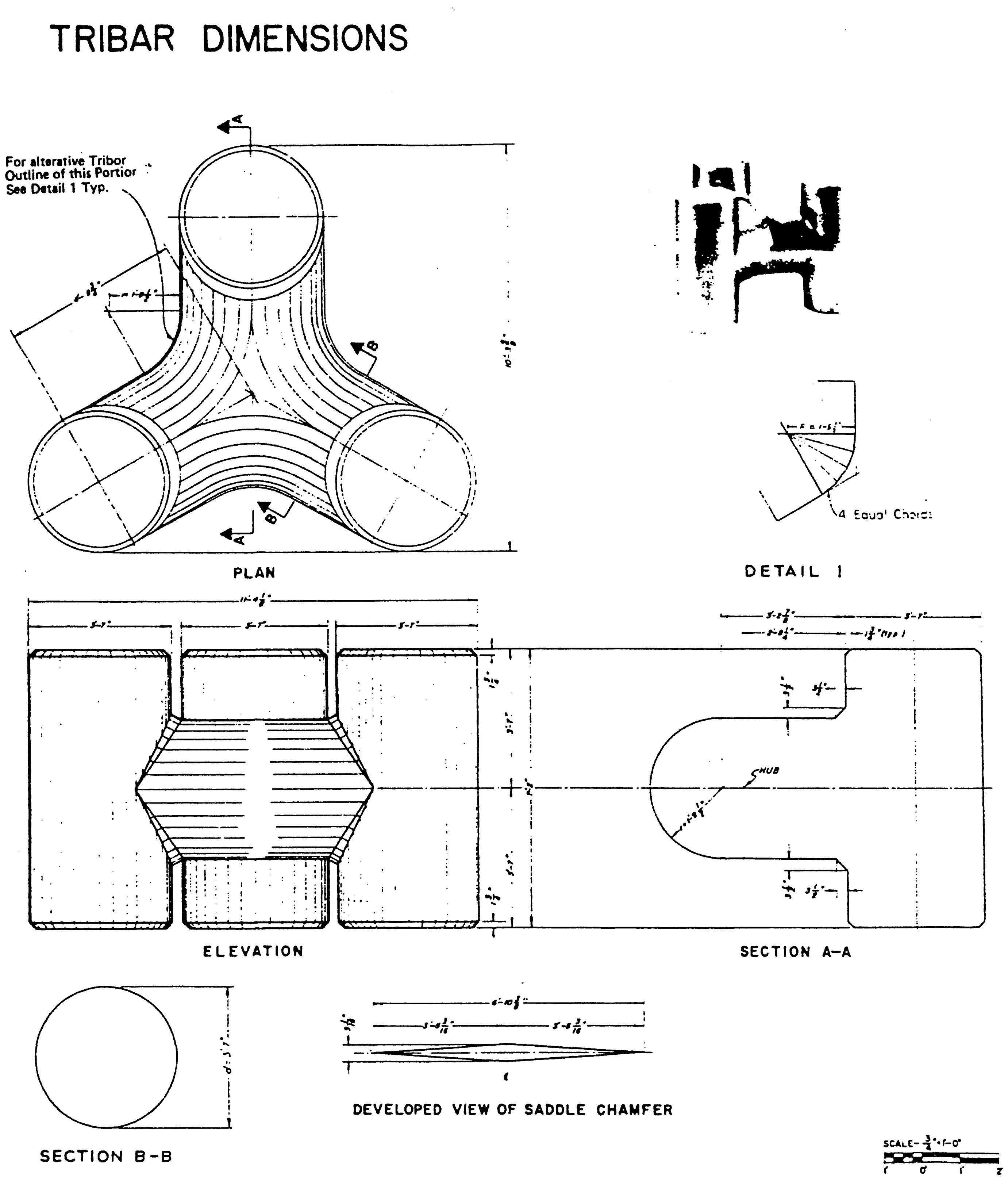


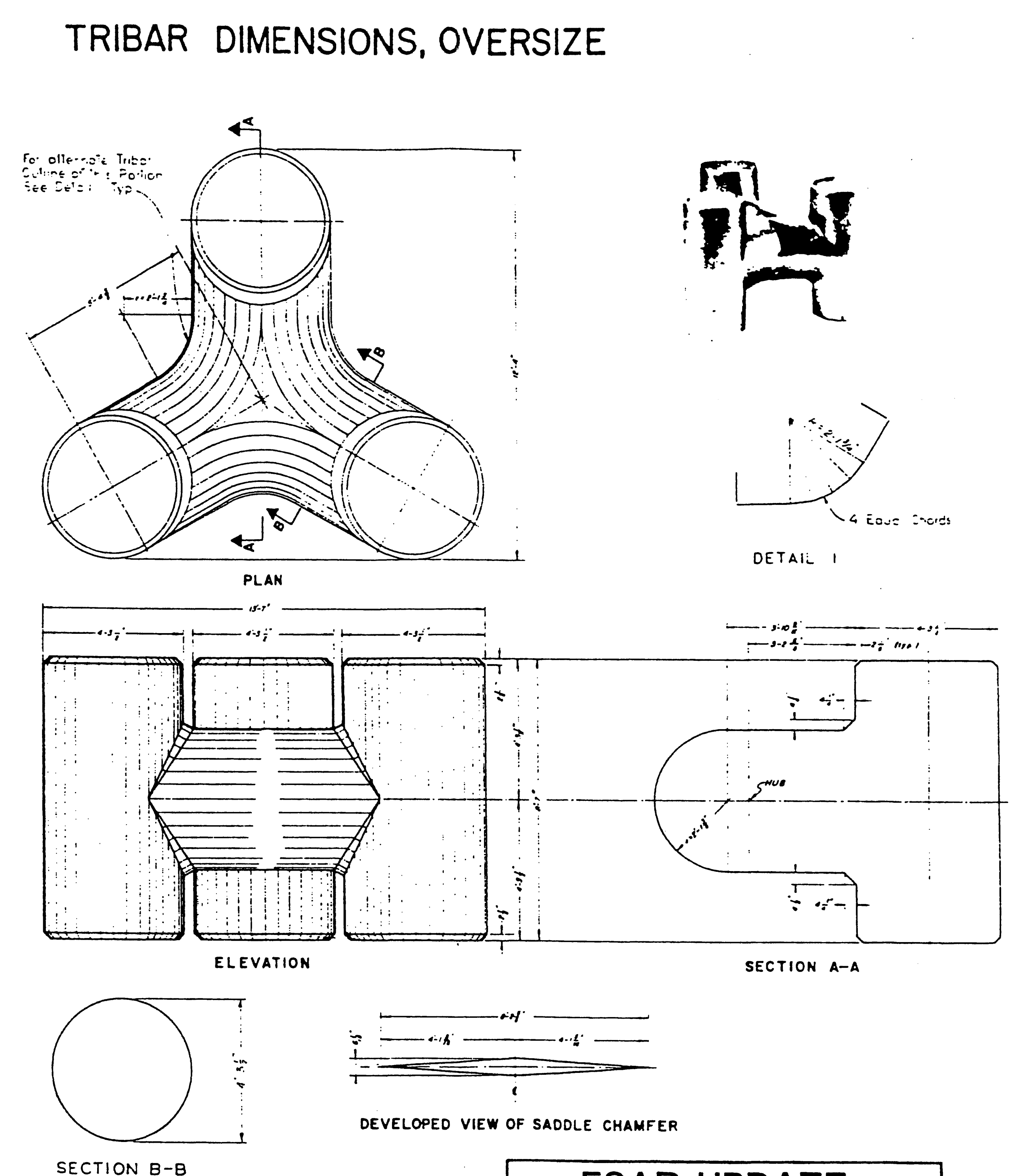
FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.4–6 GENERAL LAYOUT OF BREAKWATERS (Sheet 1 of 2 – SOUNDINGS)

FSAR UPDATE

UNITS 1 AND 2 DIABLO CANYON SITE

FIGURE 2.4–6
GENERAL LAYOUT OF BREAKWATERS
(Sheet 2 of 2 – CONTOURS)



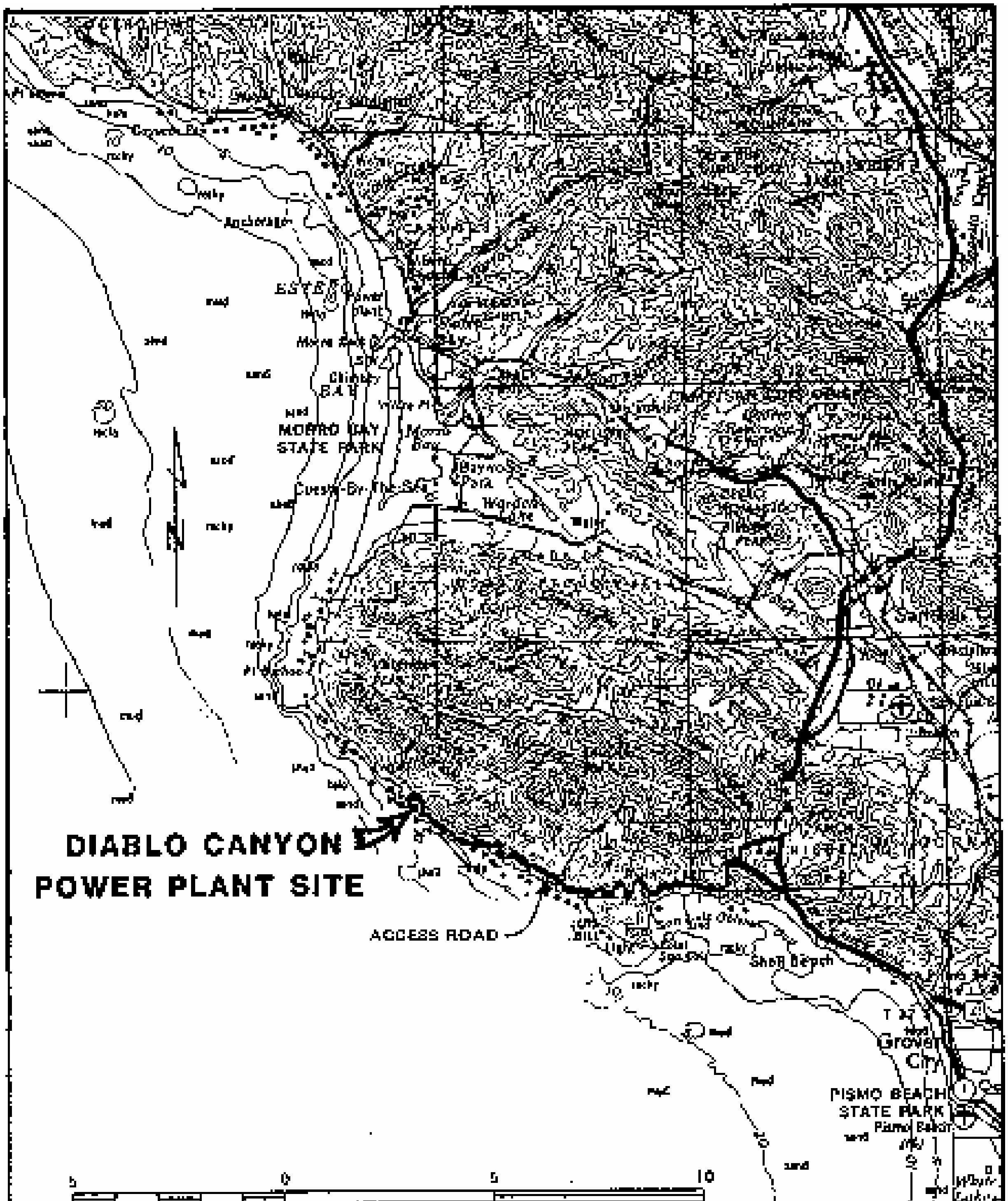


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.4-9

DIMENSIONS FOR TRIBARS

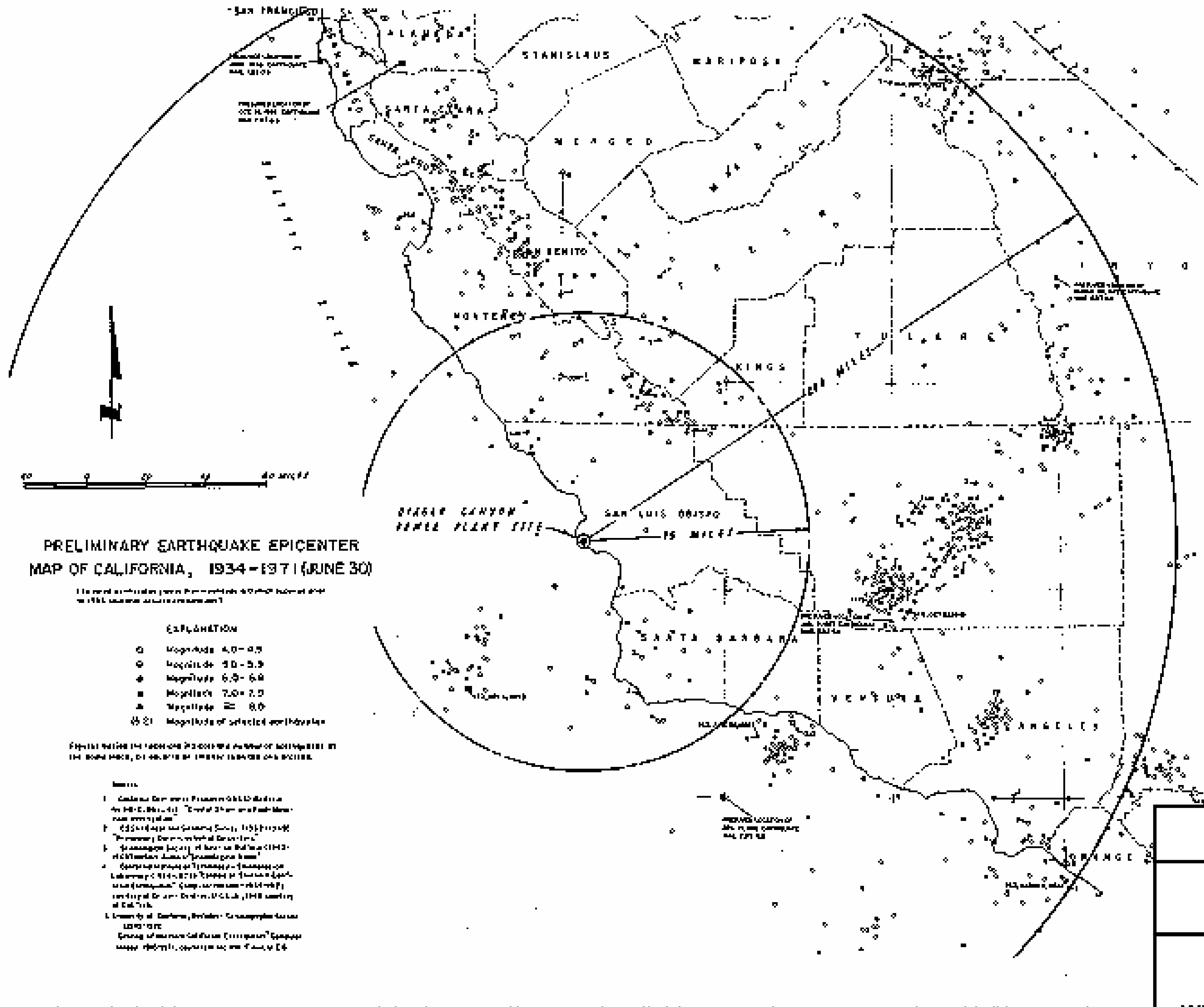


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-1

PLANT SITE LOCATION
AND TOPOGRAPHY

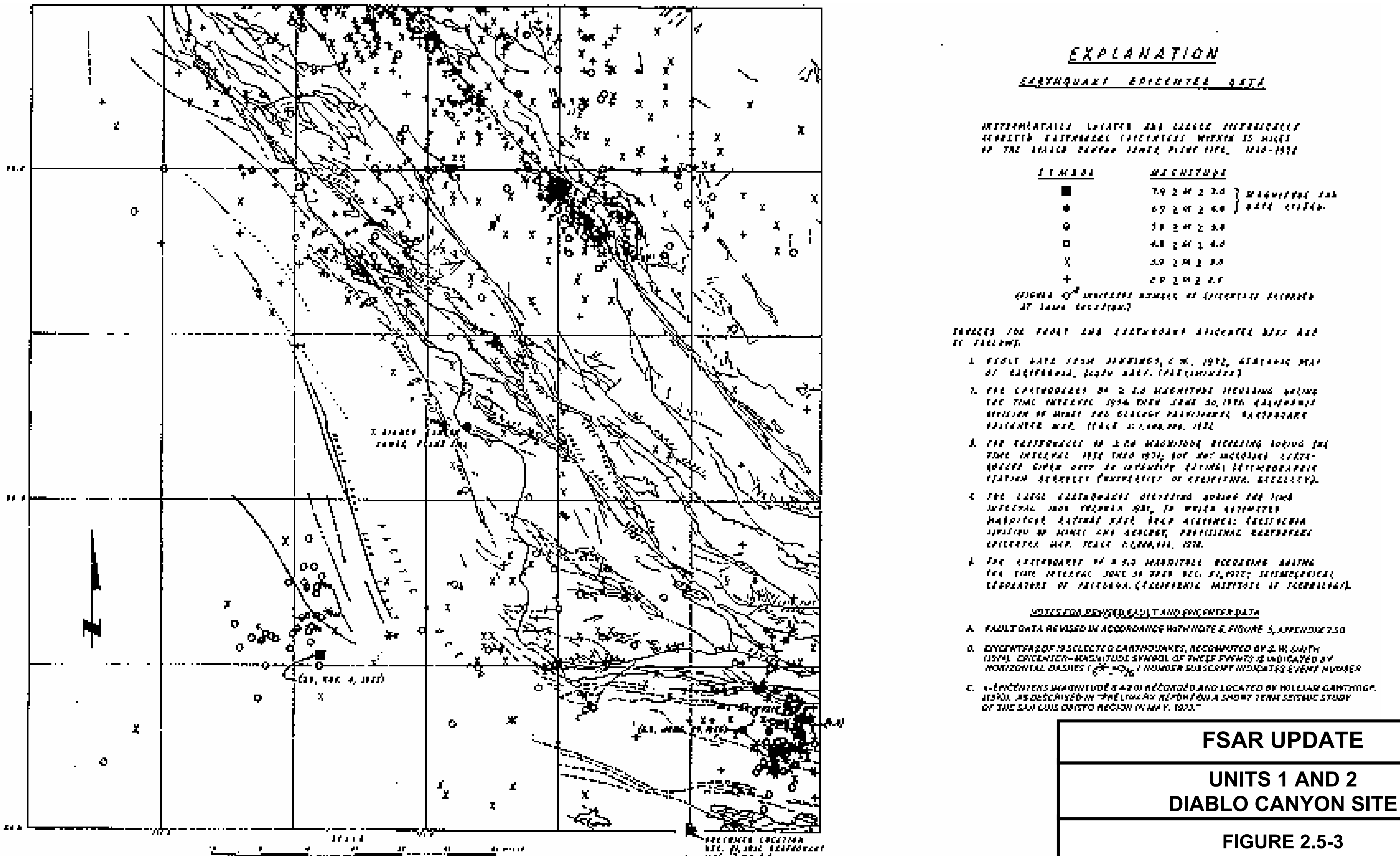


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-2
EARTHQUAKE EPICENTERS
WITHIN 200 MILES OF PLANT SITE

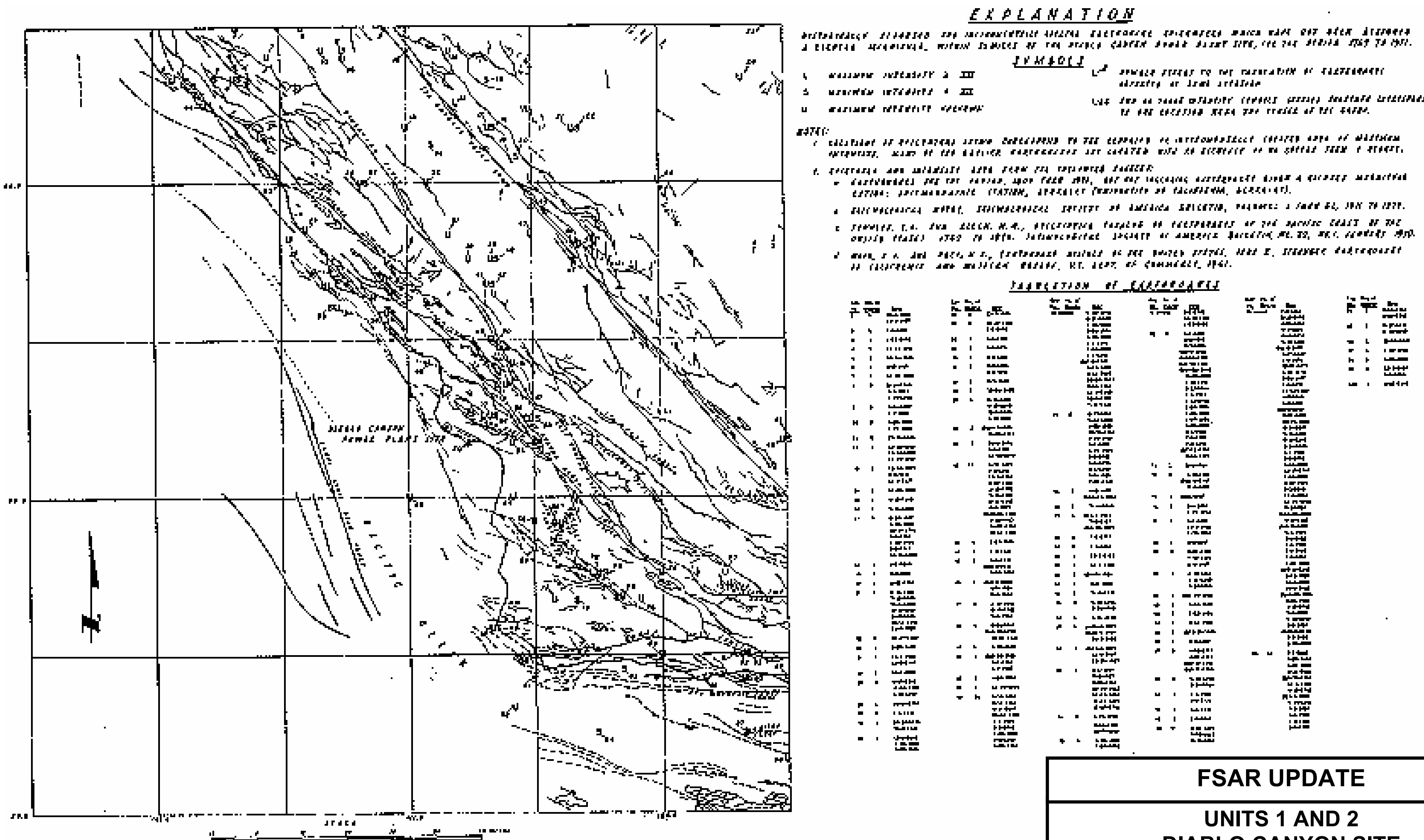
Revision 11 November 1996



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

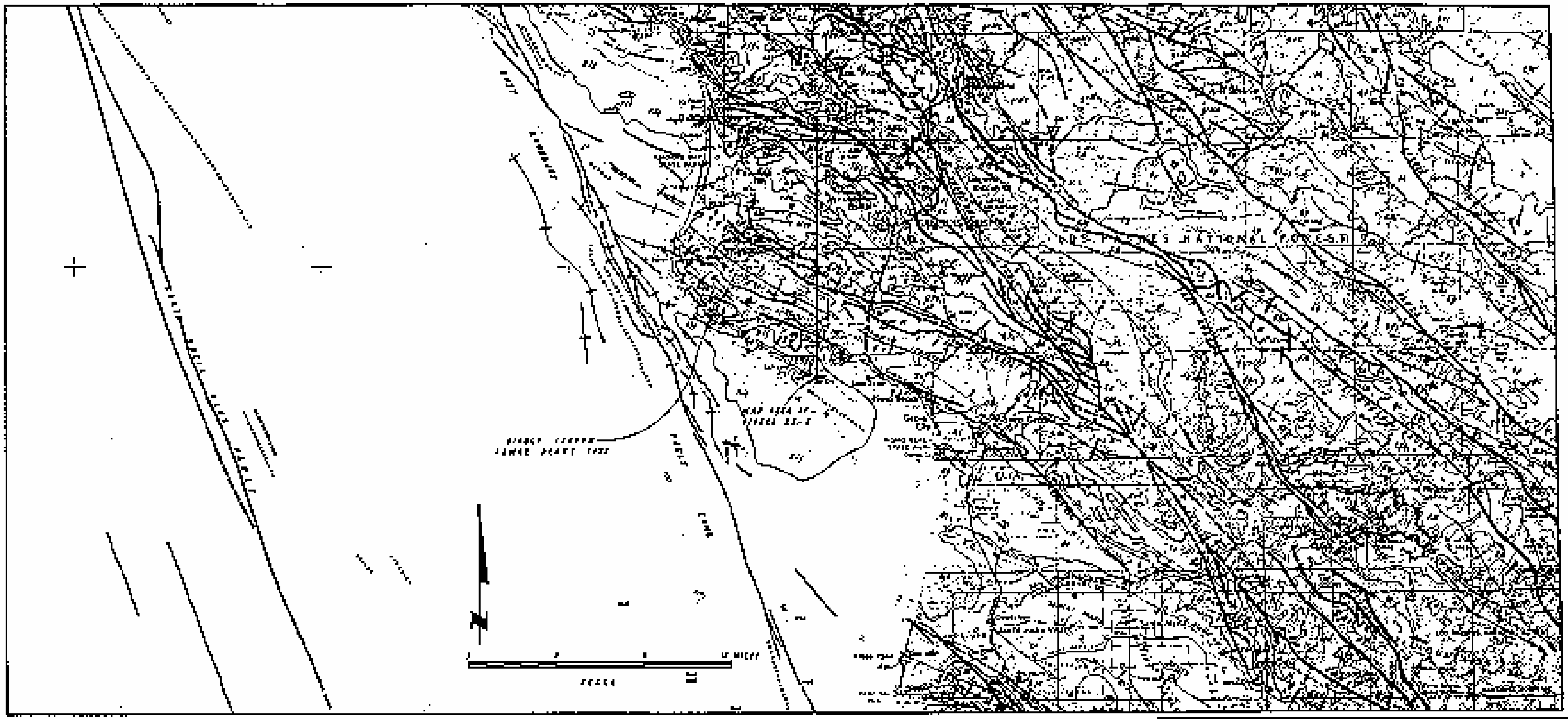
FIGURE 2.5-3
FAULTS AND EARTHQUAKE EPICENTERS WITHIN 75 MILES OF PLANT SITE (FOR EARTHQUAKES WITH ASSIGNED MAGNITUDES)



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-4
FAULTS AND EARTHQUAKE EPICENTERS
WITHIN 75 MILES OF PLANT SITE
(FOR EARTHQUAKES WITH ASSIGNED
INTENSITIES ONLY)



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-5
GEOLOGIC AND TECTONIC MAP OF
SOUTHERN COAST RANGES IN THE
REGION OF PLANT SITE
(SHEET 1 OF 2)

EXPLANATION

GEOLOGIC UNITS

CENOZOIC

SEDIMENTARY DEPOSITS AND ROCKS

- **Q** — HOLOCENE AND PLEISTOCENE NONMARINE (CHIEFLY ALLUVIAL) AND MARINE DEPOSITS, UNDIVIDED.
- **Qls** — LARGE LANDSLIDES, WHERE MAPPED SEPARATELY.
- **Qs** — DUNE SAND DEPOSITS, WHERE MAPPED SEPARATELY.
- **QPc** — PLIO-PLEISTOCENE AND PLIOCENE NONMARINE.
- **P** — PLIOCENE MARINE
- **M** — MIOCENE MARINE
- **Φc** — OLIGOCENE NONMARINE
- **E** — EOCENE MARINE
- **Ep** — PALEOCENE MARINE

VOLCANIC ROCKS

- **Tv** — TERTIARY VOLCANIC ROCKS
- **Tvp** — TERTIARY PYROCLASTIC ROCKS, (INCLUDING VOLCANIC MUDFLOW DEPOSITS).
- **Ti** — TERTIARY INTRUSIVE ROCKS.

MESOZOIC

SEDIMENTARY AND METAMORPHIC ROCKS

- **Ku** — UPPER CRETACEOUS MARINE ROCKS
- **Kl** — LOWER CRETACEOUS MARINE ROCKS
- **KJf** — FRANCISCAN ASSEMBLAGE (PREDOMINANTLY SEDIMENTARY AND METASEDIMENTARY ROCKS. INCLUDES FRANCISCAN MELANGE)
- **J** — JURASSIC MARINE ROCKS (INCLUDES KNOXVILLE FORMATION)
- **m** — METAMORPHIC ROCKS OF PRE-TERTIARY AGE, UNDIVIDED.

METAVOLCANIC ROCKS

- **Mzv** — MESOZOIC METAVOLCANIC ROCKS (INCLUDING FRANCISCAN VOLCANIC ROCKS).

PLUTONIC ROCKS

- **grMz** — MESOZOIC GRANITIC ROCKS
- **um** — MESOZOIC ULTRAMAFIC ROCKS

GROUPED LOOSELY AS "CORE COMPLEX"

SYMBOLS

- GEOLOGIC CONTACT, DASHED WHERE APPROXIMATE OR WHERE QUATERNARY DEPOSITS ARE INVOLVED.
- FAULT (SOLID LINE WHERE LOCATION IS WELL DEFINED; DASHED LINE WHERE APPROXIMATE OR INFERRED; DOTTED WHERE CONCEALED).
- ANTICLINAL AXIS – WITH PLUNGE INDICATED. (SOLID LINE WHERE LOCATION IS WELL DEFINED; DASHED WHERE APPROXIMATE OR INFERRED; DOTTED WHERE CONCEALED).
- SYNCLINAL AXIS – WITH PLUNGE INDICATED. (SOLID LINE WHERE LOCATION IS WELL DEFINED; DASHED WHERE APPROXIMATE OR INFERRED; DOTTED WHERE CONCEALED).

NOTES

1. MAP BASE FROM PARTS OF SAN LUIS OBISPO AND SANTA MARIA SHEETS, U.S. GEOLOGICAL SURVEY 1:250,000 SCALE TOPOGRAPHIC MAP SERIES

2. GEOLOGIC DATA FROM:

   "GEOLOGIC MAP OF CALIFORNIA" 1958, SCALE 1:250,000; PRELIMINARY, UNPUBLISHED, CALIFORNIA DIVISION OF MINES AND GEOLOGY. (COMPILED BY C.W. JENNINGS)

   LOCALLY SUPPLEMENTED WITH DATA FROM:

   HEADLEE, L.A., 1965, GEOLOGY OF THE COASTAL PORTION OF THE SAN LUIS RANGE, SAN LUIS OBISPO COUNTY, CALIF., UNPUBLISHED M.S. THESIS, UNIV. SOUTHERN CALIF.

   JAHNS, R.H., 1966, GEOLOGY OF THE DIABLO CANYON POWER PLANT SITE, SAN LUIS OBISPO COUNTY, CALIFORNIA; 1967 SUPPLEMENTARY REPORTS I AND II; 1968 SUPPLEMENTARY REPORT III, UNPUBLISHED REPORTS TO THE PACIFIC GAS AND ELECTRIC COMPANY.

   HALL, C.A., 1973, U.S.G.S. MAP MF 511.

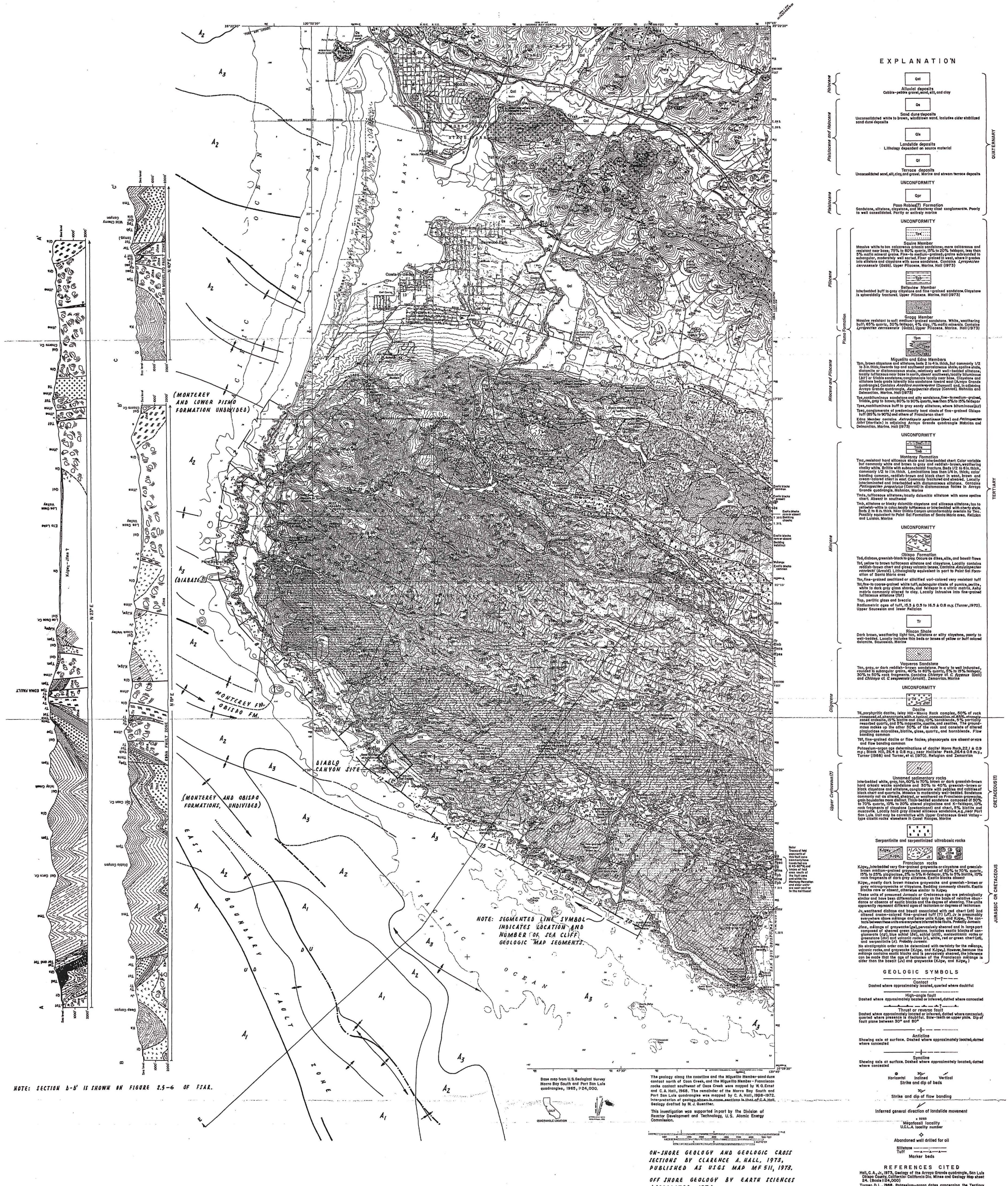
   EARTH SCIENCES ASSOCIATES, 1974, OFFSHORE INVESTIGATION.

FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-5
GEOLOGIC AND TECTONIC MAP OF SOUTHERN COAST RANGES IN THE REGION OF PLANT SITE
(SHEET 2 OF 2)

(SHEET 2 OF 2)



GEOLOGIC MAP OF THE MORRO BAY SOUTH AND PORT SAN LUIS QUADRANGLES, SAN LUIS OBISPO COUNTY, CALIFORNIA

EXPLANATION FOR GEOLOGIC MAP OF THE OFFSHORE AREA

MAP UNITS

MAP ACOUSTIC UNIT	STRATIGRAPHIC EQUIVALENT
A_1	UPPER PART OF PISMO FORMATION (ABOVE MIGUELITO AND EDNA NUMBERS).
A_2	MONTEREY FORMATION AND LOWER PART OF PISMO FORMATION (MIGUELITO AND EDNA NUMBERS), INCLUDES OBISPO FORMATION IN THE AREA OFFSHORE FROM DIABLO CANYON.
A_3	FRANCISCAN AND GREAT VALLEY SEQUENCE BASEMENT ROCKS, UNDIVIDED. LOCALLY MAY INCLUDE SOME OBISPO FORMATION.

MAP SYMBOLS

CONTACT, DASHED WHERE POORLY CONTROLLED.

FAULT, DASHED WHERE POORLY CONTROLLED.

BURIED FAULT

ANTICLINE

SYNCLINE

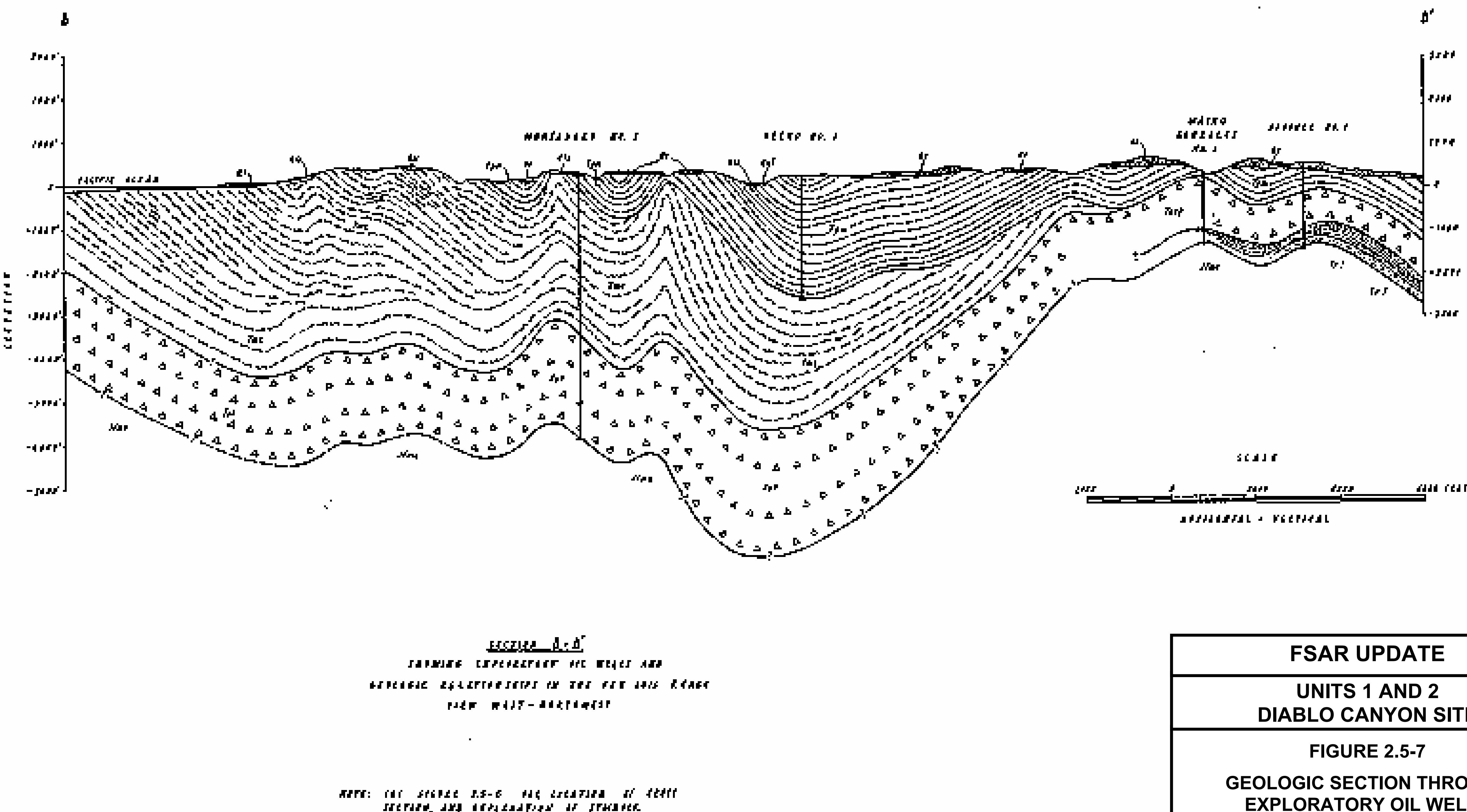
FSAR UPDATE
UNITS 1 AND 2
DIABLO CANYON SITE
FIGURE 2.5 – 6
GEOLOGIC MAP OF THE MORRO BAY SOUTH AND PORT SAN LUIS QUADRANGLES, SAN LUIS OBISPO COUNTY, CALIFORNIA, AND ADJACENT OFFSHORE AREA.

Revision 11 November 1996

(ORIGINALLY: PLATE VIII APPENDIX 2.5D)

FSAR UPDATE
UNITS 1 AND 2
DIABLO CANYON SITE
FIGURE 2.5 – 6
GEOLOGIC MAP OF THE MORRO BAY SOUTH AND PORT SAN LUIS QUADRANGLES, SAN LUIS OBISPO COUNTY, CALIFORNIA, AND ADJACENT OFFSHORE AREA.

SA 1310
EPT. 1974

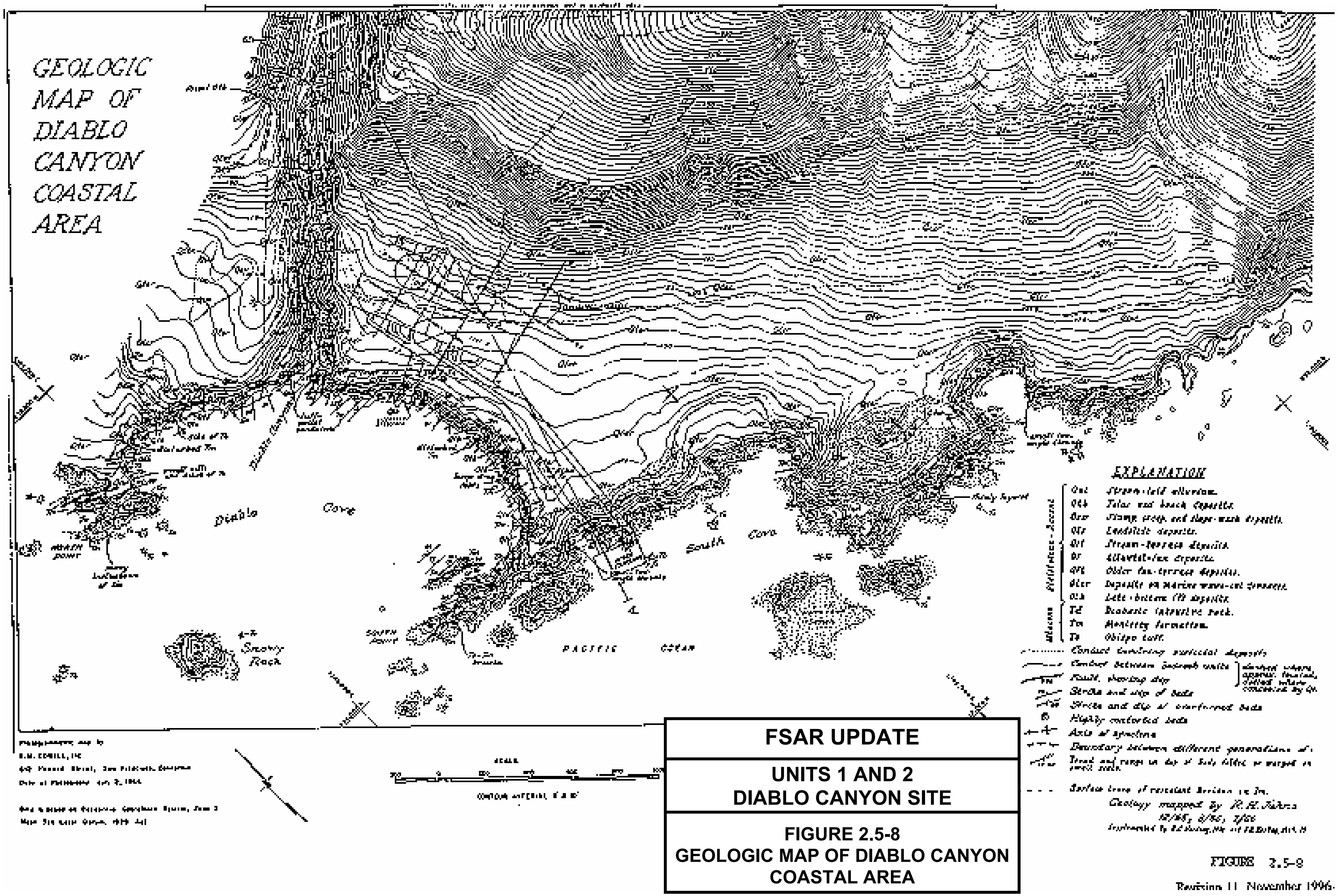


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-7

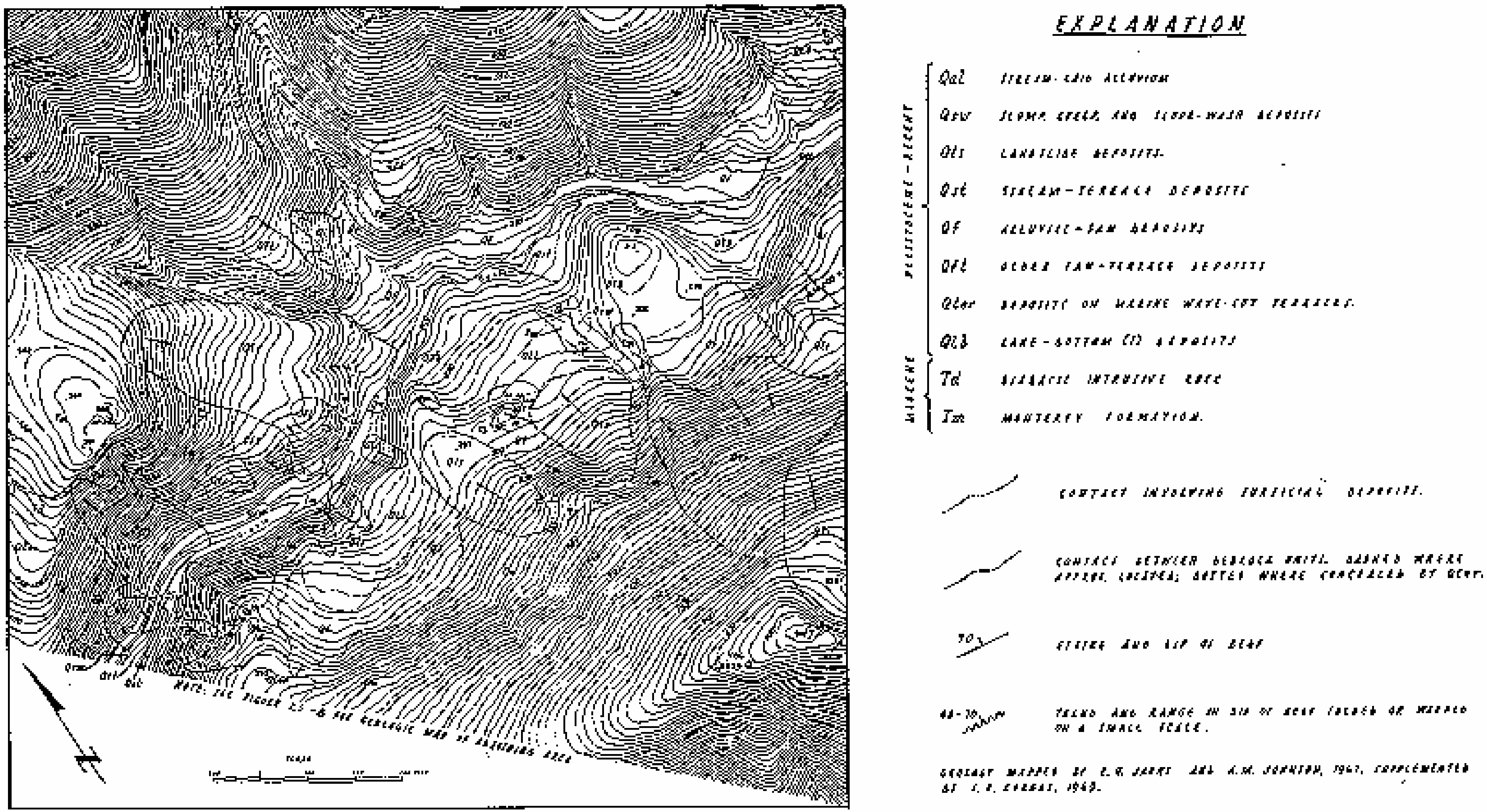
GEOLOGIC SECTION THROUGH EXPLORATORY OIL WELLS IN THE SAN LUIS RANGE



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

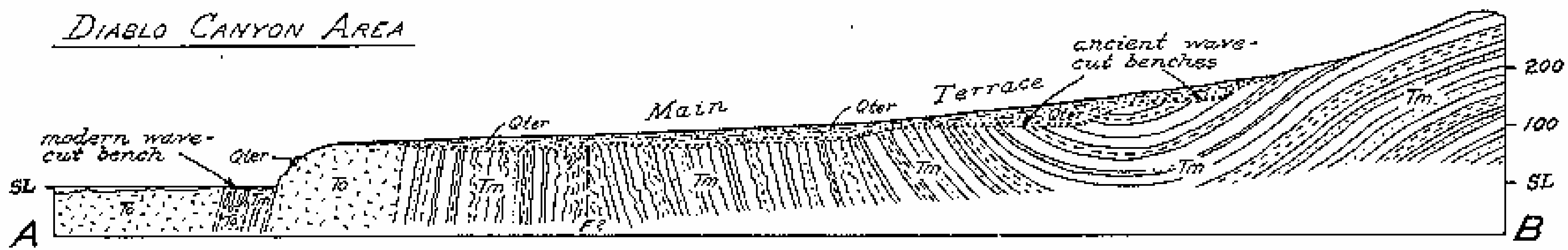
FIGURE 2.5-8
GEOLOGIC MAP OF DIABLO CANYON
COASTAL AREA



FSAR UPDATE

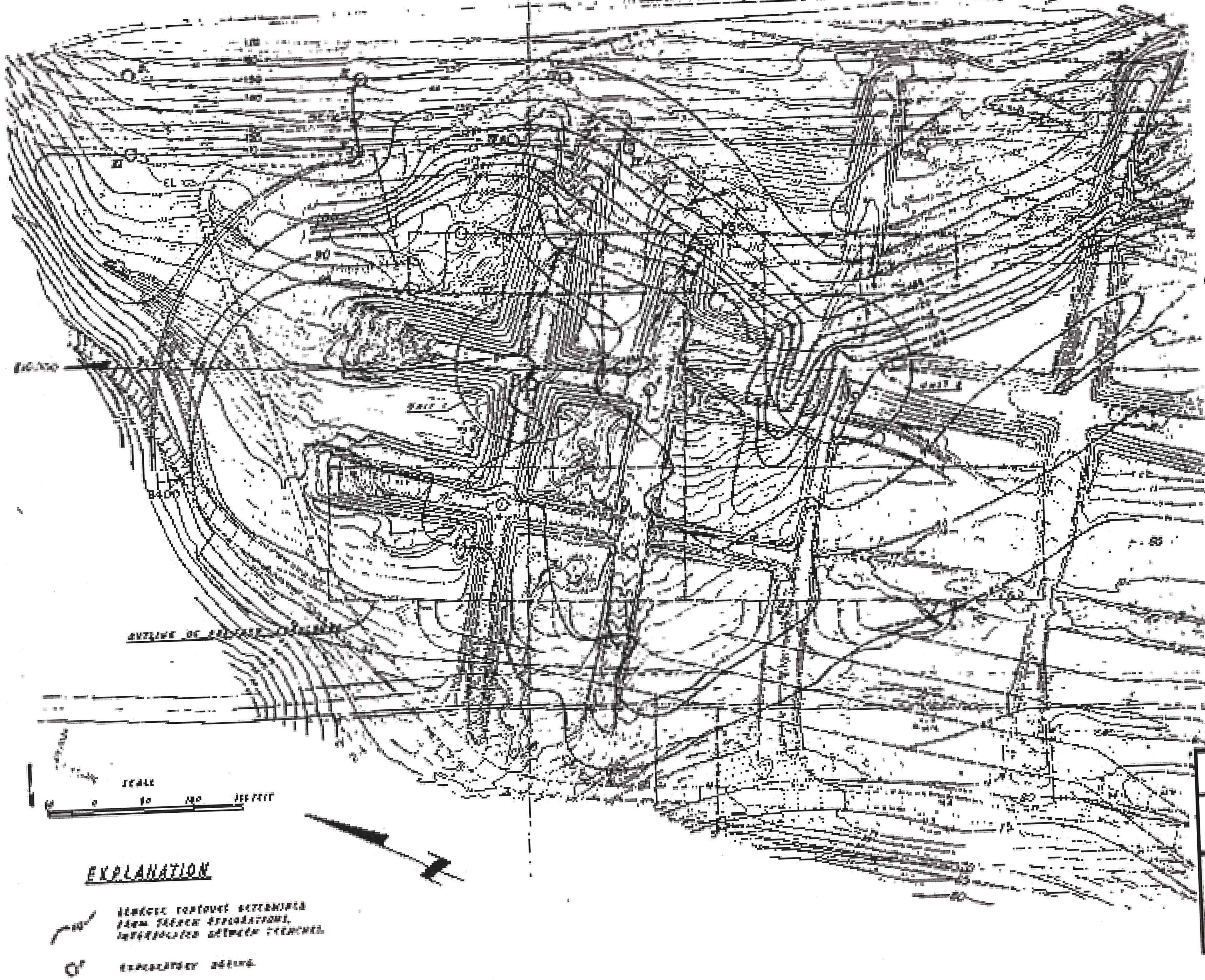
UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-9
GEOLOGIC MAP OF SWITCHYARD AREA



Section along Line A-B (Figure 2.5-8)
See geologic map for explanation of symbols

FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.5-10 GEOLOGIC SECTION THROUGH THE PLANT SITE

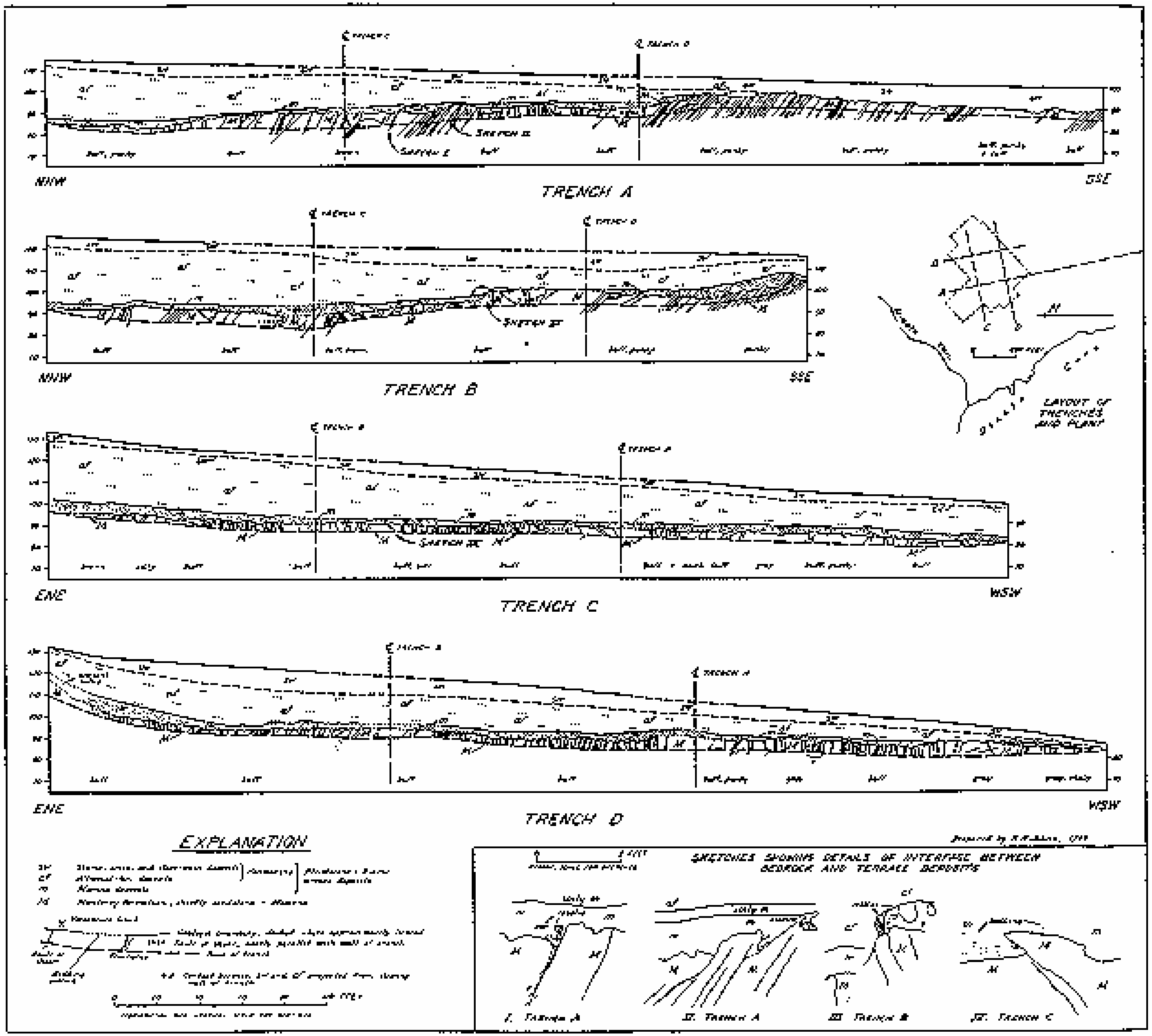


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-11
SITE EXPLORATION FEATURES AND BEDROCK CONTOURS

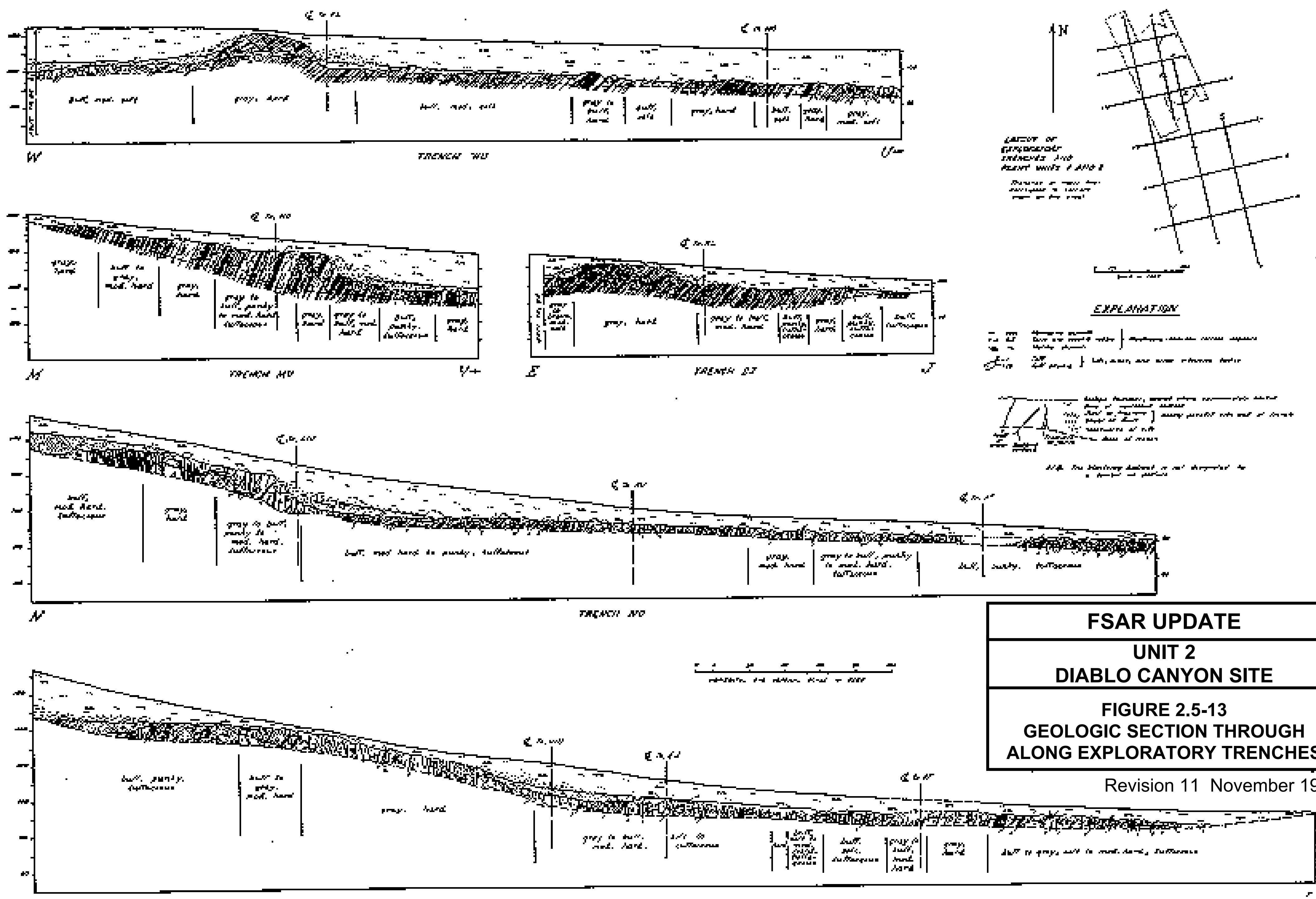
Revision 11 November 1996



FSAR UPDATE

UNIT 1
DIABLO CANYON SITE

FIGURE 2.5-12
GEOLOGIC SECTIONS AND SKETCHES ALONG EXPLORATORY TRENCHES

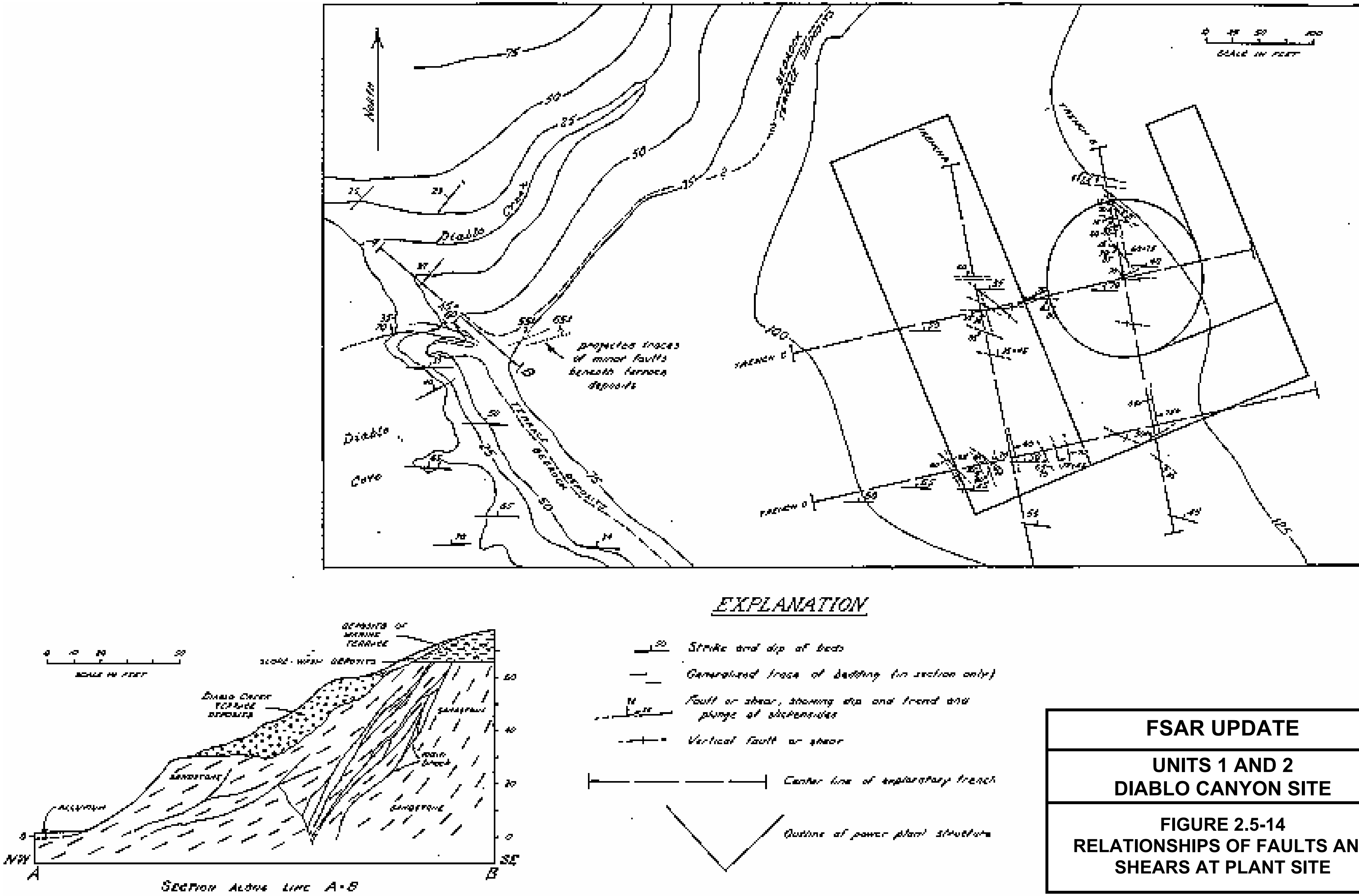


FSAR UPDATE

UNIT 2
DIABLO CANYON SITE

FIGURE 2.5-13
GEOLOGIC SECTION THROUGH
ALONG EXPLORATORY TRENCHES

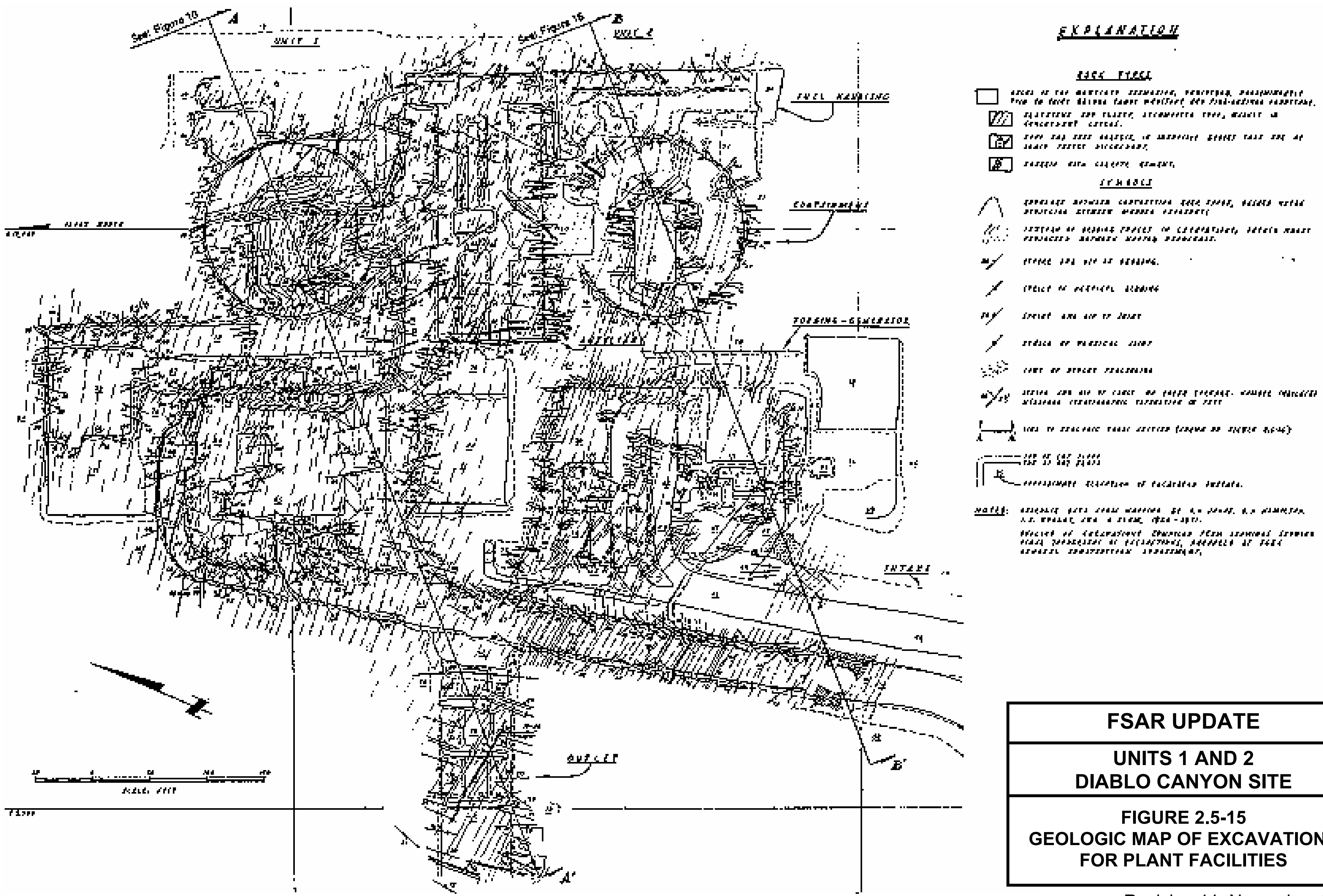
Revision 11 November 1996



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

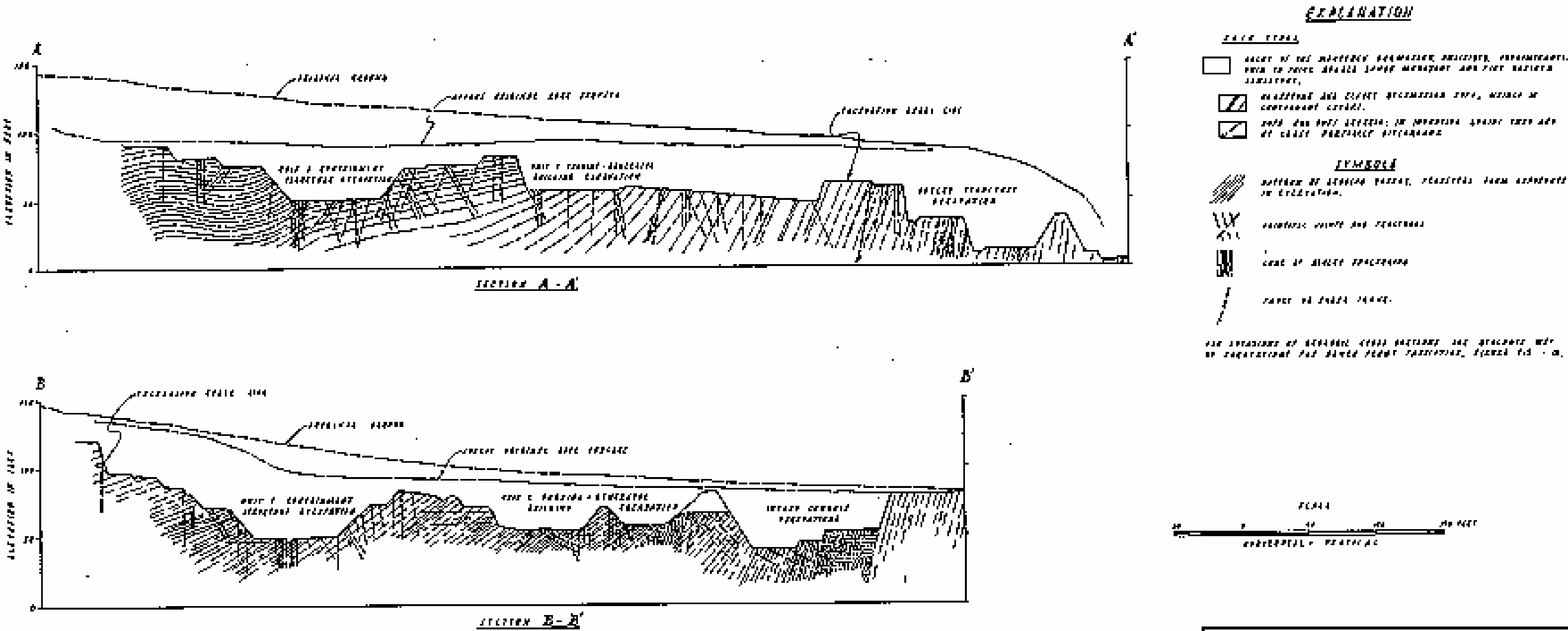
FIGURE 2.5-14
RELATIONSHIPS OF FAULTS AND SHEARS AT PLANT SITE



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

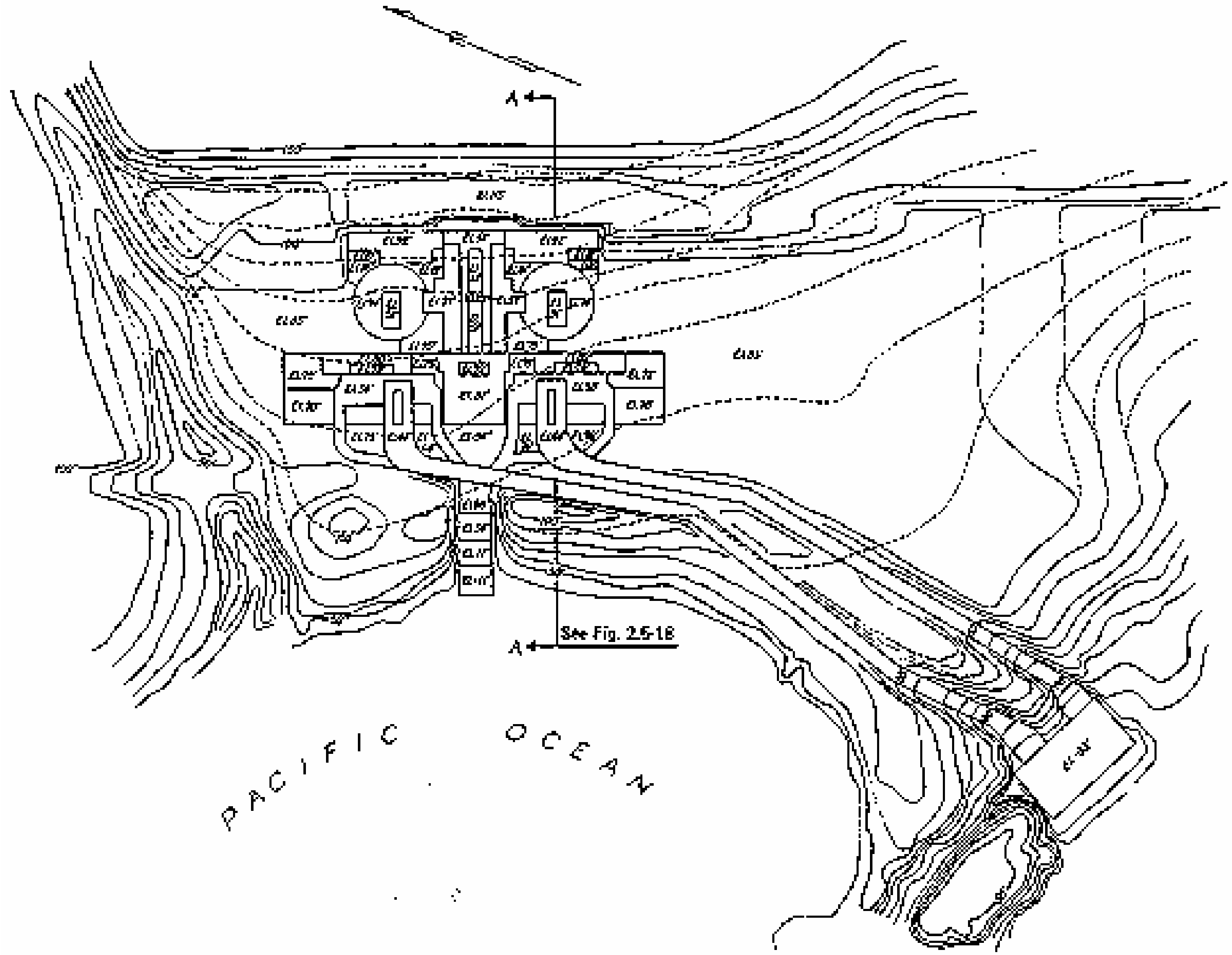
FIGURE 2.5-15
GEOLOGIC MAP OF EXCAVATIONS
FOR PLANT FACILITIES



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-16
GEOLOGIC SECTIONS THROUGH
EXCAVATIONS FOR PLANT FACILITIES

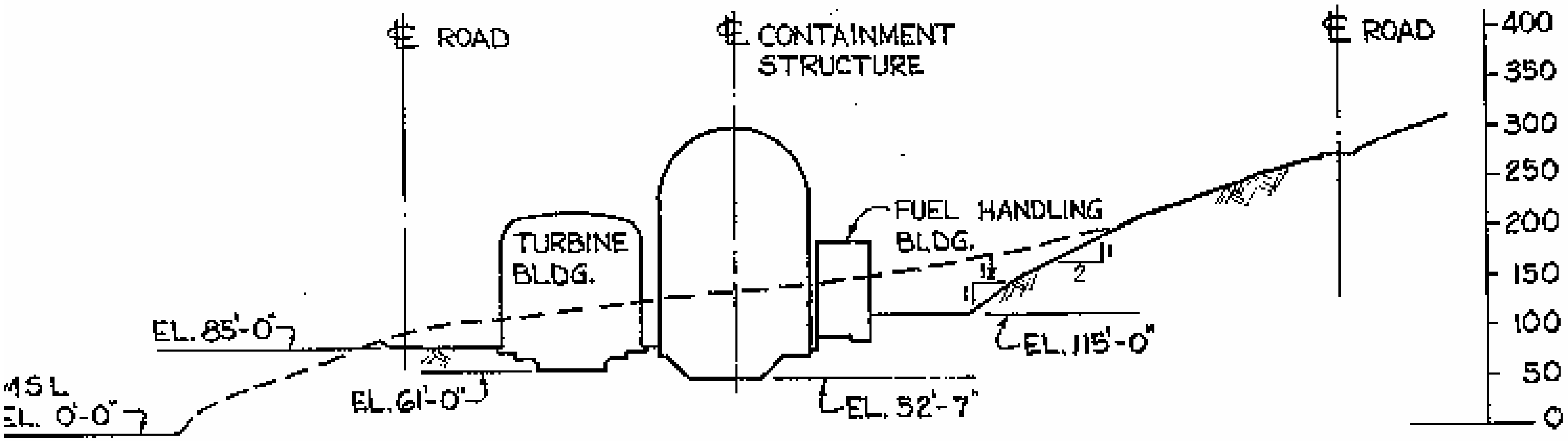


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-17

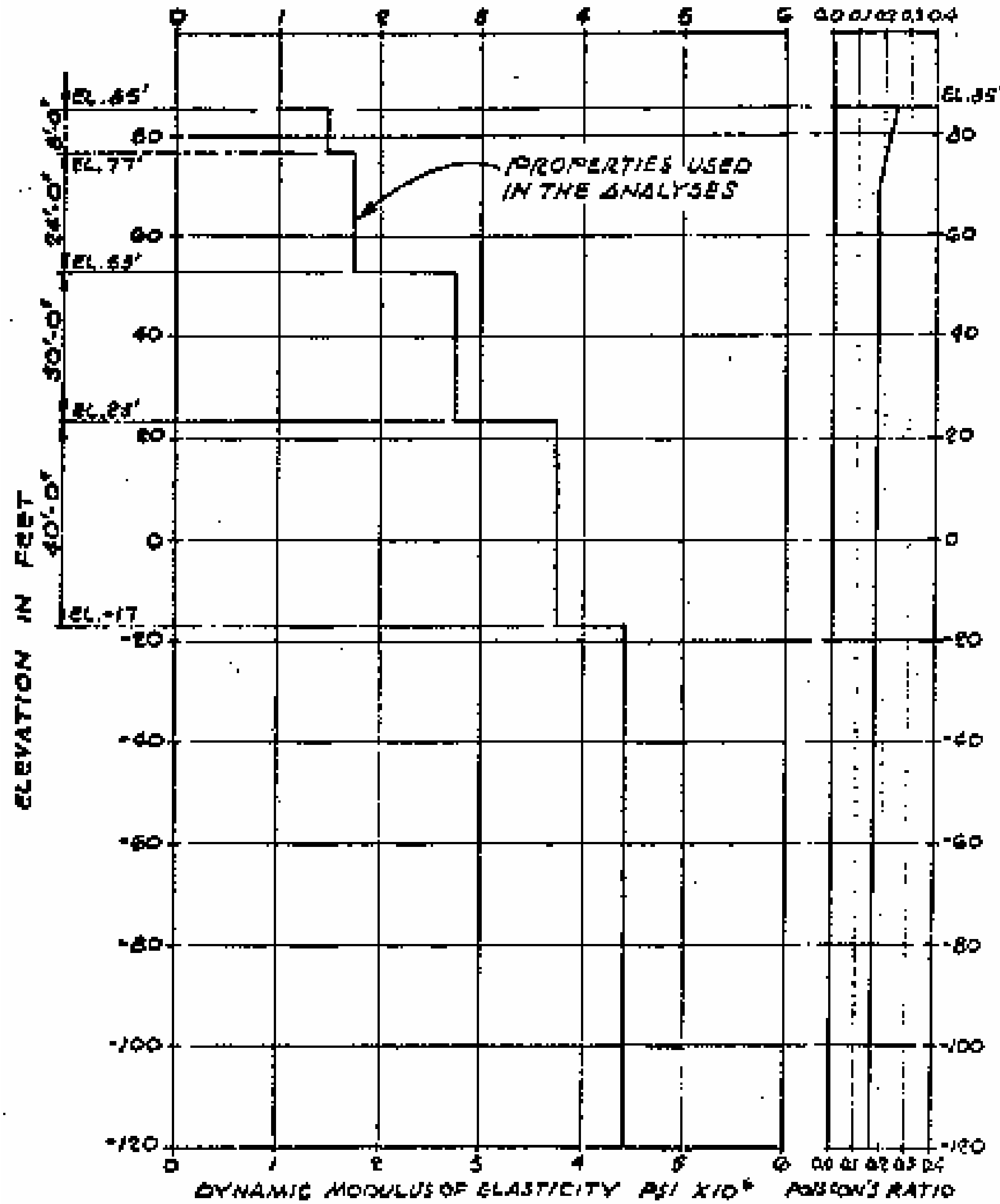
PLAN OF EXCAVATION AND BACKFILL



SECTION A-A

FROM FIGURE 2.5-17

FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.5-18 SECTION A-A EXCAVATION AND BACKFILL

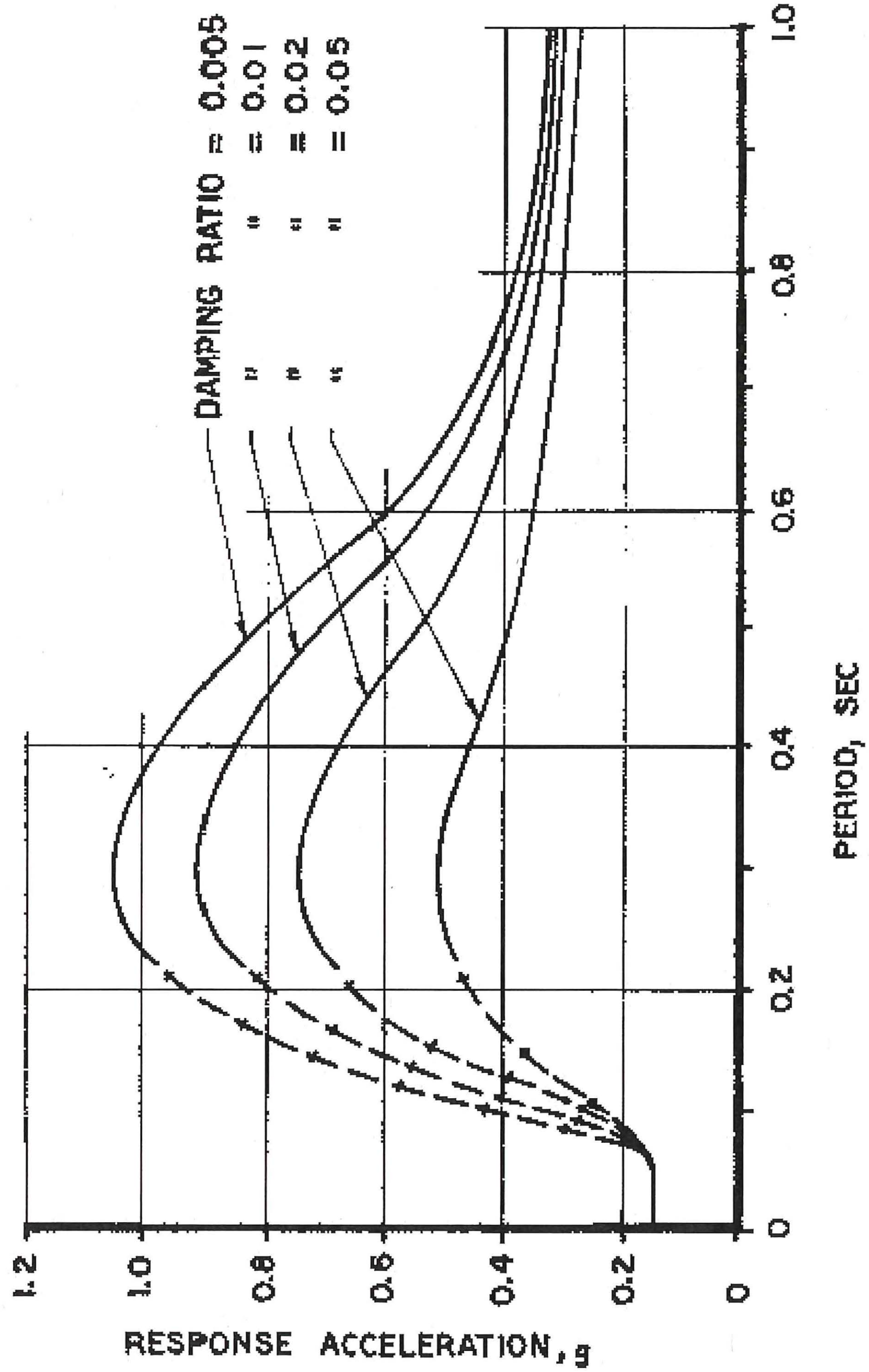


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-19

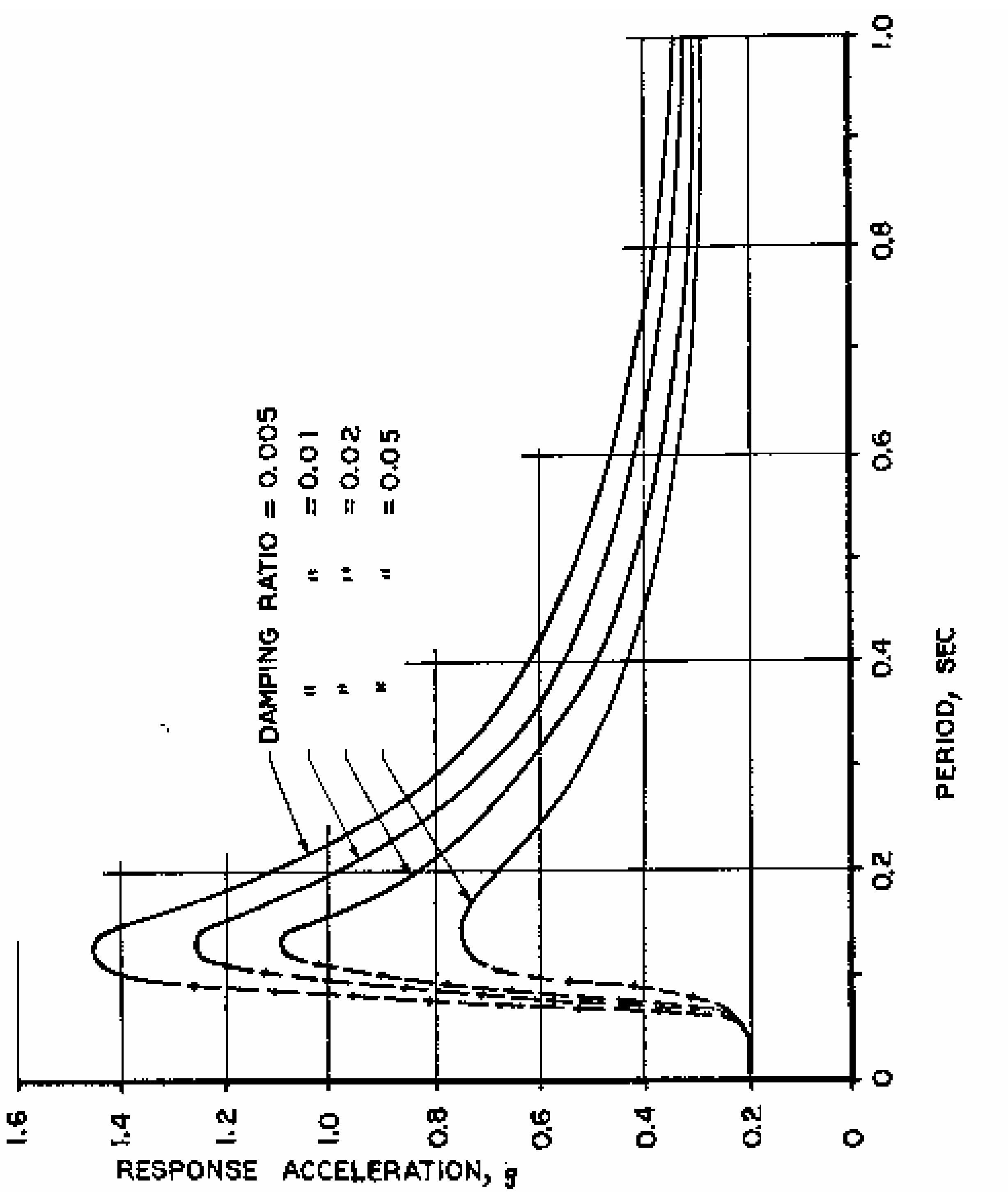
SOIL MODULE OF ELASTICITY
AND POISSON'S RATIO



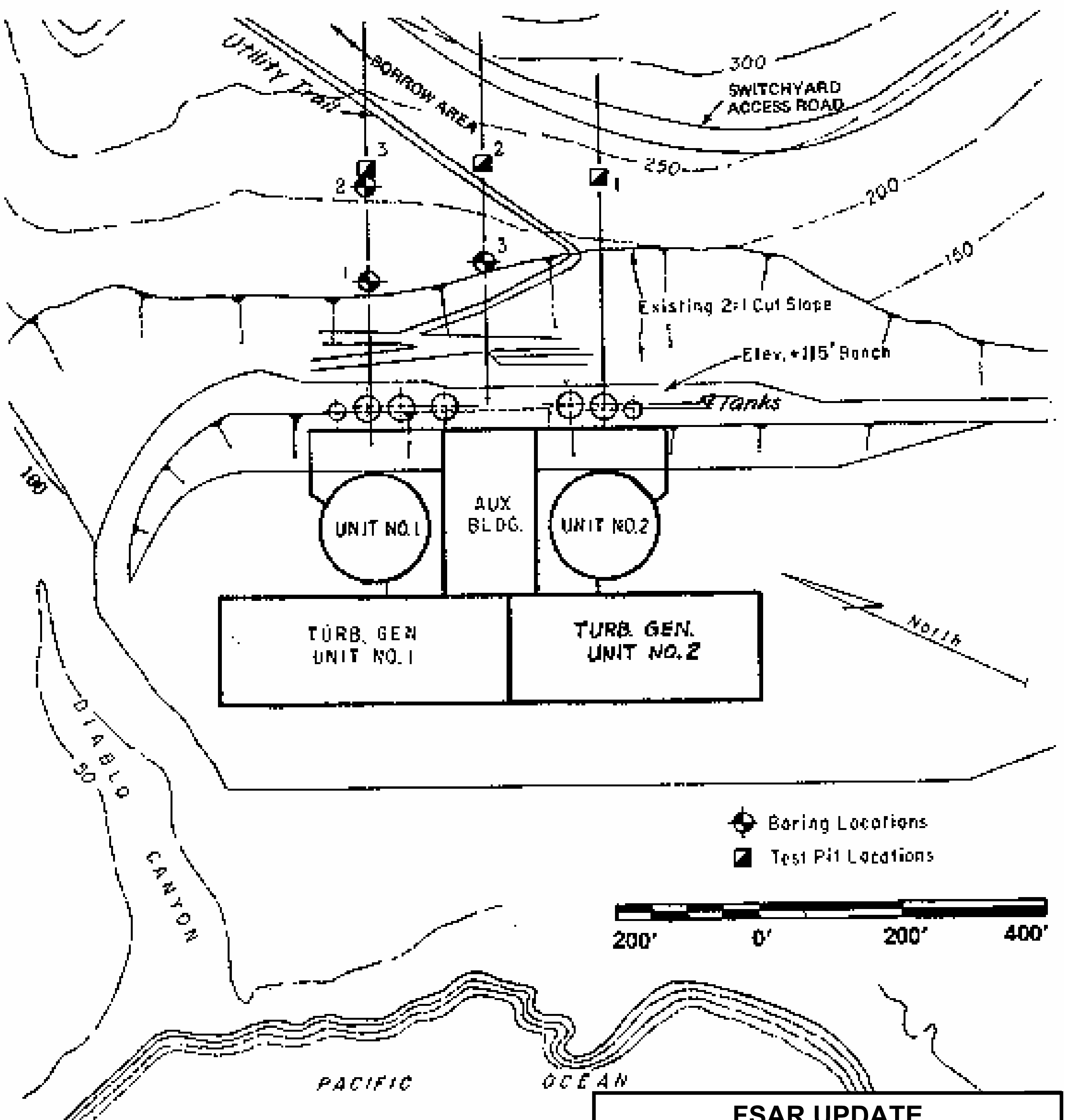
FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-20
SMOOTH RESPONSE ACCELERATION
SPECTRA – EARTHQUAKE "B"



FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.5-21 SMOOTH RESPONSE ACCELERATION SPECTRA – EARTHQUAKE "D" MODIFIED

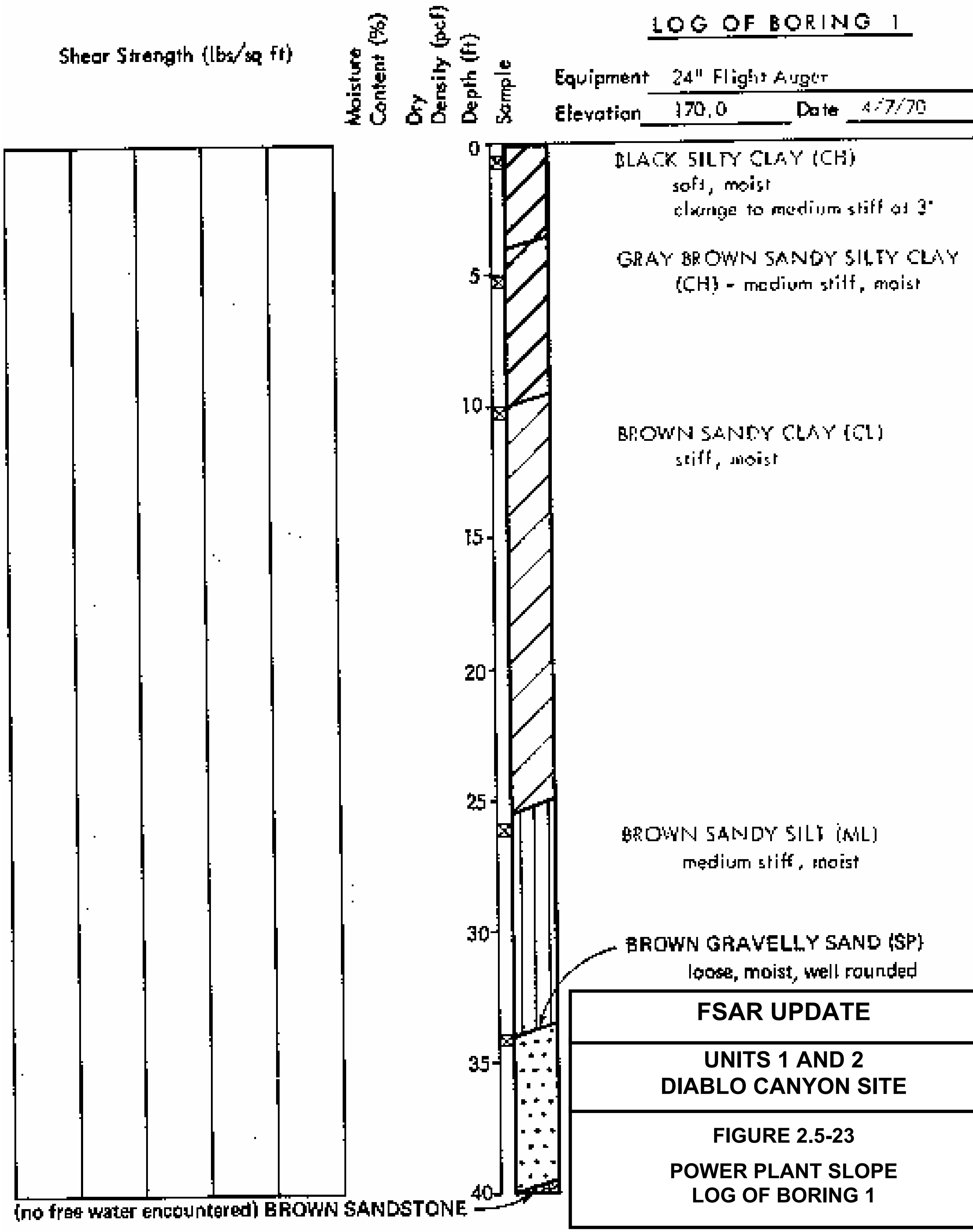


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-22

POWER PLANT SLOPE PLAN

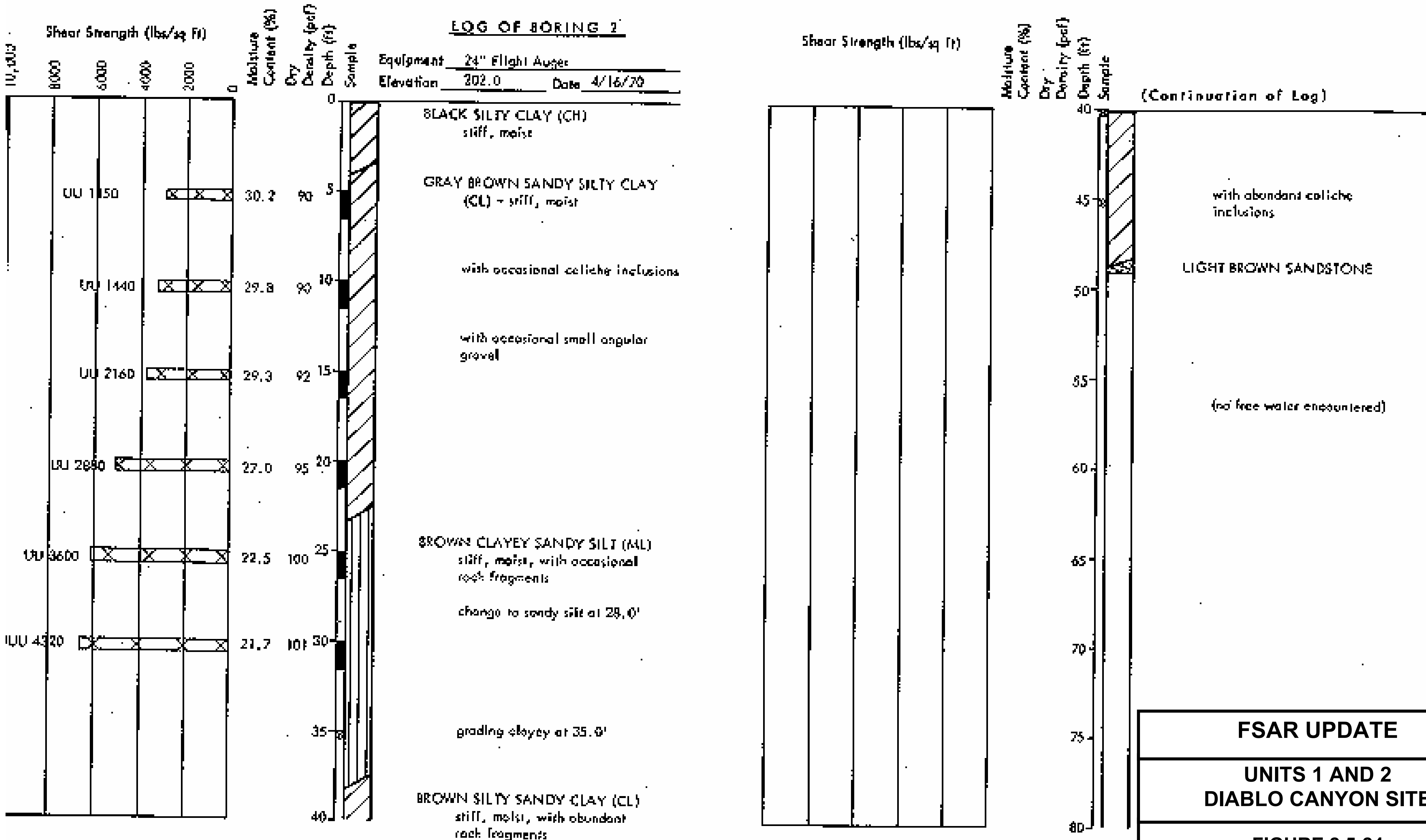


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-23

POWER PLANT SLOPE
LOG OF BORING 1

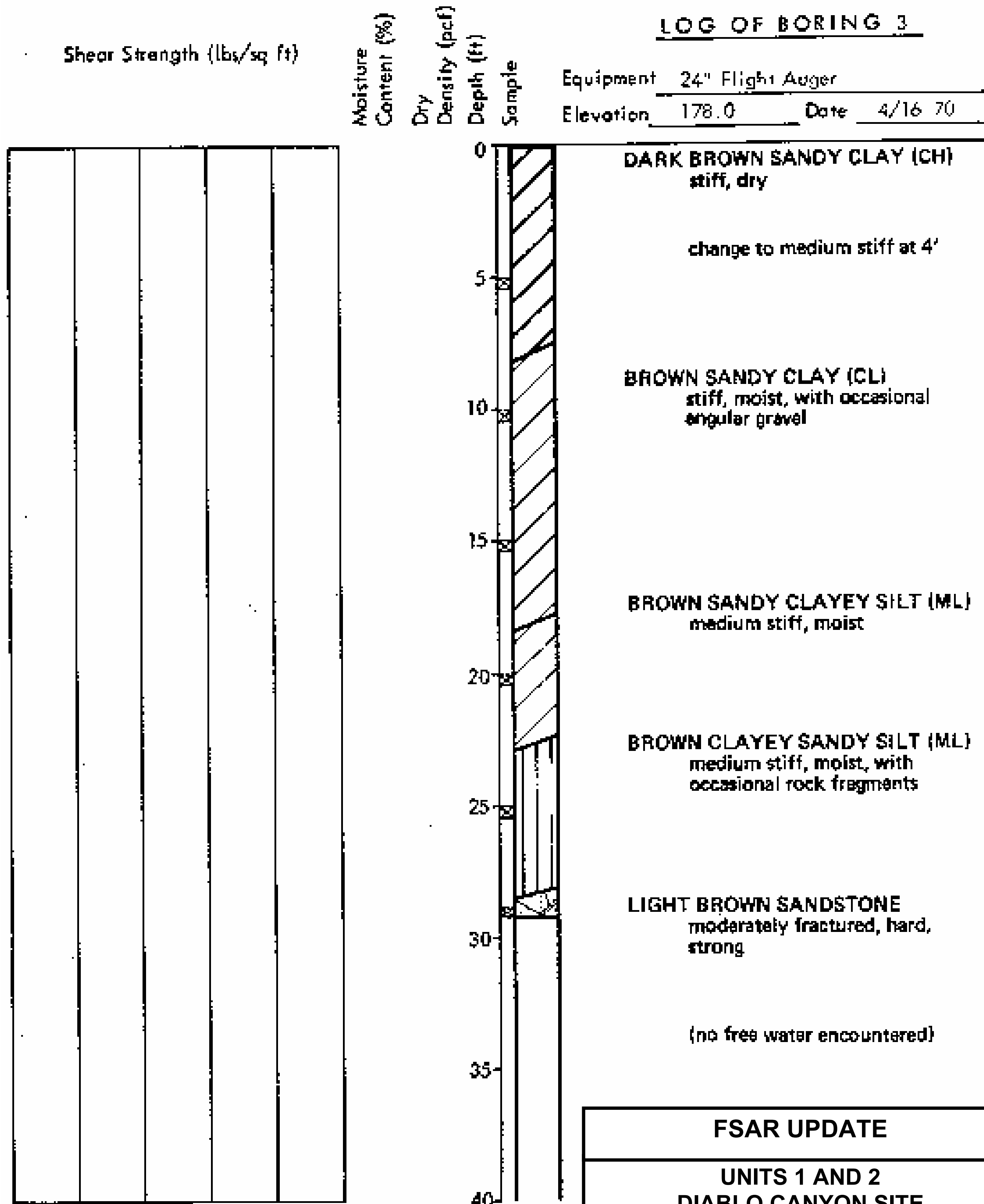


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-24

POWER PLANT SLOPE
LOG OF BORING 2

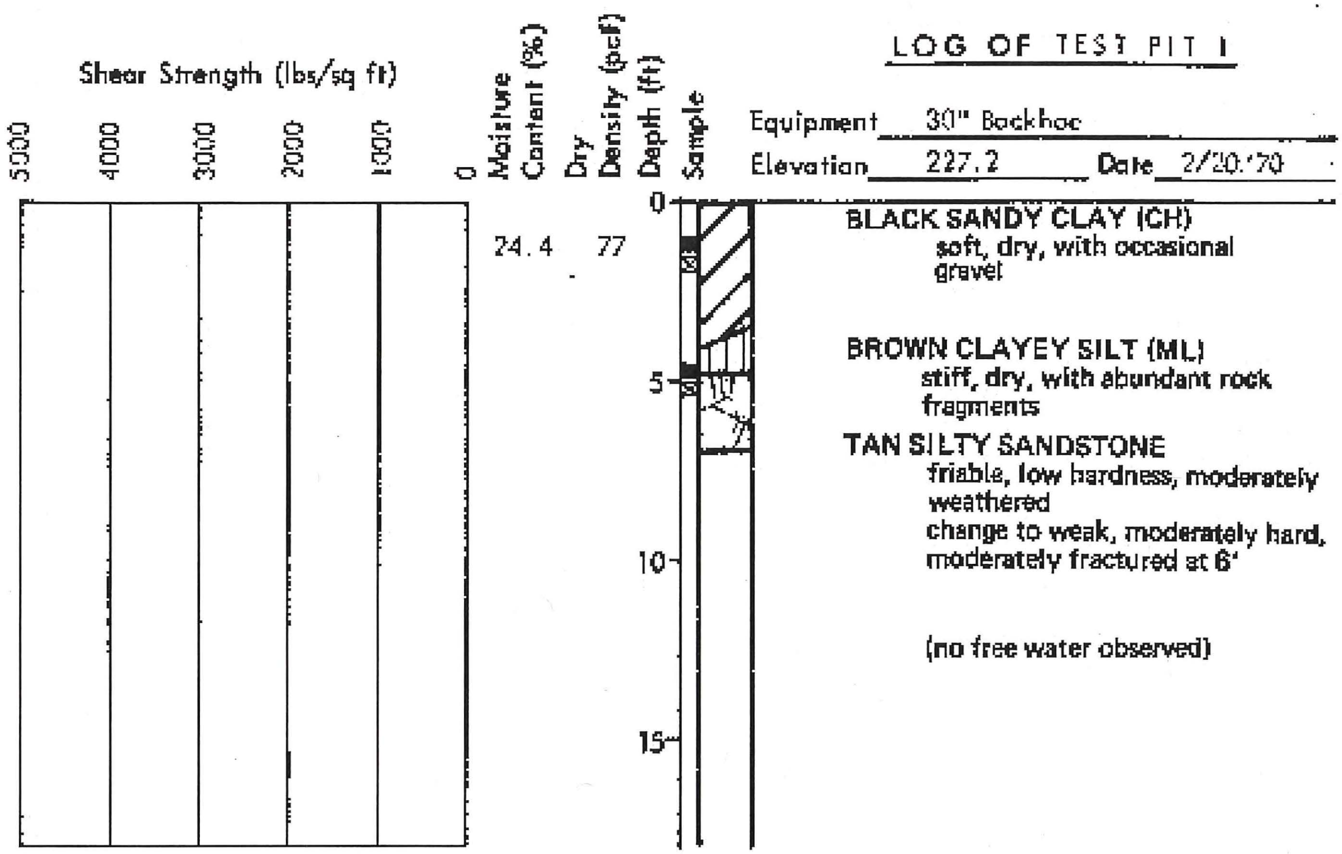


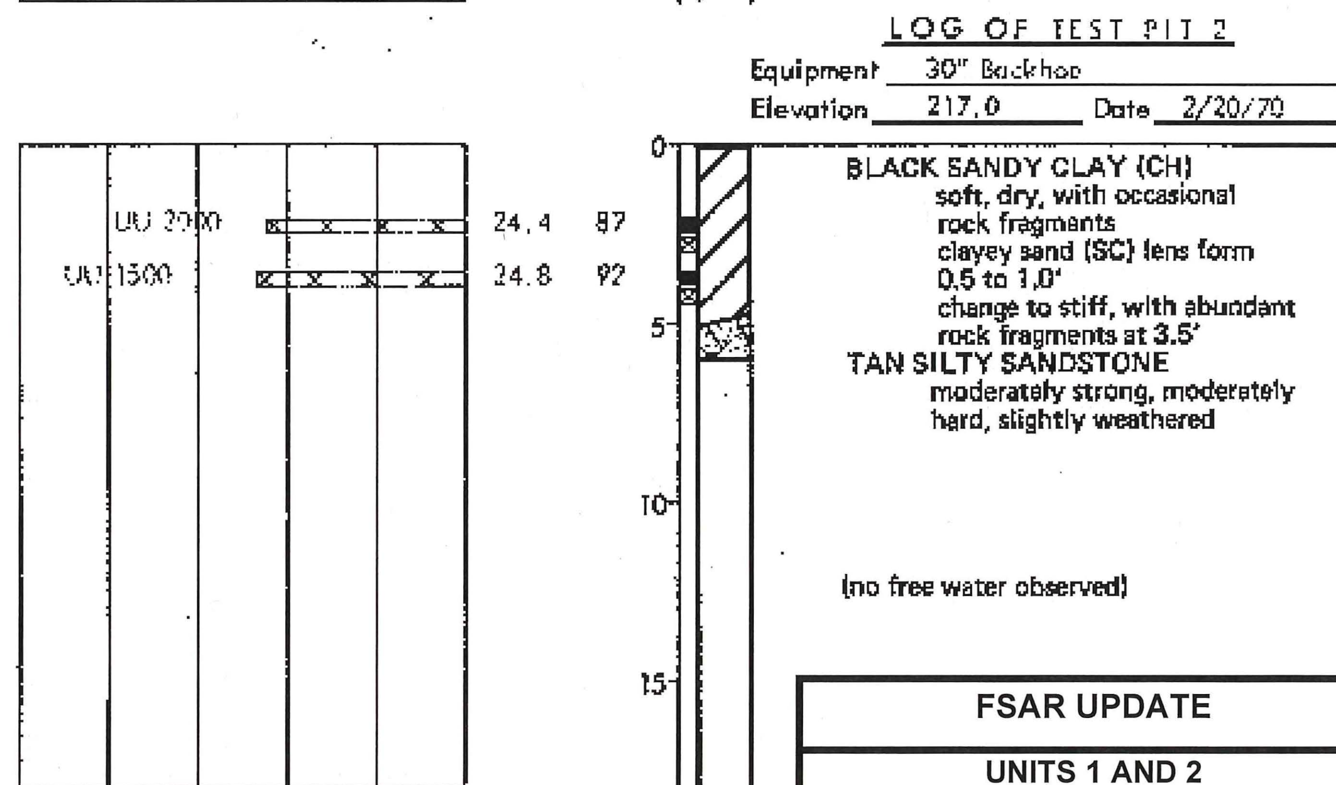
FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-25

POWER PLANT SLOPE
LOG OF BORING 3



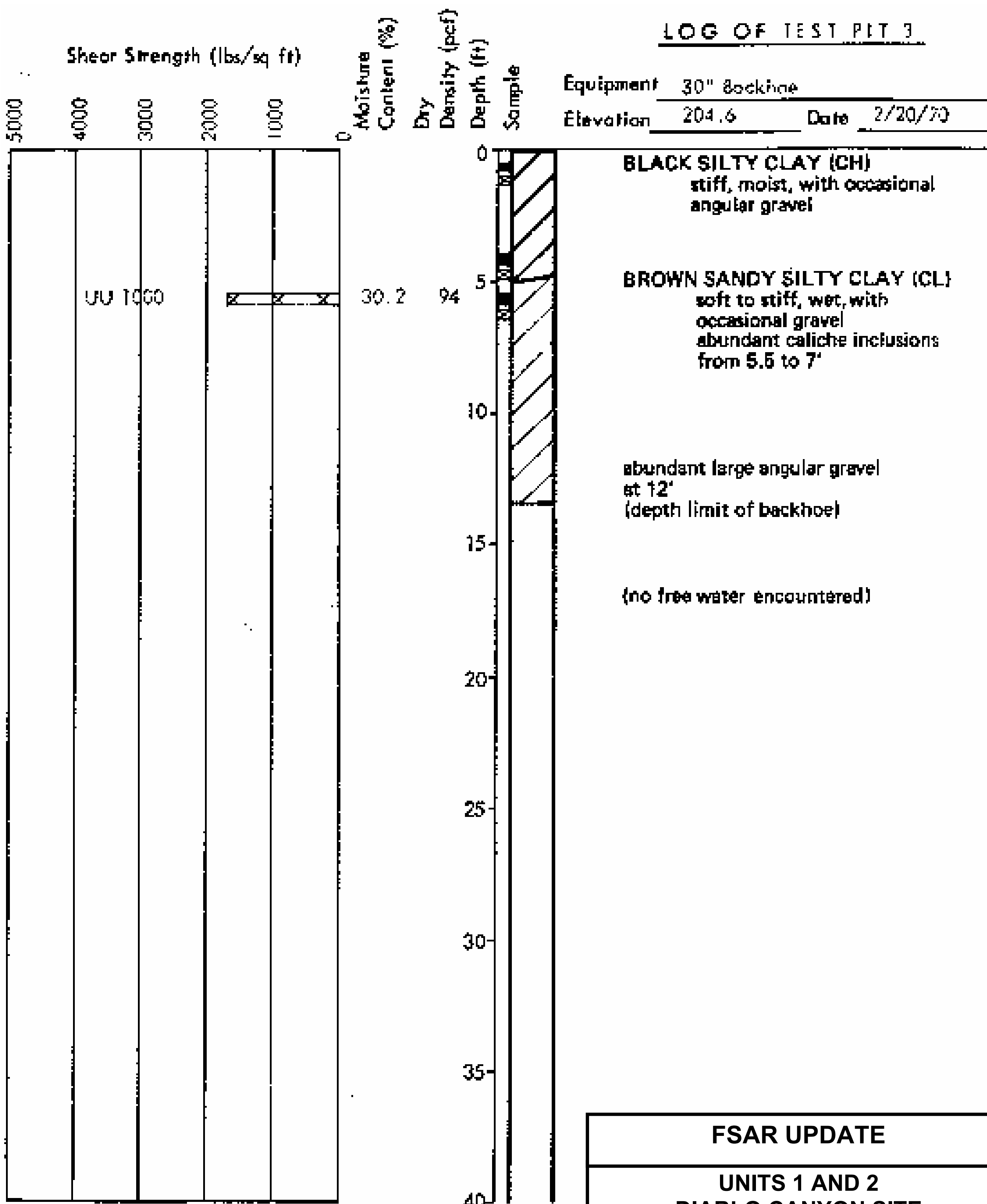


FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-26

POWER PLANT SLOPE
LOG OF TEST PITS 1 & 2



FSAR UPDATE

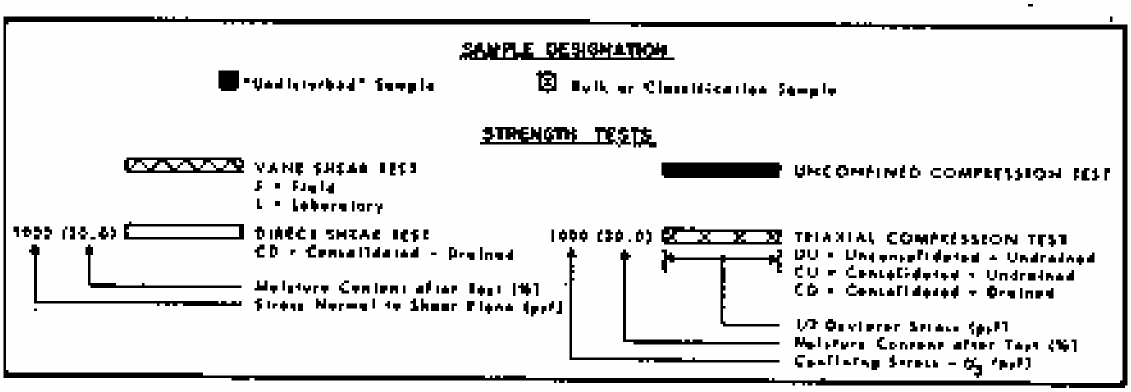
UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-27

POWER PLANT SLOPE
LOG OF TEST PIT 3

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN #200 SIEVE)	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL - SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL - SAND - SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL - SAND - CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND - SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN #200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM



KEY TO TEST DATA

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UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 2.5-28
POWER PLANT SLOPE
SOIL CLASSIFICATION CHART AND
KEY TO TEST AREA

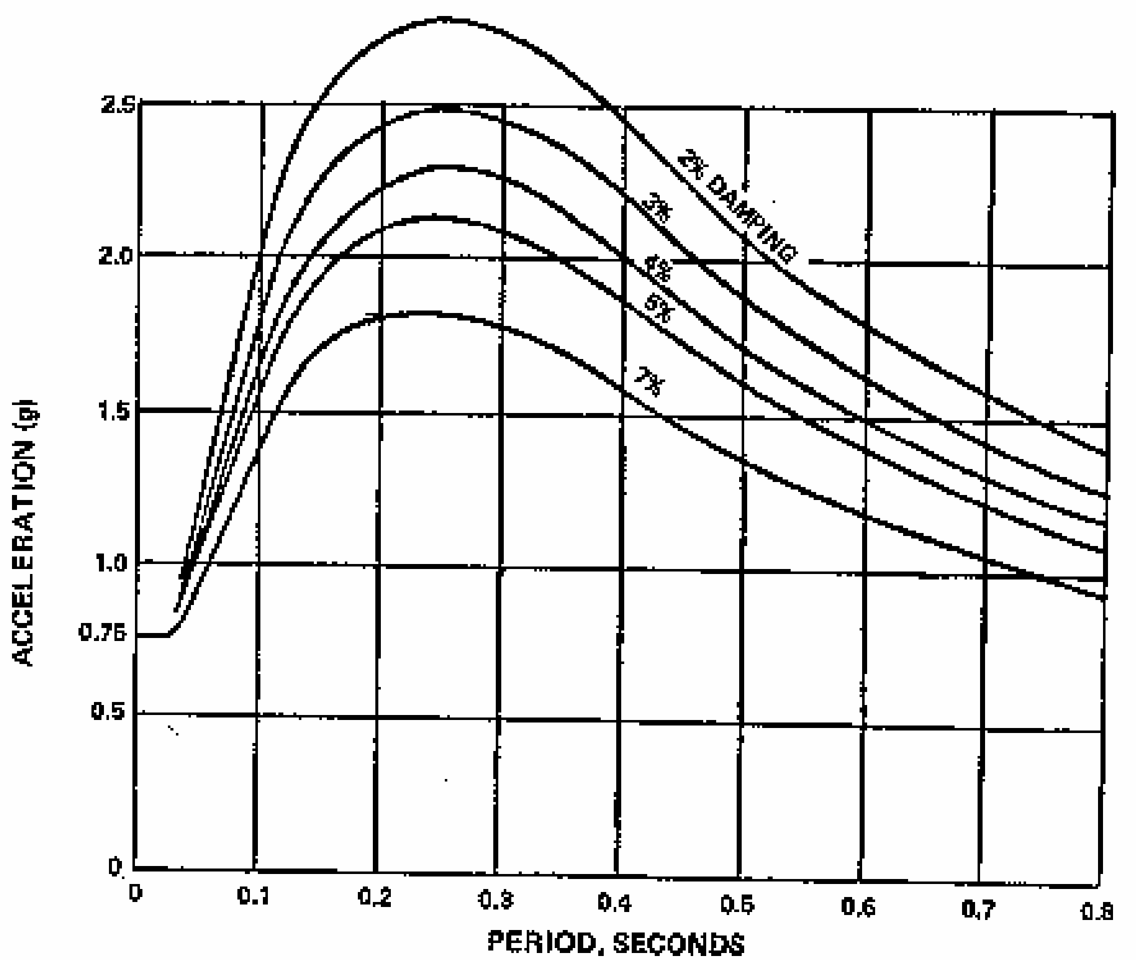

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FIGURE 2.5-29 FREE FIELD SPECTRA HORIZONTAL HOSGRI 7.5M/BLUME

Revision 11 November 1996

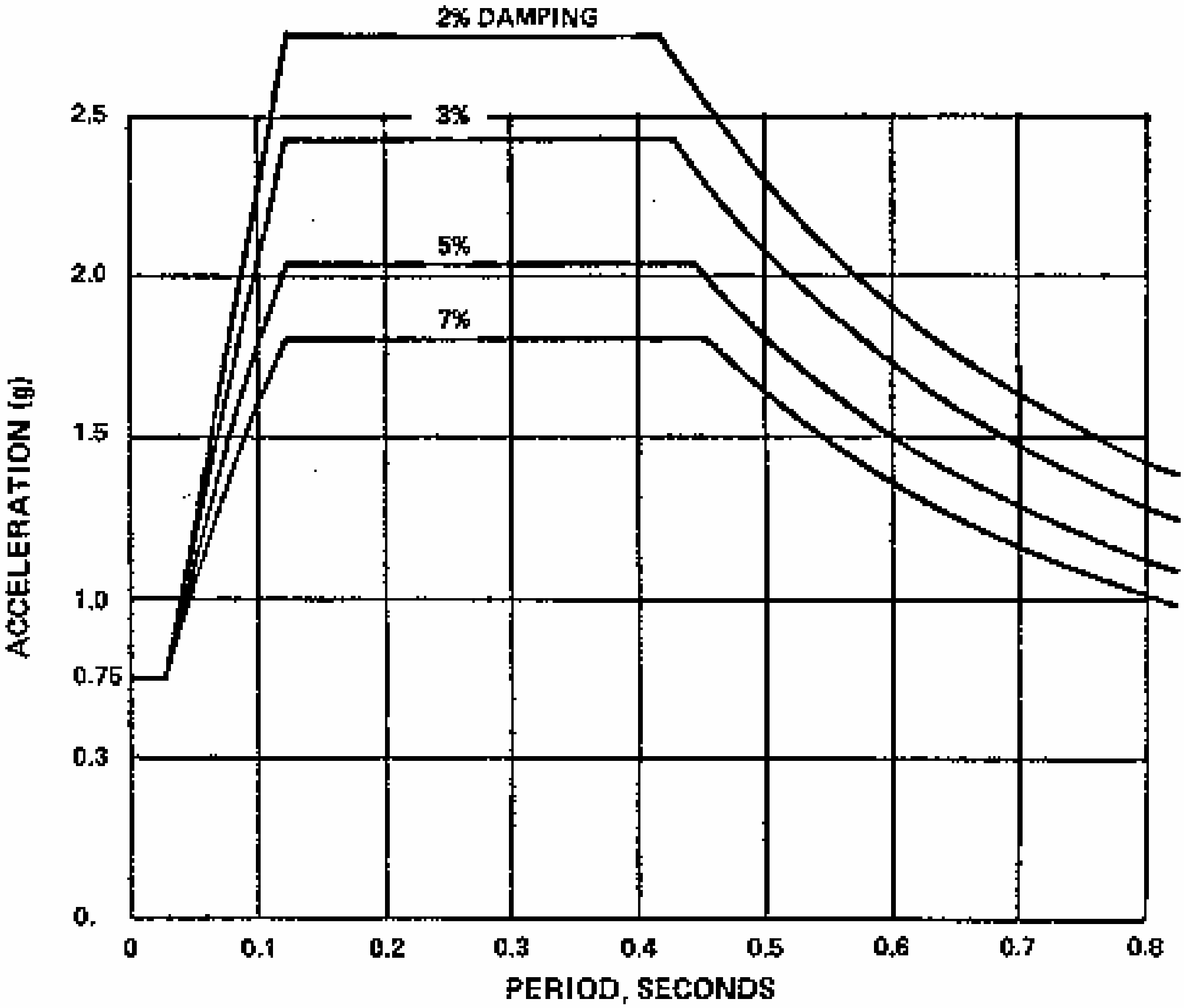

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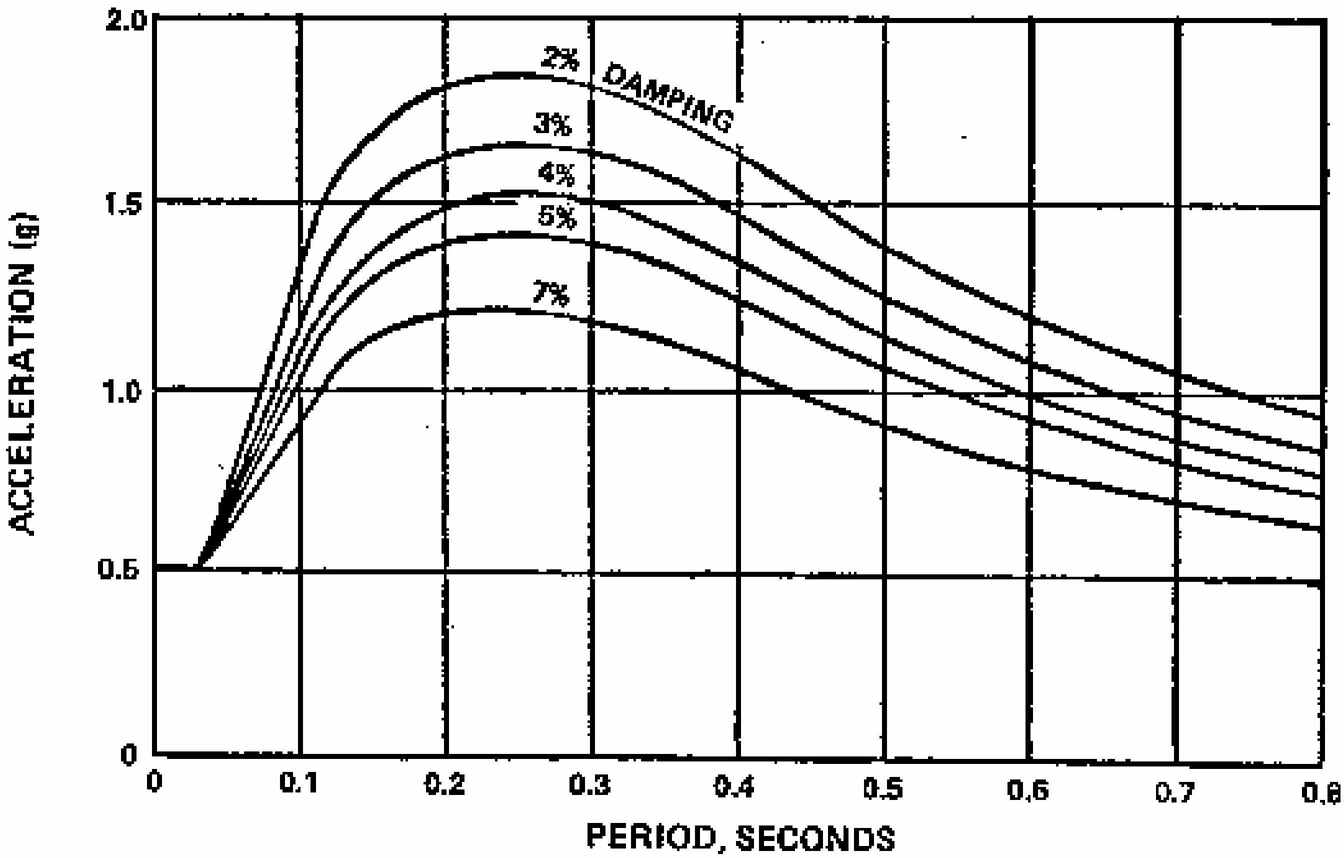
FIGURE 2.5-30 FREE FIELD SPECTRA HORIZONTAL HOSGRI 7.5M/NEWMARK



FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.5-31 FREE FIELD SPECTRA VERTICAL HOSGRI 7.5M/BLUME

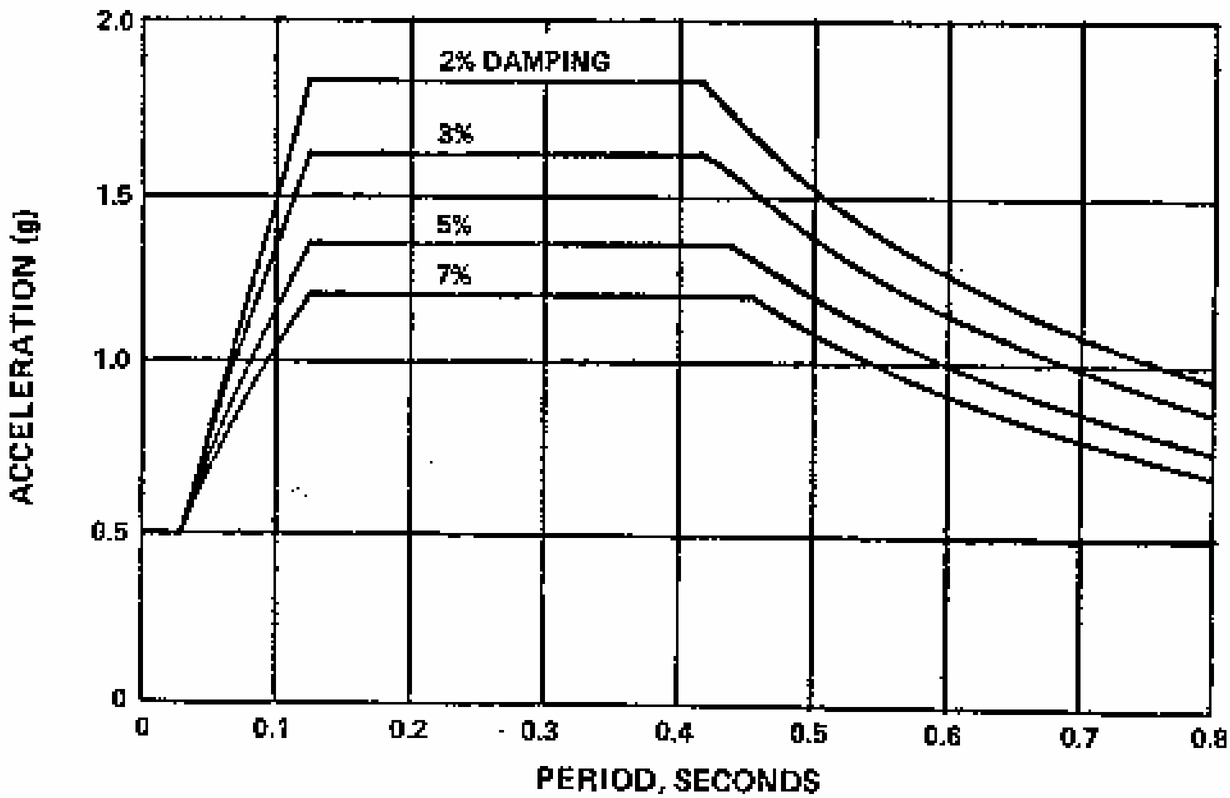


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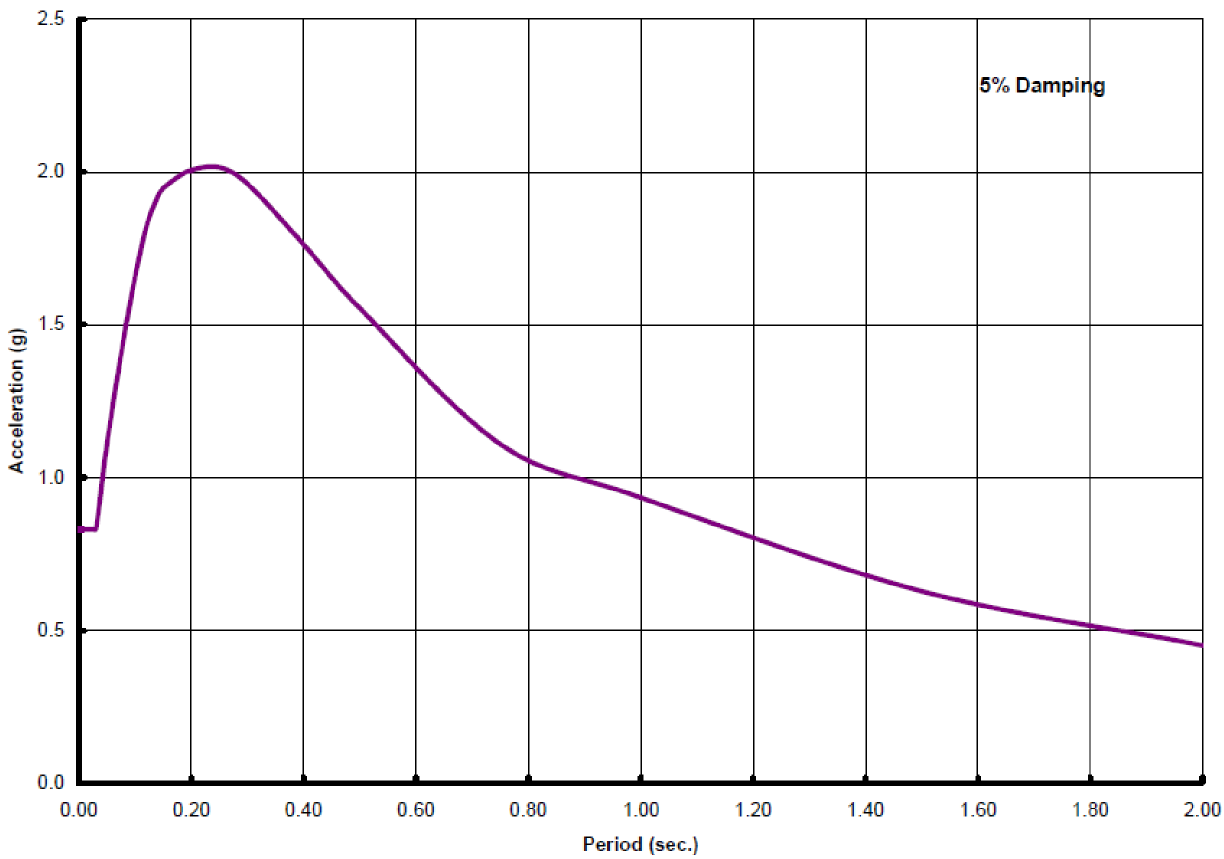
FIGURE 2.5-32
FREE FIELD SPECTRA
VERTICAL
HOSGRI 7.5M/NEWMARK

Revision 11 November 1996



NOTES:

1. This figure is based on Reference 42, Figure 2.4

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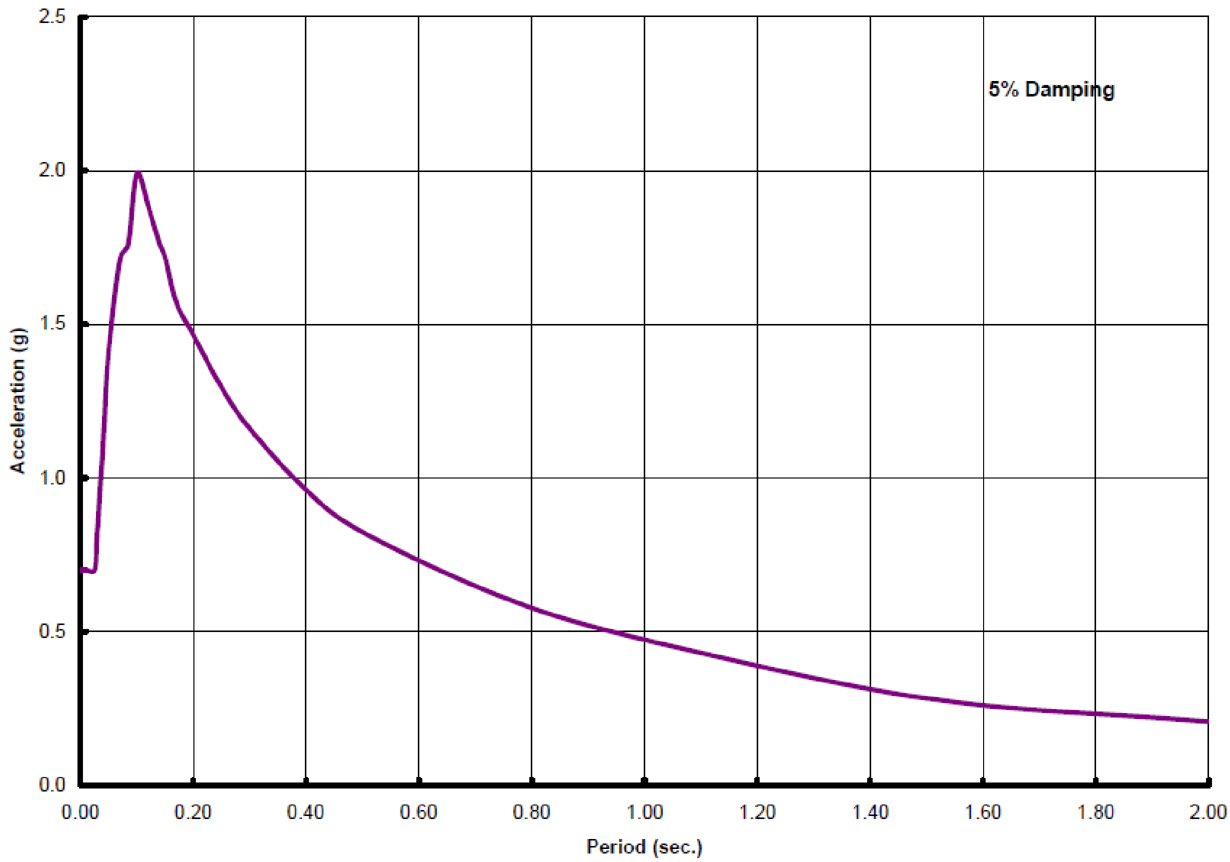
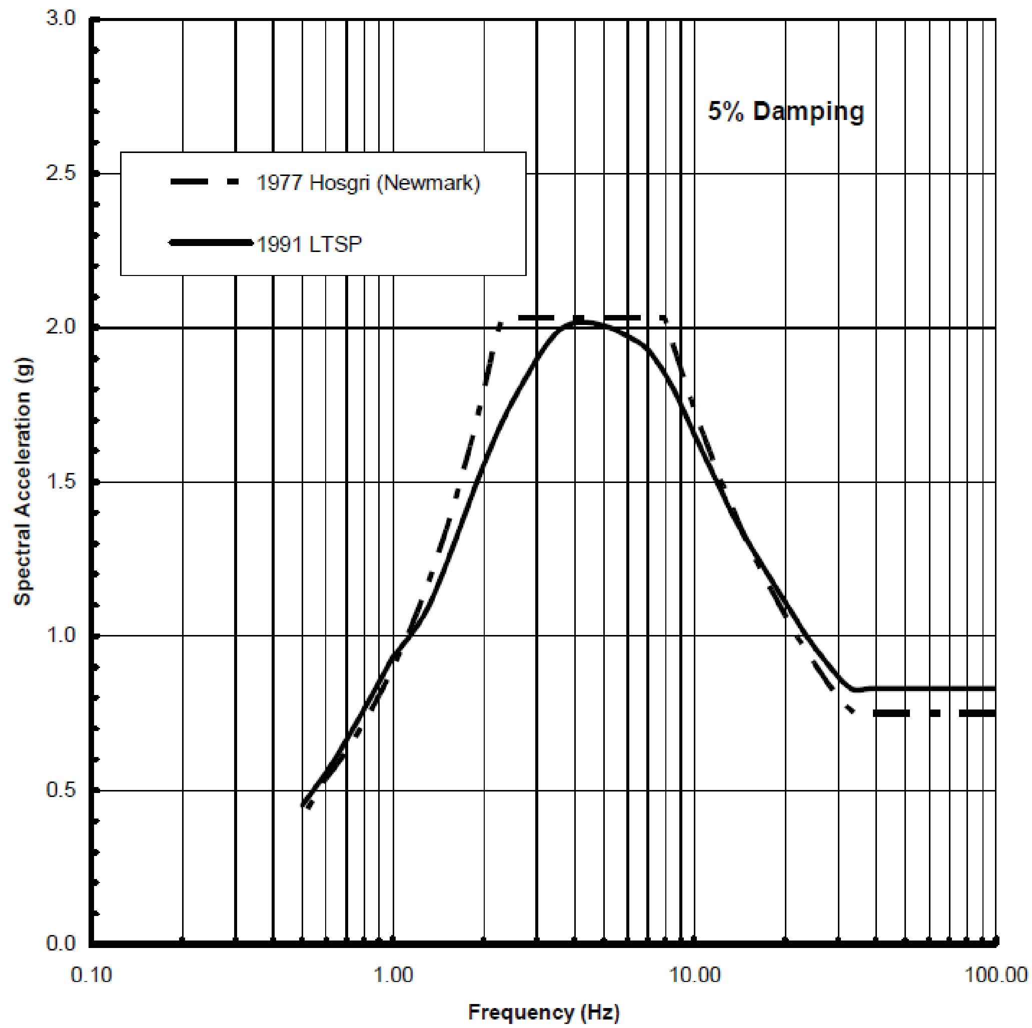
FIGURE 2.5-33 FREE FIELD SPECTRUM HORIZONTAL 1991 LTSP (84^{TH} PERCENTILE NON-EXCEEDANCE) AS MODIFIED PER SSER-34



NOTES:

1. This Figure is based on Reference 42, Figure 2.5.

FSAR UPDATE
UNITS 1 AND 2 DIABLO CANYON SITE
FIGURE 2.5-34 FREE FIELD SPECTRUM VERTICAL 1991 LTSP (84TH PERCENTILE NON-EXCEEDANCE) AS MODIFIED PER SSER-34



NOTES:

1. This Figure is based on Reference 40, Figure 7-2; however, the LTSP response spectrum has been adjusted in accordance with Reference 42, Figure 2.5.
2. This Figure is for comparison purposes only. Do not use for design.
3. Legend: 1977 Hosgri (Newmark) corresponds to the spectrum shown in Figure 2.5-30 (Frequency range of 0.5 Hz to 1.25 Hz is an extrapolation)
   1991 LTSP corresponds to the spectrum shown in Figure 2.5-33

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FIGURE 2.5-35
FREE FIELD SPECTRA
HORIZONTAL LTSP (PG&E 1998)
GROUND MOTION VS. HOSGRI (NEWMARK 1977)

NOTE:

1. This figure is based on Reference 52, Figure 1-1.

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FIGURE 2.5-36 MAP OF SHORELINE FAULT STUDY AREA