



STRONG-MOTION PROGRAM REPORT, JANUARY-DECEMBER 1983



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U.S. GEOLOGICAL SURVEY CIRCULAR 971

Department of the Interior

DONALD PAUL HODEL, *Secretary*

U.S. Geological Survey

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PREFACE

This volume contains preliminary information on the nature and availability of strong-motion data recorded by the U.S. Geological Survey (USGS). The Strong-Motion Program is operated by the USGS in cooperation with numerous Federal, State, and local agencies and private organizations. Major objectives of this program are to record both strong ground motion and the response of various types of engineered structures during earthquakes, and to disseminate this information and data to the international earthquake- engineering research and design community.

This report contains a summary of the accelerograms recovered from the USGS National Strong-Motion Network during 1983, reports on the 1983 Coalinga, Calif., earthquake sequence and the Hawaii earthquake of November 16, notes on the availability of digitized data, and general information related to the USGS and to other strong-motion programs. The data summary in table 1 contains information on all USGS accelerograms recovered (though not necessarily recorded) during 1983; event data are taken from "Preliminary Determination of Epicenters," published by the USGS.

Ronald L. Porcella, Editor
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1983 ACCELEROGRAPH RECORDS

by J.C. Switzer

A total of 508 records were recovered during 1983 from the USGS National Strong-Motion Network. About 340 of these records were from the main shock and aftershocks of the magnitude (M_L) 6.5 Coalinga earthquake of May 2. This earthquake triggered at least 37 strong-motion accelerographs operated by the USGS (see table 1). Two main-shock records that were obtained from the Pleasant Valley Pump Plant about 11 km from the epicenter show a maximum horizontal acceleration of 0.54 g and a strong duration (acceleration greater than 0.1 g) of 14.1 s. Six aftershocks of magnitude 5.0 or greater were recorded during the period May 2 to September 9. (see next report).

A magnitude 6.4 earthquake on July 12 in southern Alaska triggered accelerographs at 10 USGS stations. A maximum acceleration of 0.32 g was recorded at Valdez High School. A magnitude 6.2 earthquake on September 7 in the same area triggered accelerographs at 12 USGS stations.

On November 16, a magnitude 6.4 earthquake produced accelerograms at 15 USGS stations in Hawaii. The maximum horizontal acceleration was 0.59 g at Kau Hospital in Kohala, Hawaii (see next report).

Additional strong-motion records recovered during 1983 (see table 1) were recorded at accelerograph stations located in Arkansas, California, Idaho, Nevada, and Washington.

STRONG-MOTION DATA OBTAINED NEAR COALINGA, CALIFORNIA

By R. Maley, G. Brady, E. Etheredge,
D. Johnson, P. Mork, and J. Switzer

[abstracted from Borchardt, R.D., ed., 1983, The Coalinga earthquake sequence commencing May 2, 1983: U.S. Geological Survey Open-File Report 83-511, p. 38-56]

Introduction

The moderate ($M_L=6.5$) earthquake of May 2, 1983 (2342 G.m.t.) near Coalinga, Calif., injured 45 people and caused more than \$30 million in damage in the downtown area (fig. 1); the event triggered 37 strong-motion accelerographs that are maintained as part of the National Strong-Motion Network operated by the USGS. The accelerographs closest to the epicenter were those at the Pleasant Valley Pump Plant (fig. 2). This array of accelerographs, purchased by the U.S. Bureau of Reclamation (USBR) and operated by the USGS, recorded the main event at an epicentral distance of about 9 km. Other USGS-operated accelerograph stations, triggered at greater distances, include those located at Bear Valley, the Veterans' Administration Hospital in Fresno, the Dos Amigos Pump Plant, and several dams associated with the U.S. Army Corps of Engineers and the USBR. After the earthquake, eight analog accelerographs were installed by the USGS in the epicentral region, including the city of



Figure 1.--Typical damage to structures in downtown Coalinga; see cover photograph.
Photographs by R. P. Maley and E. C. Etheredge, May 5, 1983.

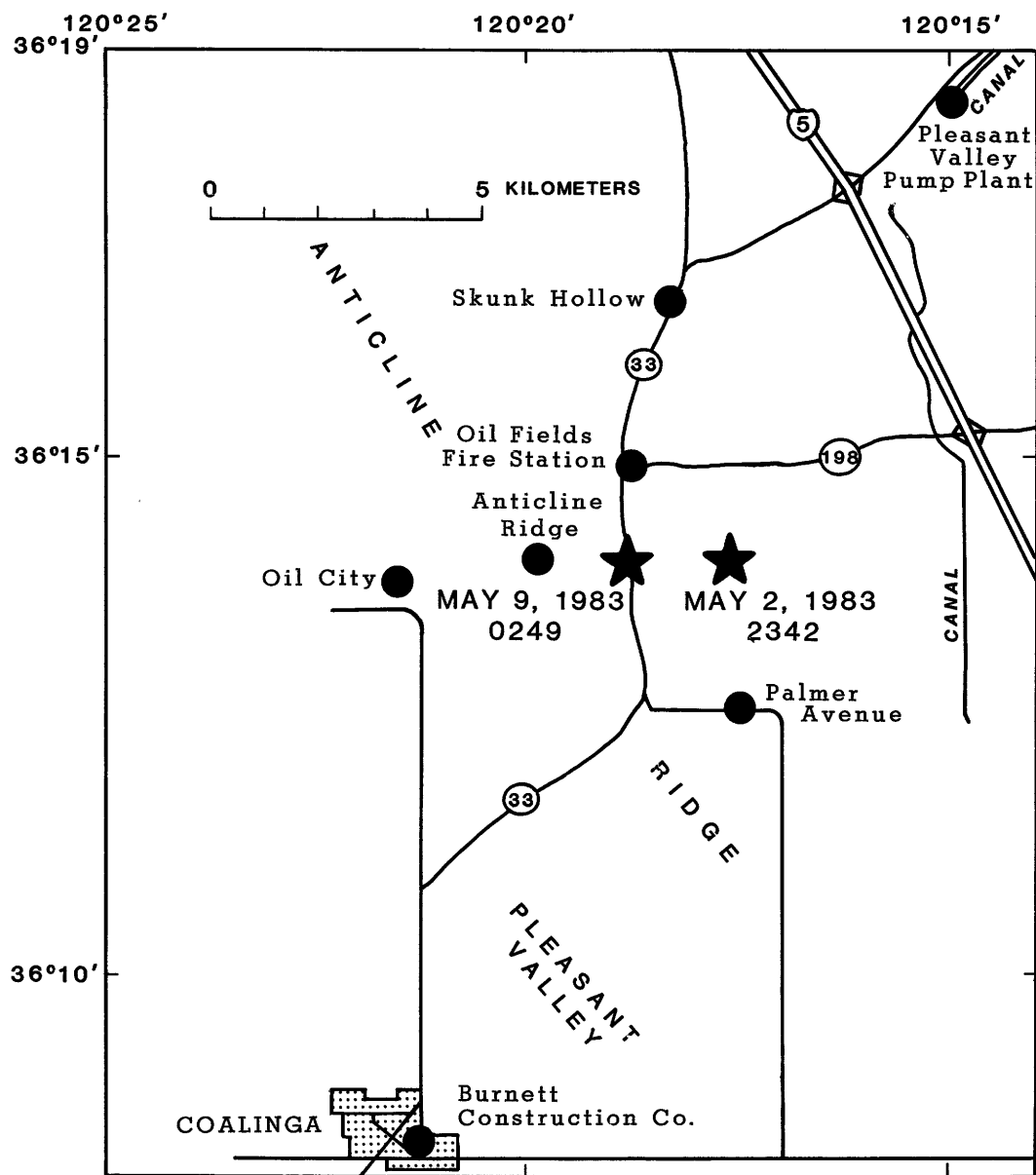


Figure 2.--Coalinga, Calif., showing locations of accelerograph stations (dots) and epicenters of the main shock and large aftershock (stars).

Coalinga (fig. 2). As of May 12, more than 50 records had been obtained from these temporary instruments, including recordings of the magnitude 5.1 aftershock of May 9 (0249 G.m.t.). Numerous aftershocks also were recorded at the Pleasant Valley Pump Plant (see table 1). A summary of California Division of Mines and Geology (CDMG) strong-motion records from the main shock was published by A.F. Shakal and R.D. McJunkin in 1983, as CDMG Office of Strong-Motion Studies Report 83-5.2 (see section below entitled "Data Sources").

Main-Shock Data

The nearest accelerograph records were recovered 9 km from the earthquake epicenter at the Pleasant Valley Pump Plant, a facility that takes water from a feeder line of the California Aqueduct for transfer into the Coalinga Canal (fig. 2). Records were obtained from instruments on the basement floor, approximately 5.2 m below grade of the building site, and at the switchyard (ground site), which is 85.3 m southwest of the plant at the top of a slope about 20.5 m above the plant grade (fig. 3). The switchyard instrument, which is mounted on a 1.5-m²-area concrete pad with a small metal shelter, is located at an elevation 27.5 m above and a distance 36.6 m northwest of the discharge pipeline.

Peak recorded accelerations were 0.54 g horizontal and 0.37 g vertical at the switchyard, and 0.33 g horizontal and 0.22 g vertical in the basement of the pump plant (fig. 4; see table 1). The ratio of corresponding accelerations at the two sites is consistent for the larger aftershocks, as well as for the Three Rocks earthquake of August 3, 1975 (0635 G.m.t.). Figure 4 shows that slight clipping of the four upward peaks on the 045° component of the record from the switchyard, due to a misalignment of the accelerometer mass, resulted in large deflections which were restricted by the transducer frame. However, comparison of this record with that from the basement indicates that few data were lost. These peaks were constructed during computer processing (Maley and others, 1984).

The instrumentation was interconnected for starting and timing signals and although the WWVB radio signal failed during the strong shaking, a real-time base was recovered by extrapolation from a clear radio signal recorded 60 s after triggering. From this radio code, the trigger time for the two accelerographs was calculated at 42 min 42.04±0.03 s, approximately 4.3 s after the origin time. The hypocentral distance is about 18 km, and the S-wave-minus-trigger (S-t) time is 4.2 s.

Strong-motion instruments also were located on the first floor and the roof of the pump plant, but no recordings were obtained from these instruments, owing to numerous false triggerings before the earthquake. This station had a long history of serious operational problems due to obsolete instrumentation, and so the USBR supplied four new

accelerographs after the October 25, 1982, earthquake near Coalinga. These new accelerographs were installed in late February 1983, after which work-related operations caused numerous false triggerings of the instruments (roof accelerations as large as 0.09 g were generated). Depletion of the film supplies by these false triggerings, generated by crane operation and some "electronic" triggers, resulted in no recordings from the two upper-level instruments.

Aftershock Data

Shortly after the main shock, eight analog accelerographs were installed at six sites--five in the epicentral area and one in Coalinga (see fig. 2 for locations and figs. 5-10 for photographs of stations).

The most significant aftershock, a magnitude 5.1 event on May 9 (0249 G.m.t.), was recorded by all eight aftershock instruments as well as by the complete structural array located at the pump plant. Peak accelerations from this shock are listed in table 1, and copies of the records are shown in figures 11 and 12.

All stations had hypocentral distances in the range 13-17 km and recorded peak accelerations from 0.09 g in Coalinga to 0.56 g in the epicentral area. The high accelerations of 0.56 g (free field) and 0.48 g (concrete pad) were measured at Anticline Ridge. Malcolm Clark (oral commun., 1983) pointed out that surficial shatter effects were evident on the far side of the ridge, about 6 to 9 m from the accelerograph site. Accelerations recorded at other stations at approximately the same distance from the preliminary epicenter are about half the maximum observed at Anticline Ridge.

The set of records from the Pleasant Valley Pump Plant (fig. 13) show, as expected, a peak acceleration at the switchyard (0.22 g) that is substantially higher than at the basement (0.14 g). As mentioned previously, this relation held true for both the main shock and previous earthquakes. We note that data traces from the basement and first floor are nearly identical, a phenomenon noticed after previous earthquakes and credited to the monolithic composition of the underground part of the pump plant. The roof record exhibits a dominant 0.55-s period (acceleration, about 0.25 g) in a northeast-southwest direction across the timber axis of the structure. We can only surmise the type of record that would have been obtained at the roof level during the main shock; however, a comparison of the basement records obtained from the two larger events in this series suggests that accelerations well above 0.5 g would have been recorded, possibly as large as 1 g.

Reference: Maley, R., Etheredge, E., Johnson, D., Switzer, J., Mork, P., and Brady, G., 1984, Strong-motion data recorded near Coalinga,

A



B

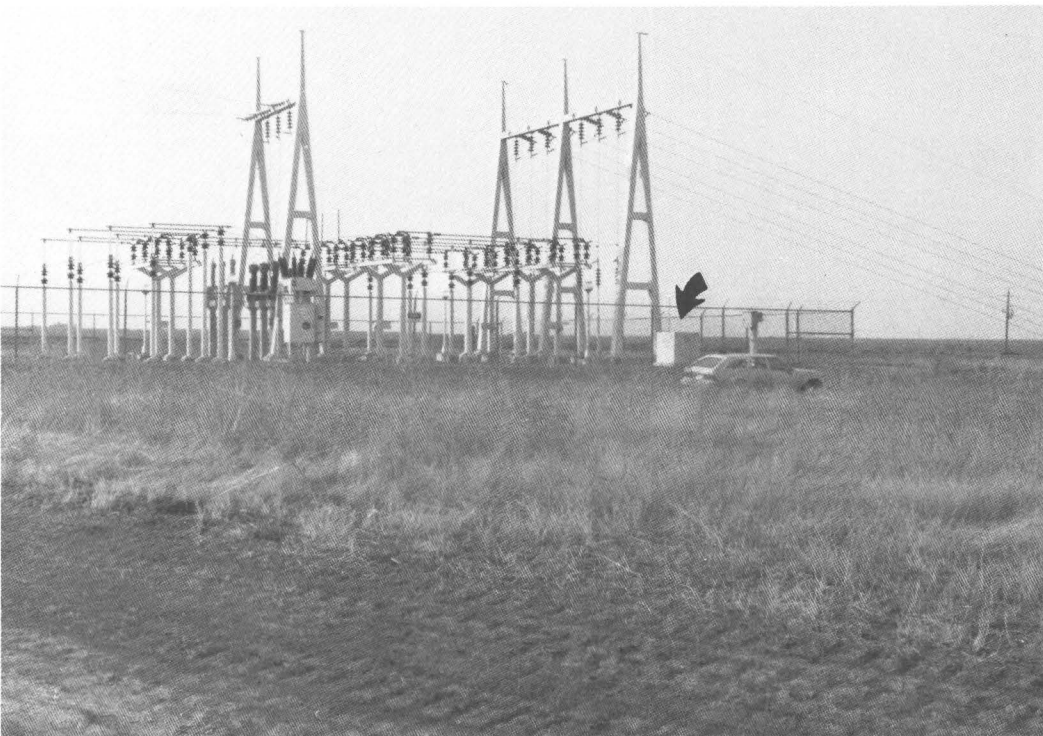
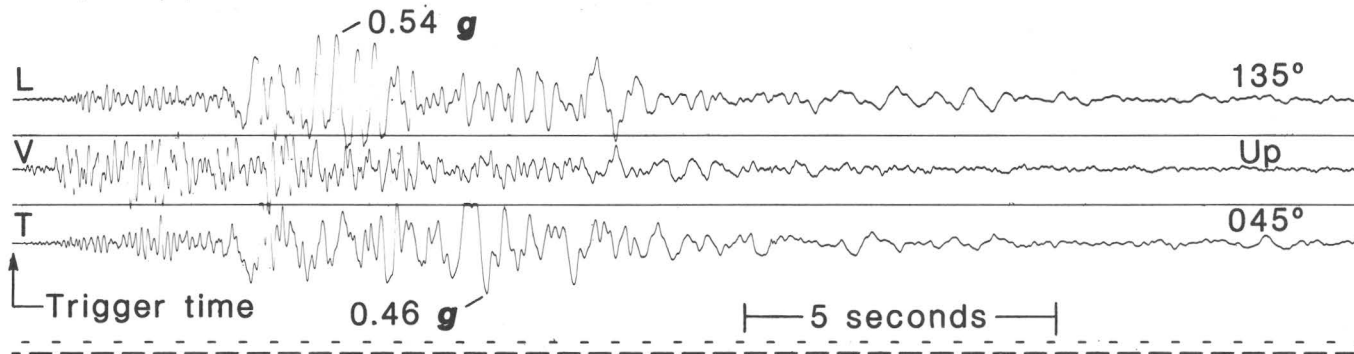


Figure 3.--Pleasant Valley Pump Plant accelerograph stations. Main shock was recorded on accelerographs located at basement level in the main plant (A), about 5 m below grade, and in a small metal shelter (arrow, B) at the switchyard, located about 85 m southwest of the plant.

SWITCHYARD



BASEMENT

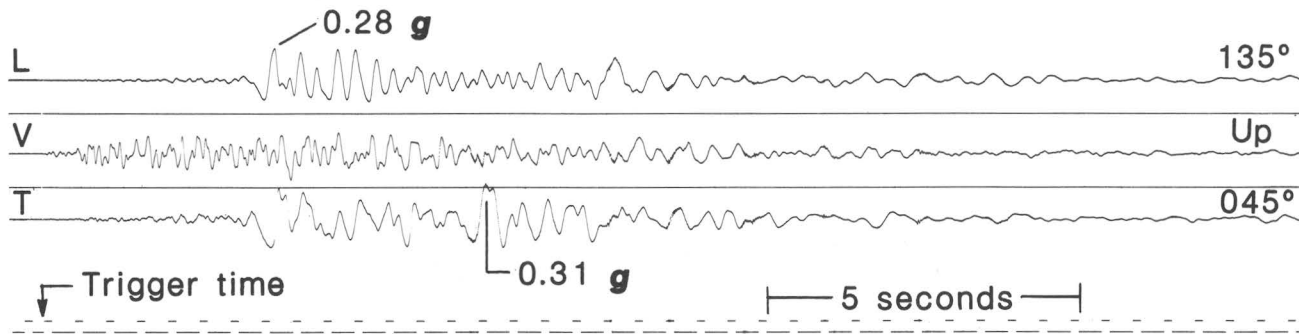


Figure 4.--Strong-motion records from the Pleasant Valley Pump Plant, recorded during the Coalinga main shock.



Figure 5.--Aftershock station at Anticline Ridge. Accelerograph is bolted to an abandoned concrete oil-pump pad on top of a ridge about 15.2 m above Shell Road. The other accelerograph is located 3 m from the pad, on soil, and held in place by several sandbags laid over the top of the instrument. The two accelerographs are interconnected for starting and for WWVB radio reception.

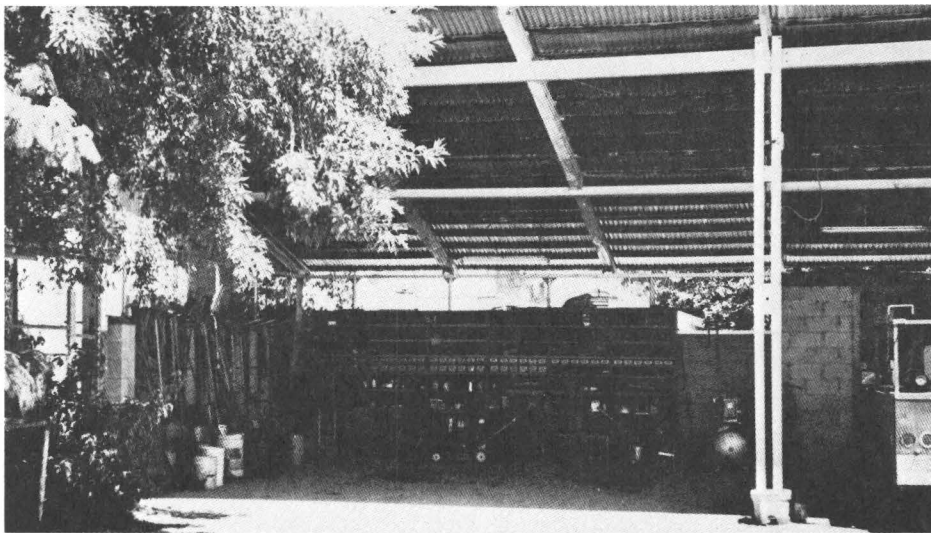


Figure 6.--Aftershock station at the Burnett Construction Co. Accelerograph is bolted to a large concrete pad (base for parking shelter) at 5th and Glenn streets in Coalinga, approximately one block southeast of the border of the heavily damaged downtown area (see cover and figs. 1, 2).



Figure 7.--Aftershock station at Oil City. Accelerograph is bolted to the pad of a small, lightweight wood-frame building located at Shell Oil Co.'s West Coalinga unit production laboratory.



Figure 8.--Aftershock station at Oil Fields Fire Station. One accelerograph was bolted near the end of a long narrow concrete pad used as a base for a lightweight hose-drying rack. A second accelerograph was placed 3 m away on natural ground, and anchored and interconnected in the same manner as described for Anticline Ridge.

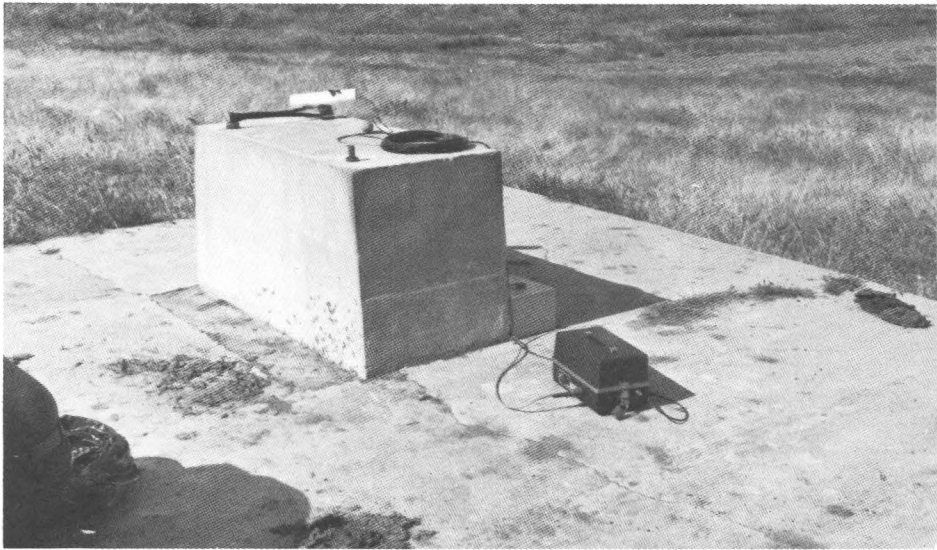


Figure 9.--Aftershock station at Palmer Avenue. Accelerograph is bolted to an abandoned concrete pad, apparently used as a derrick footing.



Figure 10.--Aftershock station at Skunk Hollow. Accelerograph is bolted to an abandoned concrete oil-pump pad.

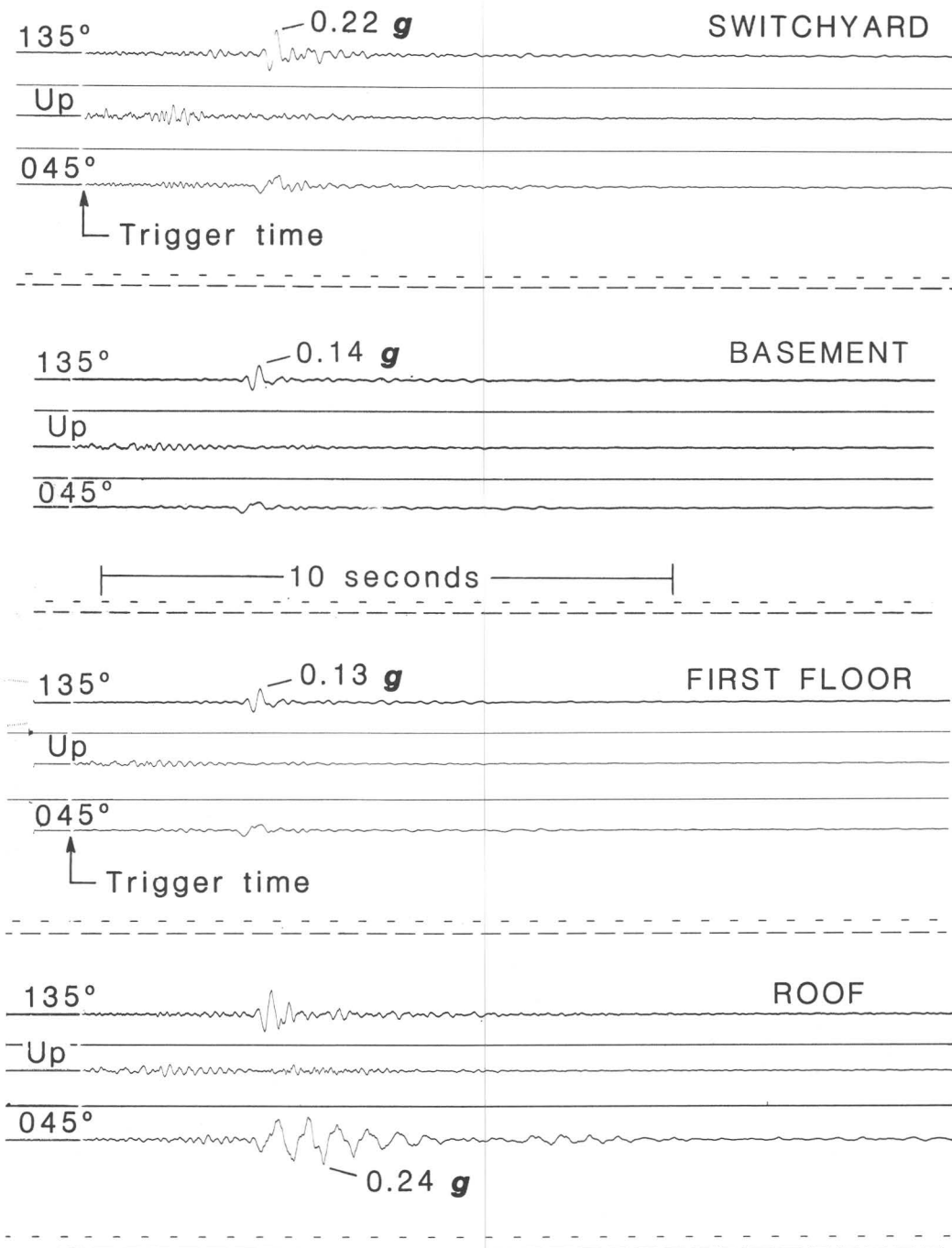


Figure 11.--Strong-motion records from Pleasant Valley Pump Plant station for the aftershock of 0249 G.m.t. May 9, 1983.

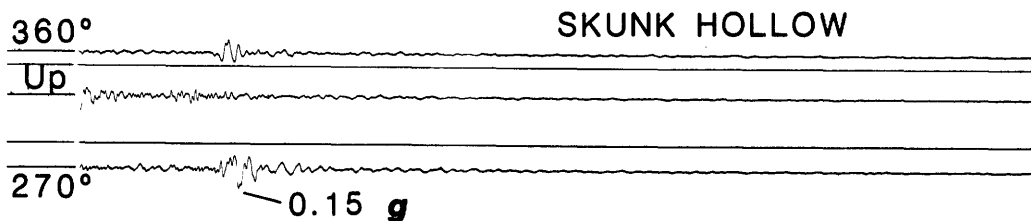
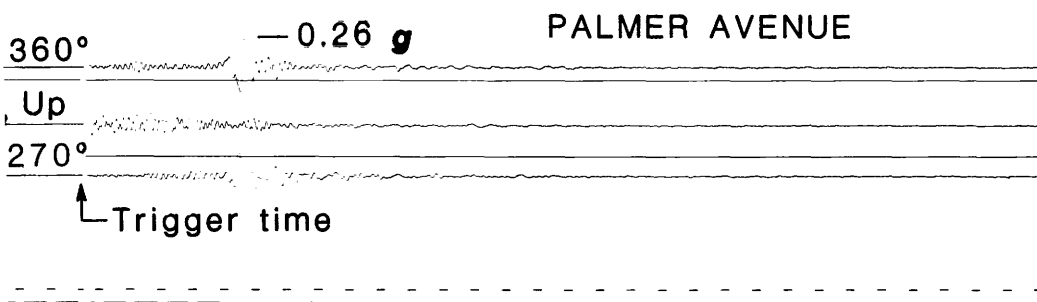
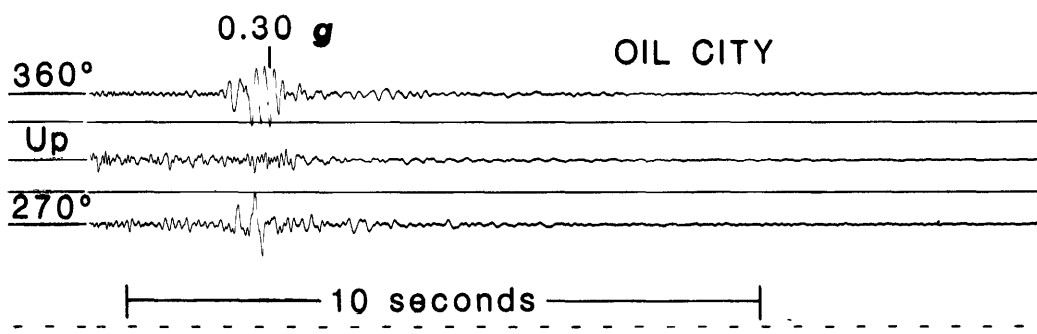
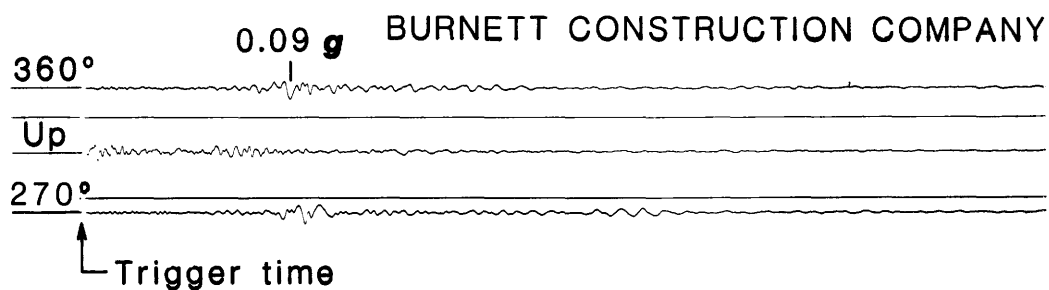


Figure 12.--Strong-motion records from temporary Coalinga stations for the aftershock of 0249 G.m.t. May 9, 1983.

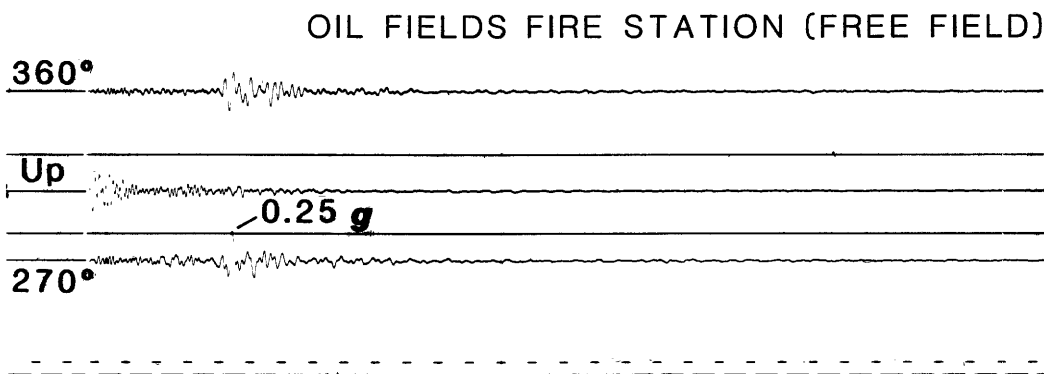
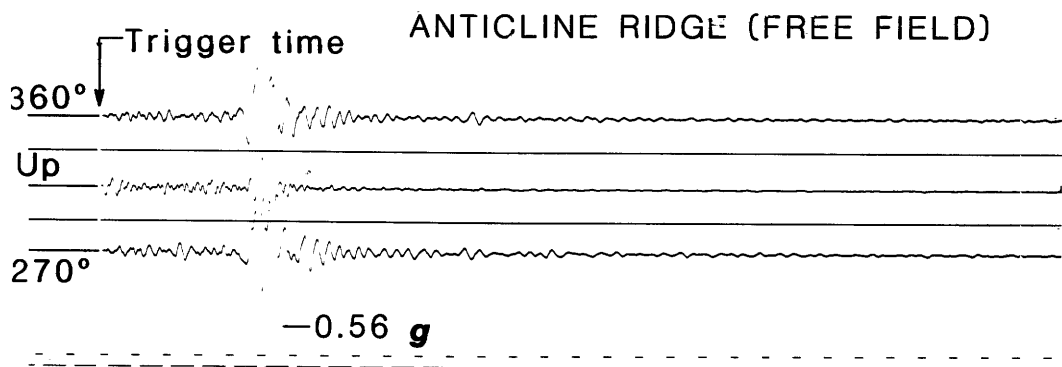
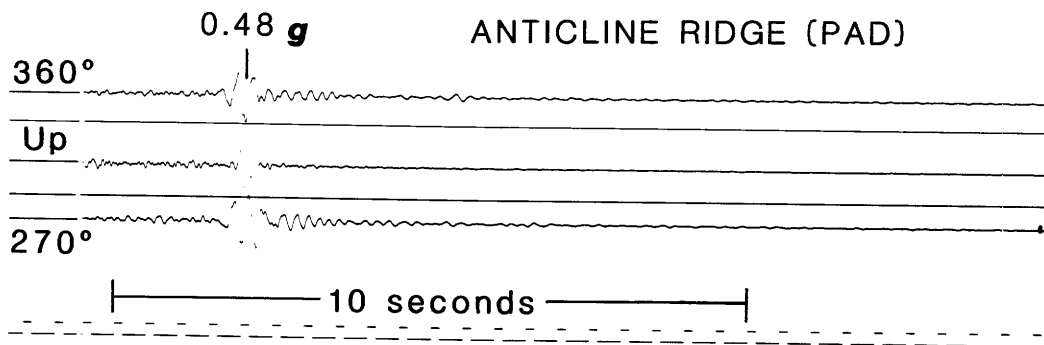


Figure 12.--continued.

Calif. (May 2, 1983) and processed data from May 2 and May 9, 1983: U.S. Geological Survey Open-File Report 84-626, 255 p.

STRONG-MOTION RESULTS FROM THE NOVEMBER 16 HAWAII EARTHQUAKE

By R.P. Maley

On November 16, 1983 (1613 G.m.t.), a strong earthquake shook the Island of Hawaii. The magnitude (M_B) 6.4 event was located at lat 19.430° N., long 155.454° W.; the hypocenter was located beneath the east flank of Mauna Loa at a depth of about 12 km. A total of 15 strong-motion instruments operated by the USGS on the island (fig. 13) were triggered by this earthquake; epicentral distances for these 15 stations ranged from 18 to 98 km. Each Hawaii accelerograph station is equipped with a single, three-channel film recorder, typically installed at the ground level of a fire station, school, or maintenance type of structure. The accelerograms from this event, which provide the most complete set of Hawaii strong-motion data, also contain the largest ground accelerations recorded during any Hawaii earthquake; the data include peak amplitudes greater than 0.50 g at the three nearest stations located 18 to 30 km from the epicenter.

Strong-motion records from Hawaii typically show characteristic, site-dependent signatures, and this data set is no exception. Most of the records resemble California-type accelerograms, but three sites exhibit strongly sinusoidal characteristics (fig. 14): frequencies of 7 to 10 Hz at Waimea and Honokaa to the north and of about 3 Hz at the Hilo Fish and Wildlife station. In contrast, the record from Wahaula on the southeast coast is dominated by unusually long (0.6-1 Hz) horizontal waves throughout most of the S -wave motion.

U.S. GEOLOGICAL SURVEY NATIONAL STRONG-MOTION NETWORK DATA

By April Converse

Descriptions of strong-motion accelerograph records and of the circumstances in which they were recorded are available to anyone involved in earthquake engineering through the computer-based Strong-Motion Information Retrieval System (SMIRS). SMIRS provides ready access to information about strong-motion records and the level of processing and analysis that has been performed on them. Information about earthquakes

that generated recorded motion and about the sites at which that motion was recorded is also provided.

With an ordinary telephone line and a terminal, a SMIRS user may review the information free of charge. Once accessed, SMIRS offers a general introduction and tells the user how to request more detailed instructions. The user is also given an opportunity to request a copy of the printed user's manual.

SMIRS resides in one of the USGS computers in Denver, Colo. It can be accessed by telephoning the computer center directly or by telephoning a local node in the TYMNET telecommunications network. The direct-dial telephone number for the Denver computer center is (303) 232-5309.

The TYMNET telecommunications network permits access to SMIRS without incurring a long-distance telephone charge to Denver. The TYMNET Corp. maintains local telephone numbers in many cities of the United States and in several foreign countries. TYMNET telephone numbers can be obtained from TYMNET Corp.'s Customer Support Group at (800) 336-0149.

Take the following steps to connect your terminal to SMIRS:

1. Set the switches, keys, or buttons on the terminal that allow a choice of operating modes:
--transmission speed = 300 baud (30 characters per second) or = 1,200 baud;
--on line;
--lowercase ASCII characters; and
--full duplex (if you are going to dial a TYMNET number) or
--half-duplex (if you are going to dial Denver directly).
2. Plug in and turn on the terminal; turn on the modem, too, if it is a separate device. Notice whether the modem uses an acoustic coupler or is directly connected to a telephone; an acoustic coupler will have a cradle into which a telephone handset can be inserted. Look for a label or diagram on an acoustic coupler that will show you in which direction the telephone cord should go. A direct-connect modem will have a switch that can be set for voice or data transmission.
3. Telephone the USGS computer center in Denver or telephone the TYMNET number nearest you; wait for a high-pitched tone.
4. Place the telephone handset in the cradle on the acoustic coupler or set the direct-connect switch to "data." Wait for the "carrier detect" light to turn on; this indicates that the terminal is receiving a signal from the computer or from the TYMNET equipment.
5. If you telephoned the Denver computer center directly, skip this section, but if you telephoned

a TYMNET number, the TYMNET prompts (shown underlined here) and your responses (shown in italics here) should proceed as follows:

please type your terminal identifier *e*
please log in: *gsbc1234:2361;sandstone <CR>*

The <CR> symbol represents the carriage-return key.

"gsbc1234" is what TYMNET refers to as a user name, "2361" is a location identifier for the USGS computer center, and "sandstone" is a password. Note that "sandstone" will not be printed at your terminal while you type.

Do not be alarmed if the first prompt comes at an odd speed.

TYMNET will now connect your terminal to a computer selecting device in Denver. If the computer selector is operating, "GSDN is online" will be printed at your terminal.

6. Type the carriage-return key. The computer selecting device will ask you to "enter class", to which you should answer "mult":

enter class *mult <CR>*

The selecting device will answer with several lines, something like "CONNECTING TO DENVER MULTICS" and "class mult start."

7. Type the line-feed key. The MULTICS computer will respond with several lines that will tell you which computer you have accessed, how many other users are connected, and so forth.
- 8a. If your terminal will transmit both uppercase and lowercase characters, type:

enter <your_name> SMIRS <CR>

"<CR>" represents the carriage-return key, and "<your_name>" is your own name typed without any embedded blanks. It is good practice to choose a version of your name that will probably be unique, and to use that version of your name every time you log onto SMIRS. That way, any messages sent to you through SMIRS will not be received by the wrong user.

Note that the word "enter" is in lower case and "SMIRS" is in upper case.

- 8b. If your terminal has only uppercase characters, type:

MAP <CR>

ENTER <YOUR_NAME> \S\MAIR\S\ <CR>

The "MAP" statement instructs the computer to interpret all the alphabetic characters you will subsequently type as though they were in lowercase, except those which follow a left slant (\).

9. From now on, SMIRS will prompt you whenever it expects you to type something. All the prompt lines begin and end with two dashes; answer by typing a question mark if you do not know what is expected of you.

Do not be concerned if the computer does not respond immediately after you enter "SMIRS." The response time may improve in the future, but it will always be fastest during nonworking hours (Denver time).

If you have any problems while using SMIRS, write or telephone April Converse or Josephine Switzer at the USGS National Strong-Motion Program office in Menlo Park, Calif., for assistance (see section below entitled "Data Sources").

CALIFORNIA DIVISION OF MINES AND GEOLOGY STRONG-MOTION DATA

Processed strong-motion data from selected earthquakes are available from the California Division of Mines and Geology (CDMG). These data have been prepared by the interim CDMG strong-motion data-processing system. This system is composed of a series of programs that have been developed by the California Institute of Technology, the USGS, and the CDMG, with special emphasis on the handling of long-duration film records from multiple-channel central recording instruments.

The data are grouped by phase: I, uncorrected accelerations; II, corrected accelerations, velocities, and displacements; and III, response spectra.

Each phase contains three-channel subgroups arranged by station. At present, data from the following earthquakes have been processed, among others:

Santa Barbara earthquake of August 13, 1978

Station	Channels
UCSB Goleta	3
UCSB North Hall	9
Freitas Building	9

Imperial Valley earthquake of October 15, 1979

El Centro free-field	3
Imperial County Services Building	13

Westmorland earthquake of April 26, 1981
Coalinga earthquake of May 2, 1983
Morgan Hill earthquake of April 24, 1984

The data are available on standard nine-track tapes, along with a microfiche copy of the tape contents. Interested parties should contact the CDMG Office of Strong-Motion Studies (OSMS) (see section below entitled "Data Sources").

The policy of the CDMG is to make all strong-motion-record data promptly available to the public in a manner consistent with good data management. Requests for copies of records, personal access to record or data files, and copies of data files should be made to the chief, OSMS, (address 8 in section below entitled "Data Sources"), and should specify the identity and medium of materials to be provided or reviewed. Desired access or delivery dates should be specific. When a request for copies of materials or personal access to files is received, the OSMS staff will provide the requested material or will set up an appointment time for a personal review of files; the requestor will be notified immediately of any significant delay or other problems that prevent meeting his or her request. Charges for copying or other processing of materials will be based on the actual cost of producing and delivering the items, and the OSMS will retain control of originals and master copies of all items.

FOREIGN STRONG-MOTION DATA

Because of the long history of close cooperation between the U.S. and the Central and South American strong-motion programs, many of the data from those programs are available from the same sources as the U.S. data. Information about strong-motion data from the Western Hemisphere will be included in the SMIRS operated by the USGS.

The USGS does not attempt to obtain first-class copies of records from those foreign organizations that prepare data reports comparable to those prepared by the USGS. Abstracts of the data reports from such organizations are presented in this Strong-Motion Program Report series, and through informal arrangements, copies of the data and records are available.

WORLDWIDE STRONG-MOTION DATA

A worldwide collection of strong-motion seismograms for dissemination to the scientific and engineering community is available from World Data Center A for Solid Earth Geophysics, National Geophysical Data Center (NGDC), U.S. National

Oceanic and Atmospheric Administration (NOAA). Countries contributing to the strong-motion-data base include Australia, Italy, Japan, New Zealand, Romania, the U.S.S.R., and Yugoslavia. The USGS has furnished records from its network of cooperative strong-motion stations, including those in Central and South America.

Copies of strong-motion records are available on 35-mm film, on 70-mm film chips, as paper copies, and as digitized data on punched cards or magnetic tape. A list of most records has been published in World Data Center A Report SE-6, "Catalog of Seismograms and Strong-Motion Records." This catalog can be ordered from the NGDC (NOAA) for \$3.00 (see section below entitled "Data Sources").

The most significant strong-motion records recorded in the United States and Latin America between 1931 and 1971 have been copied on seven reels of 35-mm film (x12 reduction) and on 70-mm film chips (approx. x8 reduction). The film chips are available for \$1.50 per chip; longer records are continued on additional chips. The 35-mm film copies can be purchased for \$30 per reel, and the complete set of reels for \$180; there is a minimum charge of \$10 per order. Check with the NGDC for current prices before placing your order.

Japan and Australia have supplied magnetic tapes of digitized data from stations located in the western Pacific Ocean (the Japanese Islands, New Guinea, and New Britain). A series of 400 U.S. strong-motion records (1933-71) that were digitized by the California Institute of Technology are now available on six magnetic tapes. The USGS is digitizing post-1971 records from its network; they have generated 15 tapes of strong-motion records recorded from 1967 to 1981 in the United States, Chile, Nicaragua, El Salvador, and Mexico.

Other digitized data include punched cards containing strong-motion records from the March 4, 1977, earthquake in Romania (recorded in Bucharest); the Gazli earthquake of May 17, 1976, in Uzbek, U.S.S.R.; and three earthquakes in the New Madrid seismic zone (located in the midcontinental United States) in 1975 and 1976.

Recent acquisitions include a magnetic tape of strong-motion records triggered by a swarm of earthquakes that occurred in northern Italy near the town of Friuli in 1976; these were compiled by the National Commission for Nuclear Energy and have been given to the center for distribution. Other data include records obtained from California earthquakes near Santa Barbara in August 1978, Gilroy in August 1979, El Centro in October 1979, Livermore in January 1980, Westmorland in April 1981, Coalinga in 1983, and Morgan Hill in April 1984.

A table listing all the digitized strong-motion records available on magnetic tape may be obtained free of charge from NOAA. These records may be purchased either in punched-card format (including all three instrument components) or in tape format.

Address inquiries to NOAA (see next section).

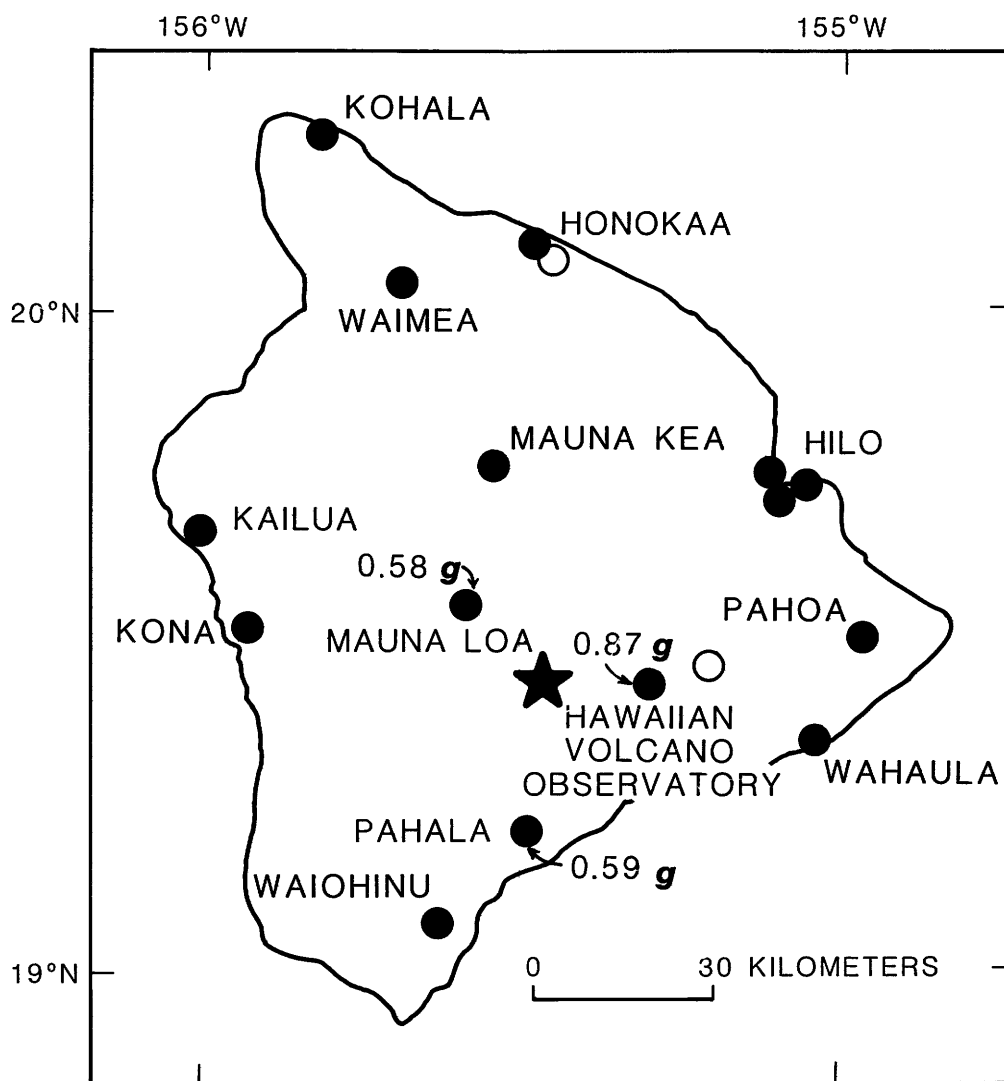


Figure 13.--Sketch map of the Island of Hawaii, showing locations of accelerograph stations during the November 16 earthquake. Stations: dots, triggered; circles, not triggered; star, epicenter.

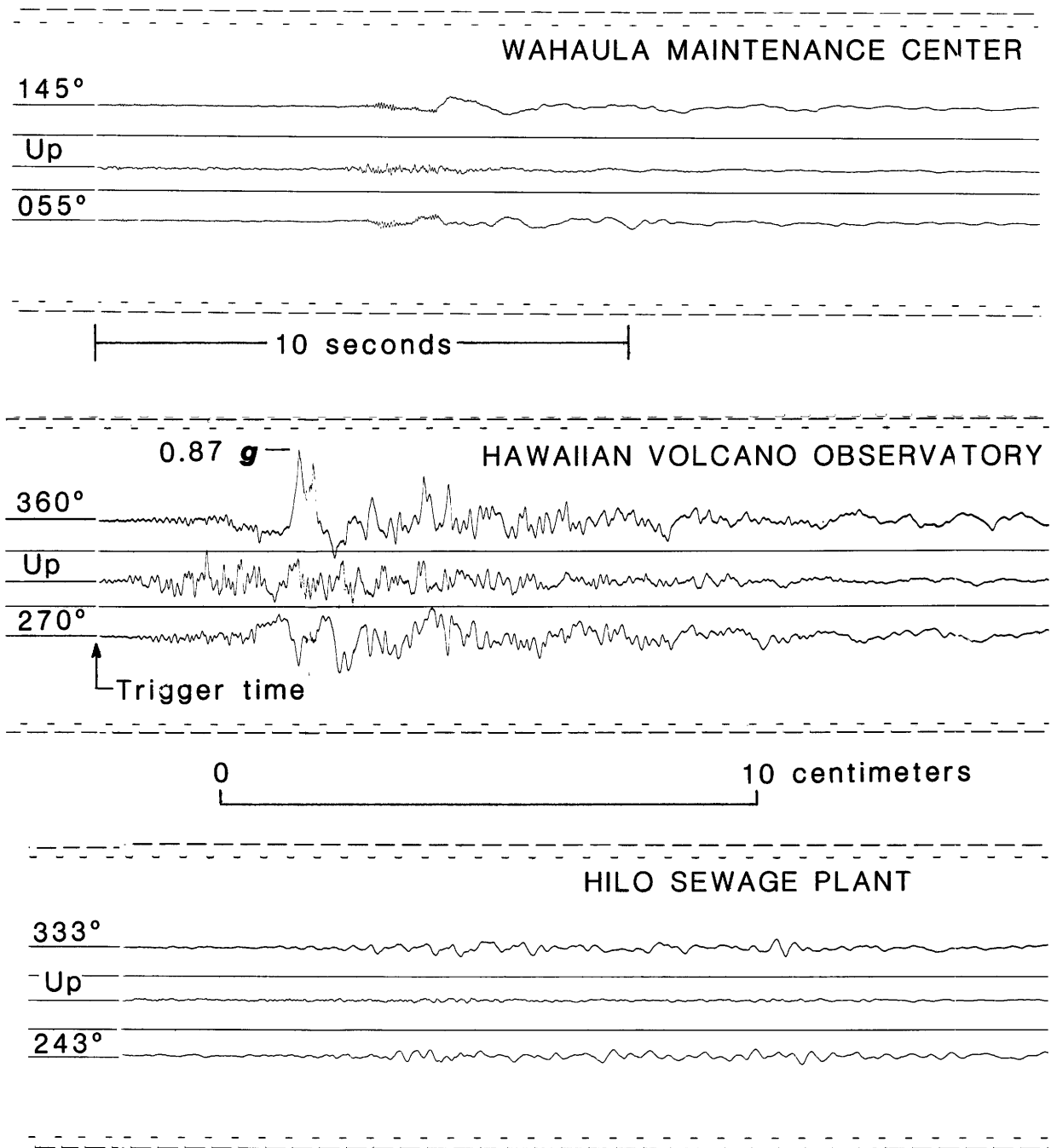
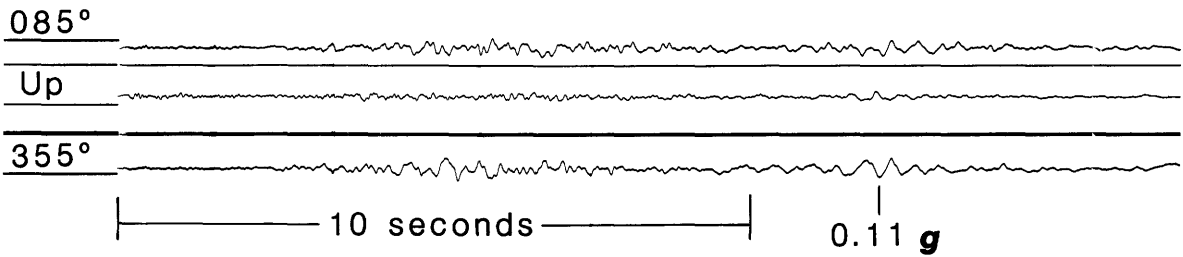
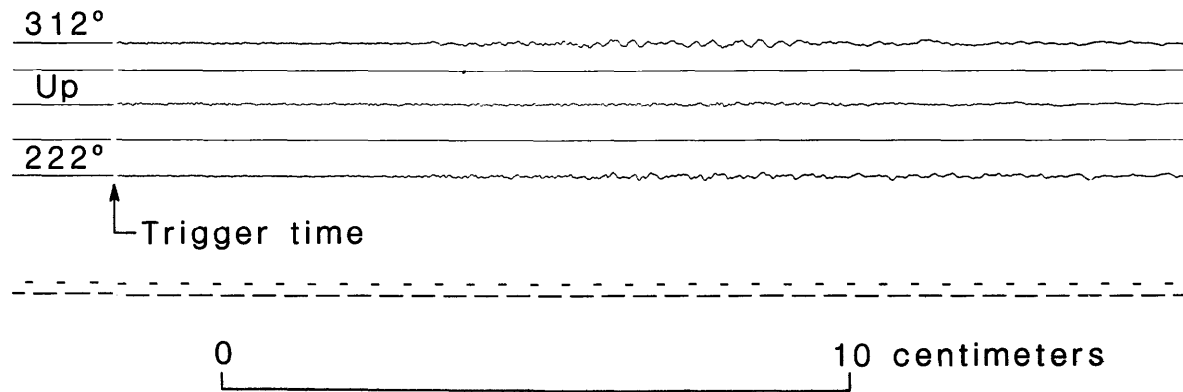


Figure 14.--Accelerograms from the magnitude 6.4 Hawaii earthquake of November 16.

HILO, UNIVERSITY OF HAWAII



KAILUA-KONA FIRE STATION



KEALAKEKUA, KONA HOSPITAL

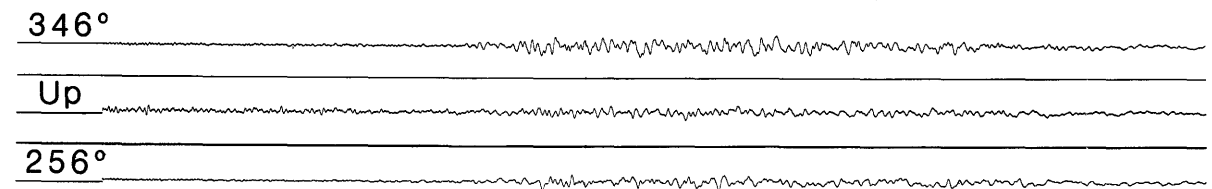


Figure 14.--continued.

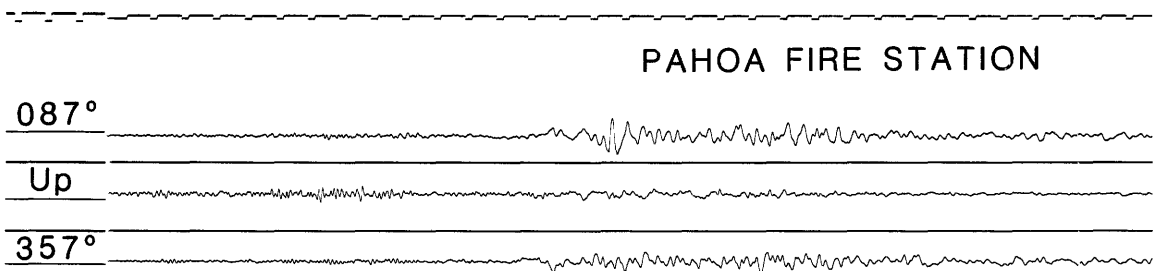
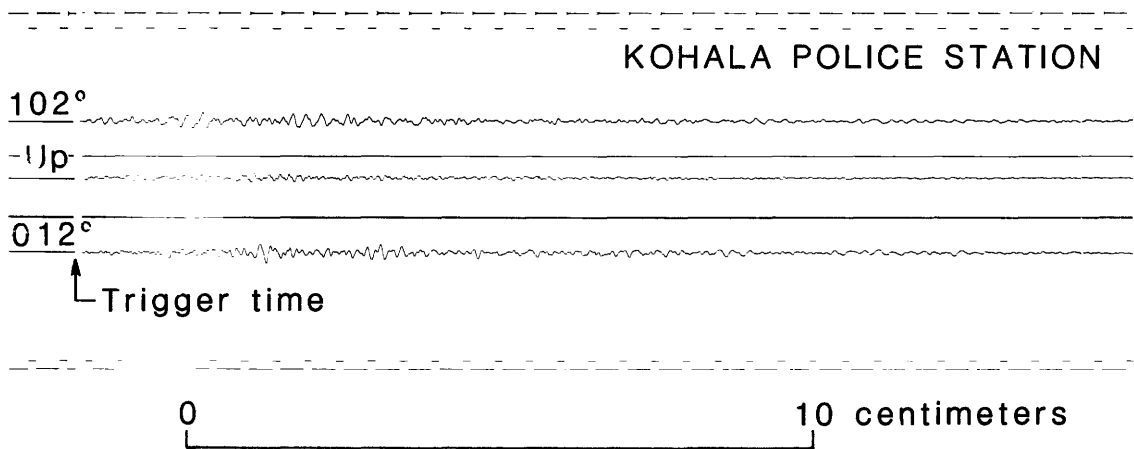
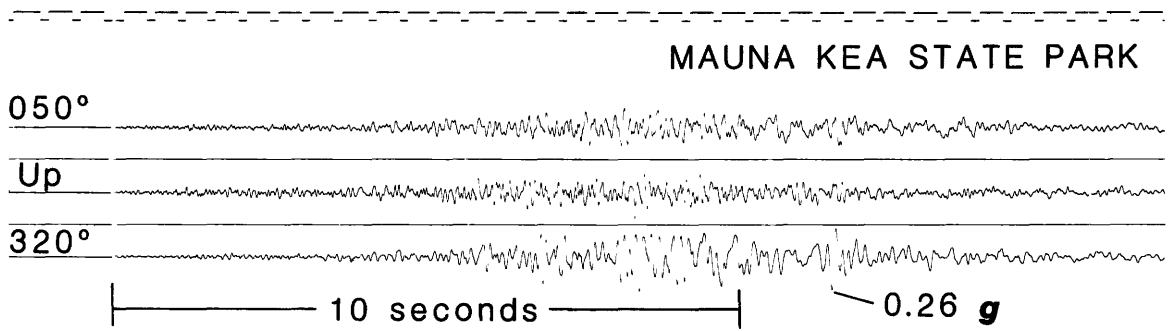
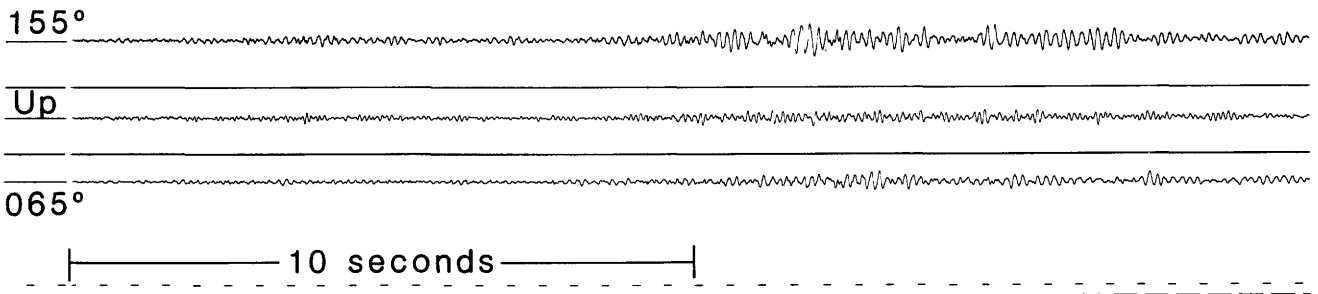
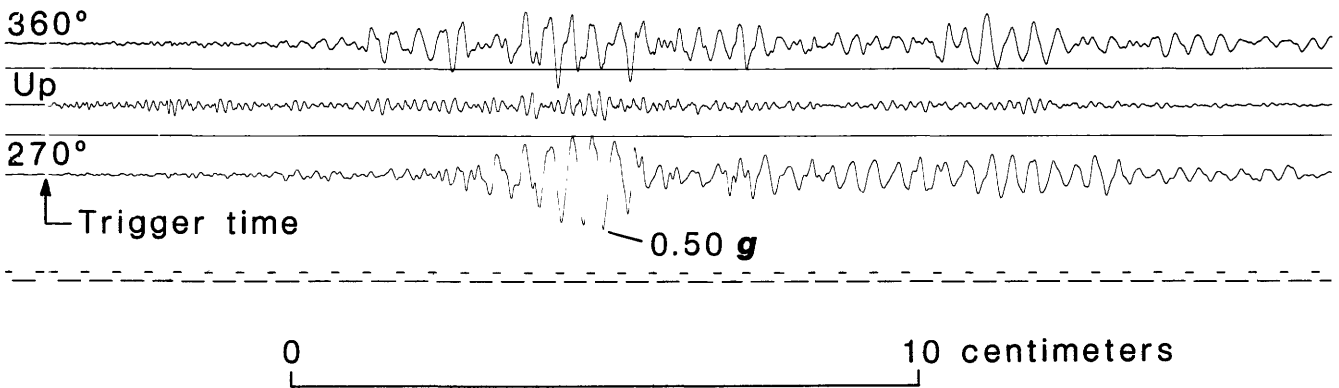


Figure 14---continued.

WAIMEA FIRE STATION



HILO, FISH AND WILDLIFE



HONOKAA FIRE STATION

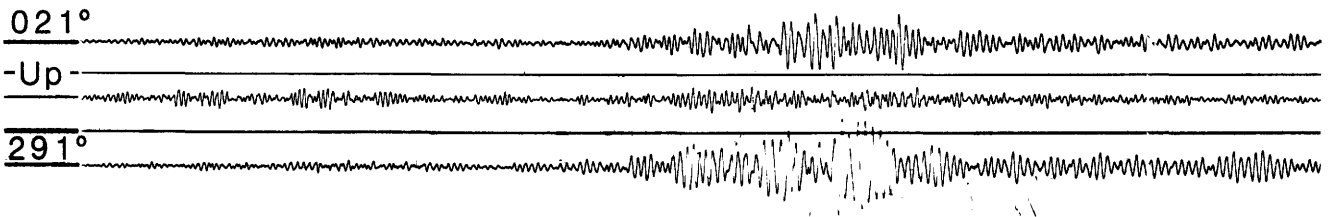


Figure 14.--continued.

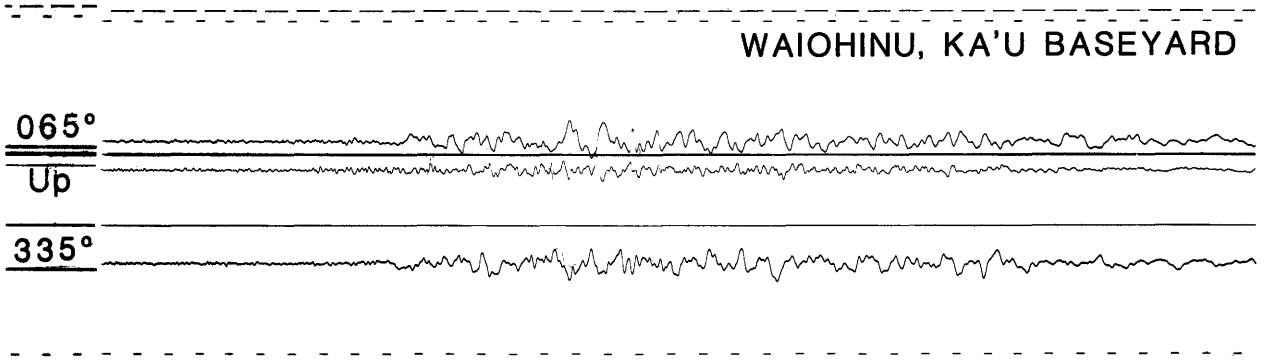
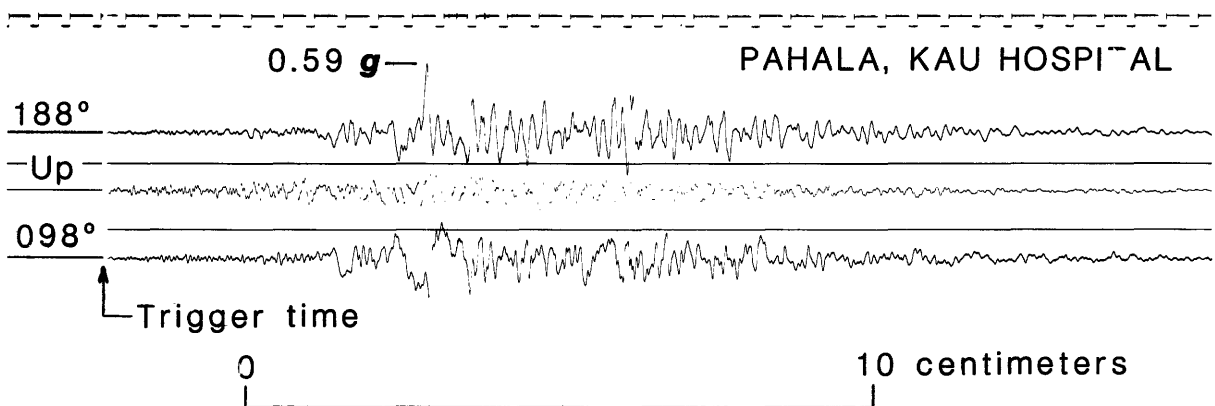
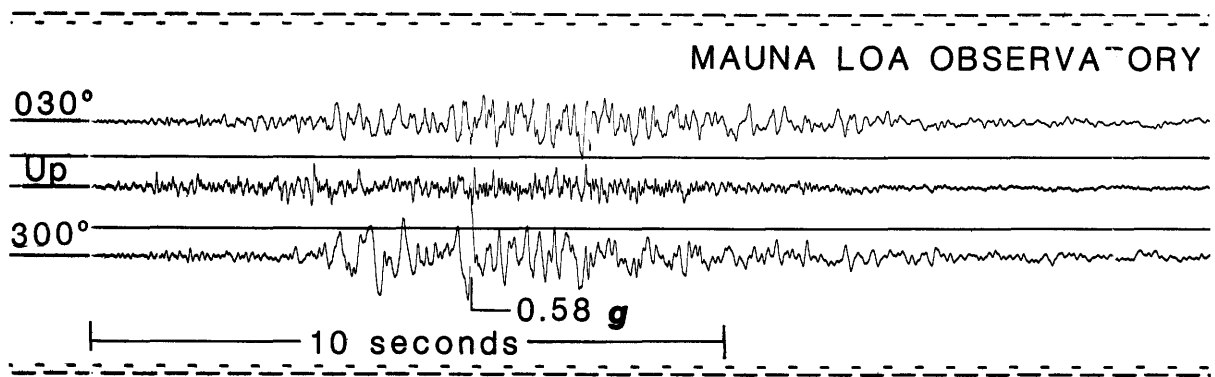


Figure 14.--continued.

DATA SOURCES

For reports or information regarding strong-motion records and data, address inquiries to the appropriate agency listed below:

- | | | | |
|---|--|--|--|
| <p>1. Branch of Distribution
U.S. Geological Survey
604 S. Pickett St.
Alexandria, VA 22304</p> | <p>(804) 756-6141
(FTS) 756-6141</p> | <p>5. Office of Strong-Motion
Studies
California Division of
Mines and Geology
630 Bercut Dr.
Sacramento, CA 95814</p> | <p>(916) 322-3105
(FTS) 552-3105</p> |
| <p>2. Earthquake Engineering
Research Institute
6431 Fairmont Ave., Suite 7
El Cerrito, CA 94530</p> | <p>(415) 525-3668</p> | <p>6. Open-File Services Section
Branch of Distribution
U.S. Geological Survey
Box 25425, Federal Center
Denver, CO 80225</p> | <p>(303) 234-5888
(FTS) 234-5888</p> |
| <p>3. National Geophysical
Data Center (D622)
Code E/GCII
325 Broadway St.
Boulder, CO 80303</p> | <p>(303) 497-6764
(FTS) 320-6764</p> | <p>7. National Strong-Motion
Program
U.S. Geological Survey
345 Middlefield Rd., MS 977
Menlo Park, CA 94025</p> | <p>(415) 323-8111
ext. 2881
(FTS) 467-2881</p> |
| <p>4. National Technical
Information Service
5285 Port Royal Rd.
U.S. Dept. of Commerce
Springfield, VA 22161</p> | <p>(703) 487-4650
(FTS) 737-4650</p> | | |

Table 1.--Summary of U.S. accelerograph records recovered during 1983

[Station owners: ACOE, U.S. Army Corps of Engineers; CDWR, California Department of Water Resources; SDGE, San Diego Gas and Electric Co.; UCB, University of California, Berkeley; USBR, U.S. Bureau of Reclamation; USGS, U.S. Geological Survey; TEIC, Tennessee Earthquake Information Center; VA, U.S. Veterans' Administration. Instrument trigger time (in seconds after minute [or following minute] listed in event column). S-minus trigger denotes S-wave-arrival-minus-trigger- time (S-t) or S-wave-minus-P-wave-arrival time (S-P, in parentheses) interval. Direction is of case acceleration for upward trace deflection on accelerogram; horizontal components are listed as azimuth, and vertical components as "up" or "down." Maximum amplitude is peak acceleration recorded at ground level on one vertical and two orthogonal horizontal components unless otherwise noted. Duration is interval between first and last peaks of acceleration greater than 0.10 g]

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
31 August 1982 0311:07.8 G.m.t. Central Calif. 36.648N, 121.325W Magnitude 4.0	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569°N 121.043°W	18.4	(2)		(1)	
	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	12.3	(2)		(1)	
22 October 1982 0059 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	3.8	(2)		(1)	
24 October 1982 2018 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	26.5	(2)		(1)	
6 January 1983 0557:31.9 G.m.t. Central Calif. 36.718N, 121.343W Magnitude 3.4	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	34.7	2.8		(1)	
7 January 1983 0138:11.0 G.m.t. Eastern Calif. 37.628N, 118.915W Magnitude 5.4	Long Valley Dam Lake Crowley (USGS) ³	37.588°N 118.705°W	(2)	2.5			
	Left abutment				275° Up 185°	.06 .06 .09	--- --- ---
4 August 1982- 16 January 1983 Eastern Calif. Epicenters and magnitudes unknown	Long Valley Fire Station (USGS)	37.570°N 118.752°W	(2)	(2)		(1)	
	Note: Two additional records ¹ recovered at Long Valley fire station.						
	Long Valley Dam Lake Crowley (USGS)	37.588°N 118.705°W	(2)	2.3			
	Left abutment				275° Up 185°	.08 .06 .11	--- --- 1 peak

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
10 July 1982- 26 January 1983 Arkansas Epicenters and magnitudes unknown	Enola, Arkansas (USGS/TEIC)	35.185°N 92.232°W	(2)	.7		(1)	
	Note: One additional record ¹ recovered at Enola.						
3 May 1982- 2 February 1983 Hawaii Epicenters and magnitudes unknown	Mauna Loa Weather Observatory (USGS)	19.539°N 155.580°W	(2)	(2)		(1)	
	Mauna Kea State Park (USGS)	19.752°N 155.530°W	(2)	(2)	050° Up 320°	.05 .03 .09	--- --- ---
	Note: One additional record ¹ recovered at Mauna Kea State Park.						
	Honokaa Fire Station (USGS)	20.080°N 155.465°W	(2)	(2)	020° Up 290°	.12 .07 .27	.7 --- 2 peaks
	Note: Four additional records ¹ recovered at Honokaa Fire Station.						
	Kapa'au Kohala Police Station (USGS)	20.230°N 155.801°W	(2)	(2)		(1)	
	Waimea Fire Station (USGS)	20.03° N 155.66° W	(2)	(2)	155° Up 065°	.20 .19 .24	1.7 1.2 .8
	Note Two additional records ¹ recovered at Waimea Fire Station.						
	Pahala Kau Hospital (USGS)	19.20° N 155.47° W	(2)	1.7	188° Up 098°	.06 .03 .04	--- --- ---
	Hawaii National Park Wahaula Center (USGS)	19.329°N 155.031°W	(2)	1.5		(1)	
4 March 1983 0632:18.6 G.m.t. South Dakota 44.214N, 99.409W Magnitude 4.4	Big Bend Dam, SD (ACOE) ³	44.043°N 99.444°W	(2)	2.3			
	Crest				183° Up 093°	.09 .11 .04	--- 1 peak ---
	Downstream				277° Up 187°	.06 .11 .10	--- 1 peak 1 peak
	Spillway					(1)	
12 August 1982- 2 May 1983 Central Calif. Epicenters and magnitudes unknown	Bear Valley Station 1 Fire Station (USGS)	36.573°N 121.184°W	(2)	(2)		(1)	
	Note: Three additional records ¹ recovered at Bear Valley Station 1.						

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
<p>Note: Records from May 2 (main shock), May 9 (0249 G.m.t.), and July 22 (0239 G.m.t.) that have been digitized and processed include the following:</p> <p><u>May 2</u>: Pleasant Valley Pump Plant (basement, switchyard) in USGS Open File Report 84-626.</p> <p><u>May 9</u>: Anticline Ridge (freefield and pad), Burnett Construction, Oil City, Oil Fields Fire Station, Palmer Avenue, Skunk Hollow and Pleasant Valley Pump Plant (switchyard, basement, first floor, roof) in USGS Open File Report 84-626.</p> <p><u>July 22</u>: Anticline Ridge (pad), Oil City, Oil Fields (freefield and pad), Palmer Avenue, Pleasant Valley Pump Plant (first floor, basement, freefield, roof, switchyard), Skunk Hollow, and Transmitter Hill in USGS Open File Report 85-250).</p> <p>Additional aftershock records are currently being processed.</p>							
2 May 1983 2342:37.7 G.m.t. Central Calif. 36.219N, 120.317W Magnitude 6.5	Pleasant Valley Pump Plant (USBR) ³	36.308°N 120.249°W	(2)	3.1			
	Switchyard				135° Up 045°	.54 .38 .46	14.1 10.2 11.6
	Basement				135° Up 045°	.28 .22 .31	5.8 8.3 6.7
	Bear Valley Station 1 Fire Station (USGS) ³	36.573°N 121.184°W	(2)	(2)		(1)	
	Bear Valley Station 2 Stone Canyon West (USGS)	36.636°N 121.234°W	11.5	(2)		(1)	
	Bear Valley Station 6 James Ranch (USGS)	36.504°N 121.101°W	56.3	7.7		(1)	
	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	59.8	12.7	310° Up 220°	.08 .03 .08	--- --- ---
	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	1.0	6.4	310° Up 220°	.04 .02 .06	--- --- ---
	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	59.2	(2)		(1)	
	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569°N 121.043°W	(2)	2.8		(1)	
	Fresno VA Hospital (VA) ³	36.77° N 119.78° W	(2)	(2)		(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
2 May 1983 2342:37.85 G.m.t. -continued-	Dos Amigos Pumping Plant (CDWR) ³	36.92° N 120.83° W	(2)	(2)			
	Level 1					(1)	
	Level 4					(1)	
	Buchanan Dam (ACOE)	37.22° N 119.98° W	3.9	7.4			
	Left crest					(1)	
	Right abutment					(1)	
	Tower level 9					(1)	
	Right crest					(1)	
	Tower level 1					(1)	
	New Melones Dam (USBR) ³	37.949°N 120.524°W	(2)	(2)			
	Slope					(1)	
	Downstream					(1)	
	Right abutment					(1)	
	Center crest					(1)	
	Left abutment					(1)	
	Left crest					(1)	
	Pine Flat Dam (ACOE)	36.83° N 119.33° W	(2)	11.9			
	Gallery level 5				255° Up 165°	.07 .02 .05	--- --- ---
	Gallery level 2					(1)	
	Toe					(1)	
	Hidden Dam (ACOE)	37.112°N 119.883°W	9.6	(2)			
	Left crest					(1)	
	Downstream					(1)	
	Right crest					(1)	
	Upper level (control tower)					(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
2 May 1983 2342:37.85 G.m.t. -continued-	Terminus Dam (ACOE)	36.420°N 119.000°W	50.8	(2)			
	Slope					(1)	
	Main crest					(1)	
	Auxiliary dam crest				320° Up 230°	.05 .04 .07	--- --- ---
	Note: One aftershock record ¹ recovered at auxiliary crest.						
	Lake Success Dam (ACOE) ³	36.061°N 118.920°W	(2)	12.0			
	Left crest				285° Up 195°	.04 .03 .03	--- --- ---
	Downstream				285° Up 195°	.04 .01 .09	--- --- ---
	Left abutment					(1)	
	Slope					(1)	
	Right crest					(1)	
	Right abutment					(1)	
	Note: Two each additional records ¹ recovered at left crest, left abutment, downstream, right crest, right abutment, and slope.						
2 May 1983 2343 G.m.t. Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	---	(3.8)			
	Basement					(1)	
2 May 1983 2344 G.m.t. Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	---	(3.1)			
	Basement					(1)	
2 May 1983 2345:23 G.m.t. Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR) ³	36.308°N 120.249°W	---	2.7			
	Basement					(1)	
2 May 1983 2345:50 G.m.t. Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	---	(3.7)			
	Basement					(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
2 May 1983 2346:06.0 G.m.t. Central Calif. 36.230N, 120.290W Magnitude 5.7	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	---	(3.7)			
	Basement				135° Up 045°	.05 .03 .05	--- --- ---
2 May 1983 2347:13 G.m.t. Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	---	(2.8)			
	Basement					(1)	
2 May 1983 2348 G.m.t. Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	---	(3.0)			
	Basement					(1)	
4 May 1983 0728:40.3 G.m.t. Central Calif. 36.270N, 120.331W Magnitude 4.8	Coalinga Skunk Hollow (USGS)	36.275°N 120.306°W	41.9	(2)	360° Up 270°	.05 .10 .04	--- 1 peak ---
	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	42.9	2.9			
	Basement				135° Up 045°	.05 .05 .17	--- --- 1 peak
	1st floor				135° Up 045°	.04 .04 .16	--- --- 1 peak
	Roof				135° Up 045°	.08 .07 .44	--- --- 2.3
	Switchyard				135° Up 045°	.07 .07 .26	--- --- 1 peak
4 May 1983 0739:07.7 G.m.t. Central Calif. 36.282N, 120.306W Magnitude 3.5	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	10.4	3.0			
	Basement					(1)	
	1st floor					(1)	
	Roof					(1)	
	Switchyard				135° Up 045°	.03 .03 .07	--- --- ---

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
4 May 1983 0739:07.7 G.m.t. -continued-	Coalinga Skunk Hollow (USGS)	36.275°N 120.306°W	9.9	1.3		(1)	
4 May 1983 1611:19.4 G.m.t. Central Calif. 36.263N, 120.363W Magnitude 4.3	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	23.7	3.0			
	Basement					(1)	
	1st floor					(1)	
	Roof					(1)	
	Switchyard				135° Up 045°	.04 .05 .10	--- --- 1 peak
	Coalinga Skunk Hollow (USGS)	36.275°N 120.306°W	22.8	1.9		(1)	
5 May 1983 1020:43.9 G.m.t. Central Calif. 36.264N, 120.385W Magnitude 4.5	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	48.5	3.0			
	Basement				135° Up 045°	.02 .02 .06	--- --- ---
	1st floor				135° Up 045°	.02 .02 .06	--- --- ---
	Roof				135° Up 045°	.06 .03 .16	--- --- 1 peak
	Switchyard				135° Up 045°	.05 .03 .11	--- --- 1 peak
5 May 1983 1133:40.4 G.m.t. Central Calif. 36.241N, 120.368W Magnitude 3.6	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	44.7	3.1			
	Basement					(1)	
	1st floor					(1)	
	Roof					(1)	
	Switchyard					(1)	
5 May 1983 1242:15.4 G.m.t. Central Calif. 36.240N, 120.401W Magnitude 3.7	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	20.0	2.8		(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
20 May 1982- 6 May 1983 Central Calif. Epicenters and magnitudes unknown	Hollister Damler Residence (UCB)	36.82° N 121.41° W	(2)	4.1		(1)	
Note: Two additional records ¹ recovered at Damler residence.							
24 September 1982- 6 May 1983 Central Calif. Epicenter and magnitude unknown	Bear Valley Station 5 Callens Ranch (USGS)	36.673°N 121.195°W	(2)	1.5		(1)	
3 May 1983- 6 May 1983 Central Calif. Epicenters and magnitudes unknown	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	(2)	1.0	360° Up 270°	.07 .03 .05	--- --- ---
			(2)	2.2	360° Up 270°	.13 .03 .10	1 peak --- 1 peak
			(2)	1.5	360° Up 270°	.05 .03 .06	--- --- ---
			(2)	2.4	360° Up 270°	.25 .04 .07	.4 --- ---
			(2)	2.4	360° Up 270°	.07 .02 .03	--- --- ---
			(2)	2.5	360° Up 270°	.07 .02 .02	--- --- ---
			Note: Two additional records ¹ recovered at Palmer Avenue.				
			6 May 1983 1151:44.1 G.m.t. Central Calif. 36.258N, 120.380W Magnitude 3.3	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	47.3 1.9	
			Free field			(1)	
			7 May 1983 0017:15.1 G.m.t. Central Calif. 36.279N, 120.312W Magnitude 3.8	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	18.6 1.8	
			Free field		360° Up 270°	.05 .02 .08	--- --- ---
			Pad		360° Up 270°	.07 .02 .08	--- --- ---
			Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	20.0 .9	360° Up 270°	.04 .04 .06

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
7 May 1983 0017:15.1 G.m.t. -continued-	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	18.5	1.6			
	Free field				360° Up 270°	.10 .02 .07	1 peak --- ---
7 May 1983 0543:57.0 G.m.t. Central Calif. 36.223N, 120.288W Magnitude 3.5	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	.0	1.9			
	Free field					(1)	
	Pad					(1)	
	Coalinga Palmer Avenue (USGS) ³	36.209°N 120.292°W	.6	.8	360° Up 270°	.02 .02 .06	--- --- ---
8 May 1983 Time unknown Central Calif. Epicenter and magnitude unknown	Coalinga Palmer Avenue (USGS) ³	36.209°N 120.292°W	(2)	1.6	360° Up 270°	.03 .05 .03	--- --- ---
4 May 1983- 9 May 1983 Central Calif. Epicenter and magnitude unknown	Coalinga Skunk Hollow (USGS)	36.275°N 120.306°W	(2)	1.9		(1)	
	Coalinga Oil City (USGS)	36.229°N 120.360°W	(2)	(2)		(1)	
6 May 1983- 9 May 1983 Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	(2)	2.7			
	Switchyard				135° Up 045°	.05 .02 .03	--- --- ---
9 May 1983 0249:11.2 G.m.t. Central Calif. 36.229N, 120.312W Magnitude 5.1	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	14.6	2.1			
	Free field				360° Up 270°	.56 .30 .56	1.4 .4 1.4
	Pad				360° Up 270°	.48 .37 .47	.8 .4 1.3
	Coalinga Burnett Company (USGS) ³	36.138°N 120.357°W	(2)	1.9	360° Up 270°	.09 .07 .08	--- --- ---

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
9 May 1983 0249:11.2 G.m.t. -continued-	Coalinga	36.229°N	(2)	2.1	360°	.30	.9
	Oil City	120.360°W			Up	.10	3.0
	(USGS) ³				270°	.24	.5
	Coalinga	36.209°N	14.6	2.1	360°	.26	.8
	Palmer Avenue	120.292°W			Up	.10	.9
	(USGS)				270°	.22	.7
	Coalinga, Oil Fields	36.247°N	14.7	1.9			
	Fire Station	120.314°W					
	(USGS)						
	Free field				360°	.18	.7
					Up	.16	.3
					270°	.25	.4
	Coalinga	36.275°N	(2)	2.1	360°	.12	1 peak
	Skunk Hollow	120.306°W			Up	.12	1 peak
	(USGS) ³				270°	.15	1 peak
	Pleasant Valley	36.308°N	(2)	2.9			
	Pump Plant	120.249°W					
	(USBR) ³						
	Basement				135°	.14	1 peak
					Up	.04	---
					045°	.05	---
	1st floor				135°	.13	1 peak
					Up	.05	---
					045°	.06	---
	Roof				135°	.23	.5
					Up	.06	---
					045°	.24	1.9
	Switchyard				135°	.22	1 peak
					Up	.11	1 peak
					045°	.10	1 peak
9 May 1983 0326:36.6 G.m.t. Central Calif. 36.210N, 120.318W Magnitude 4.4	Terminus Dam	36.420°N	44.2	(2)			
	(ACOE)	119.000°W					
	Auxiliary						
	Center crest					(1)	
	Coalinga	36.233°N	40.9	1.9			
	Anticline Ridge	120.333°W					
	(USGS)						
	Free field				360°	.05	---
					Up	.02	---
					270°	.02	---
	Pad				360°	.05	---
					Up	.02	---
					270°	.10	1 peak

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
9 May 1983 0326:36.6 G.m.t. -continued-	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	42.0	2.4		(1)	
	Coalinga Oil City (USGS)	36.229°N 120.360°W	41.2	1.9	360° Up 270°	.06 .02 .07	--- --- ---
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	40.7	1.9			
	Free field				360° Up 270°	.07 .04 .06	--- --- ---
	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	40.5	2.1	360° Up 270°	.06 .06 .07	--- --- ---
	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	41.5	3.0			
	Roof					(1)	
9 May 1983 0330:40.6 G.m.t. Central Calif. 36.222N, 120.308W Magnitude 3.3	Coalinga Oil City (USGS)	36.229°N 120.360°W	47.1	(2)		(1)	
9 May 1983 0332:22.41 G.m.t. Central Calif. Epicenter and magnitude unknown	Coalinga Oil City (USGS) ³	36.229°N 120.360°W	(2)	(2)		(1)	
10 May 1983 0328:05.7 G.m.t. Southern Calif. 33.150N, 115.617W Magnitude 3.2	Salton Sea Wildlife Refuge (USGS)	33.18° N 115.62° W	7.9	.8		(1)	
10 May 1983 1326:29.5 G.m.t. Central Calif. 36.311N, 120.322W Magnitude 3.7	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	34.7	(2)			
	Roof					(1)	
10 May 1983 2331 G.m.t. Southern Calif. Epicenter and magnitude unknown	Salton Sea Wildlife Refuge (USGS)	33.18° N 115.62° W	7.6	1.6		(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
11 May 1983 2049:25.1 G.m.t. Central Calif. 36.232N, 120.255W Magnitude 3.3	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	28.4	.5			
	Free field				360° Up 270°	.08 .02 .13	--- --- .2
	Pad				360° Up 270°	.08 .02 .13	--- --- .2
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	26.9	1.7			
	Free field				360° Up 270°	.09 .01 .04	--- --- ---
	Coalinga Skunk Hollow (USGS)	36.275°N 120.306°W	(2)	2.1		(1)	
	Note: Four additional records ¹ recovered at Skunk Hollow.						
	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	(2)	3.0			
	Switchyard				135° Up 045°	.02 .02 .07	--- --- ---
	Note: Two additional records ¹ recovered at switchyard at the Pleasant Valley Pump Plant.						
5 May 1983(2245)- 12 May 1983(1945) Central Calif. Epicenters and magnitudes unknown	Coalinga Oil City (USGS)	36.229°N 120.360°W	(2)	(2)	360° Up 270°	.06 .02 .03	--- --- ---
	Note: One additional record ¹ recovered at Oil City.						
	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	(2)	2.0			
11 May 1983(2200)- 12 May 1983(2025) Central Calif. Epicenter and magnitude unknown	Switchyard					(1)	
12 May 1983 1341:08.1 G.m.t. Central Calif. 36.155N, 120.257W Magnitude 4.4	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	10.4	2.4	360° Up 270°	.05 .03 .04	--- --- ---
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	12.3	.8			
	Free field					(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
12 May 1983 1341:08.1 G.m.t. -continued-	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	10.0	2.1	360° Up 270°	.14 .13 .10	1 peak .1 1 peak
14 May 1983 0502:02.9 G.m.t. Central Calif. 36.254N, 120.321W Magnitude 3.7	Coalinga Oil City (USGS)	36.229°N 120.360°W	7.7	.8		(1)	
	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	7.7	1.0	360° Up 270°	.07 .06 .10	--- --- 1 peak
	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	7.0	1.2			
	Pad				360° Up 270°	.08 .07 .07	--- --- ---
	Free field				360° Up 270°	.06 .05 .11	--- --- 1 peak
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	7.3	.7			
	Free field				360° Up 270°	.08 .02 .07	--- --- ---
	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	6.6	2.7			
	Basement					(1)	
	1st floor				135° Up 045°	.05 .05 .05	--- --- ---
	Roof				135° Up 045°	.05 .02 .13	--- --- 1 peak
	Switchyard				135° Up 045°	.05 .05 .11	--- --- 1 peak
10 May 1983 1426-1741 G.m.t. Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	(2)	(2)			
	Roof					(1)	

Table 1.--Summary of accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
12 May 1983- 18 May 1983 Central Calif. Epicenter and magnitude unknown	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	(2)	2.6		(1)	
18 May 1983 0246:50.0 G.m.t. Central Calif. 36.228N, 120.241W Magnitude 3.6	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	5.2	1.7		(1)	
18 May 1983 2039:32.0 G.m.t. Central Calif. 36.242N, 120.370W Magnitude 3.4	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	34.6	1.7			
	Free field					(1)	
	Pad					(1)	
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	34.6	1.6			
	Free field					(1)	
	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	35.0	2.1		(1)	
14 May 1983(1402)- 19 May 1983(1631) Central Calif. Epicenter and magnitude unknown	Coalinga Oil City (USGS)	36.229°N 120.360°W	(2)	1.6	360° Up 270°	.08 .05 .05	--- --- ---
	Coalinga Skunk Hollow (USGS)	36.275°N 120.306°W	(2)	2.1		(1)	
Note: Records may be related to event of 2039 G.m.t. 18 May.							
24 May 1983 0902:17.3 G.m.t. Central Calif. 36.238N, 120.326W Magnitude 4.6	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	20.5	1.5			
	Free field				360° Up 270°	.44 .34 .74	1.3 .9 1.4
	Pad				360° Up 270°	.30 .35 .66	1.5 .4 1.6
	Coalinga Oil City (USGS)	36.229°N 120.360°W	20.5	1.4	360° Up 270°	.22 .10 .14	.5 1 peak 1.0
	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	21.8	2.7	360° Up 270°	.05 .05 .07	--- --- ---

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 May 1983 0902:17.3 G.m.t. -continued-	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	20.4	1.5			
	Pad				360° Up 270°	.49 .10 .32	.8 .2 .6
	Free field				360° Up 270°	.50 .12 .35	.9 .1 .6
	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	20.9	1.7	360° Up 270°	.14 .07 .08	.3 --- ---
	Coalinga Skunk Hollow (USGS) ³	36.275°N 120.306°W	(²)	1.4	360° Up 270°	.06 .08 .10	--- --- 1 peak
	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	21.4	2.8			
	Basement				135° Up 045°	.05 .04 .06	--- --- ---
	1st floor				135° Up 045°	.04 .04 .07	--- --- ---
	Roof				135° Up 045°	.08 .04 .22	--- --- .8
	Switchyard				135° Up 045°	.07 .09 .11	--- --- 1 peak
	Free field				360° Up 270°	.04 .05 .09	--- --- ---
24 May 1983 0904 G.m.t. Central Calif. Epicenter and magnitude unknown	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	.5	2.6			
	Switchyard					(1)	
	Free field					(1)	
24 May 1983- 25 May 1983 Central Calif. Epicenter and magnitude unknown	Coalinga Oil City (USGS)	36.229°N 120.360°W	(²)	1.9		(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
25 May 1983 0851 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	53.4	1.1		(1)	
27 May 1983 1125:18.3 G.m.t. Southern Calif. 33.650N, 116.733W Magnitude 3.7	Hurkey Creek Park (USGS)	33.67° N 116.68° W	3.8	1.8	135° Up 045°	.05 .01 .04	--- --- ---
30 May 1983 0321:52.2 G.m.t. Central Calif. 36.233N, 120.384W Magnitude 3.3	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	55.4	(2)			
	Free field					(1)	
	Pad					(1)	
11 June 1983 0309:52.1 G.m.t. Central Calif. 36.244N, 120.459W Magnitude 5.0	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	1.0	(2)			
	Free field					(1)	
	Switchyard				135° Up 045°	.04 .02 .05	--- --- ---
	Basement					(1)	
	1st floor					(1)	
	Roof				135° Up 045°	.04 .03 .14	--- --- .7
	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	57.8	3.5			
	Free field				360° Up 270°	.06 .02 .06	--- --- ---
	Pad					(1)	
	Coalinga Transmitter Hill (USGS) ³	36.249°N 120.343°W	(2)	2.8	360° Up 270°	.06 .04 .06	--- --- ---
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	.9	(2)			
	Free field					(2)	
	Pad					(2)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
11 June 1983 0309:52.1 G.m.t. -continued-	Coalinga Oil City (USGS)	36.229°N 120.360°W	55.8	1.9	360°	.09	---
					Up	.09	---
					270°	.09	---
	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	1.3	2.0	360°	.20	.2
					Up	.07	---
					270°	.14	.1
12 June 1983 0131:27.1 G.m.t. Central Calif. 36.114N, 120.303W Magnitude 4.0	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	31.6	2.9	360°	.05	---
					Up	.04	---
					270°	.06	---
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	32.2	3.1			
	Free field				360°	.06	---
					Up	.02	---
					270°	.03	---
	Pad				360°	.07	---
					Up	.01	---
					270°	.02	---
	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	(2)	2.4	360°	.07	---
					Up	.02	---
					270°	.08	---
25 May 1983- 13 June 1983 Central Calif. Epicenters and magnitudes unknown	Coalinga Skunk Hollow (USGS)	36.275°N 120.306°W	(2)	2.2		(1)	
Note: One additional record ¹ recovered at Skunk Hollow.							
12 September 1982- 22 June 1983 Cent. Washington Epicenter and magnitude unknown	Mud Mountain Dam (ACOE)	47.14° N 121.93° W	(2)	(2)			
	Toe					(1)	
24 June 1983 1047:35.5 G.m.t. Central Calif. 36.553N, 121.230W Magnitude 3.2	Bear Valley Station 1 Fire Station (USGS)	36.573°N 121.184°W	36.4	.6		(1)	
24 June 1982- 26 June 1983 Alaska Epicenter and magnitude unknown	Bradley Lake (USGS)	59.76° N 150.89° W	(2)	(2)	360° Up 270°	.10 .03 .05	1 peak --- ---
28 June 1983 0325:17.0 G.m.t. Alaska 60.219N, 141.287W Magnitude 5.9	Guyot Hills (USGS)	60.146°N 141.472°W	27.2	2.5	360° Up 270°	.12 .06 .10	1 peak --- .1

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
10 December 1982- 28 June 1983 Nevada Epicenters and magnitudes unknown	Hoover Dam Nevada (USBR) Gallery Right abutment Upper intake tower	36.02° N 114.74° W	(2)	(2)		135° Up 045° 315° Up 225° 315° Up 225°	.02 .03 .14 (1) .06 .04 .06 .07 .03 .11 1 peak 1 peak
Note: Two additional records ¹ recovered at Gallery.							
29 June 1983 0808:36.4 G.m.t. Southern Calif. 32.633N, 117.383W Magnitude 4.6	Mission Power Station San Diego (SDGE) ³	32.788°N 117.138°W	(2)	(2)			(1)
3 July 1983 1840:08.2 G.m.t. Central Calif. 37.535N, 118.858W Magnitude 5.2	Long Valley Dam Lake Crowley (USGS) ³ Left abutment	37.588°N 118.705°W	(2)	2.4		275° Up 185°	.08 .05 .07 ---
	Long Valley Fire Station (USGS)	37.570°N 118.752°W	12.3	(2)	037° Up 307°	.05 .02 .04	---
	Terminus Dam (ACOE)	36.420°N 119.000°W	51.5	(2)			
	Auxiliary Center crest						(1)
9 July 1983 0740:50.9 G.m.t. Central Calif. 36.237N, 120.409W Magnitude 5.2	Pleasant Valley Pump Plant (USBR) Basement 1st floor Roof Switchyard	36.308°N 120.249°W	56.2	3.0		135° Up 045° 135° Up 045°	.03 .04 .10 .03 .03 .06 ---

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
9 July 1983 0740:50.9 G.m.t. -continued-	Pleasant Valley Pump Plant (continued) Free field					(1)	
	Coalinga Anticline Ridge (USGS) ³	36.233°N 120.333°W	(2)	1.7			
	Free field				360° Up 270°	.28 .12 .39	2.2 .5 2.5
	Pad				360° Up 270°	.24 .11 .42	2.4 1.7 2.6
	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	55.3	2.1	360° Up 270°	.14 .08 .10	2 peaks --- 1 peak
	Coalinga Oil City (USGS)	36.229°N 120.360°W	53.8	1.5	360° Up 270°	.37 .21 .38	2.4 2.1 2.5
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	54.1	2.0			
	Free field				360° Up 270°	.09 .07 .09	--- --- ---
	Pad				360° Up 270°	.09 .07 .09	--- --- ---
	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	54.5	2.2	360° Up 270°	.20 .07 .12	2 peaks --- .2
	Coalinga Skunk Hollow (USGS) ³	36.275°N 120.306°W	(2)	2.1	360° Up 270°	.14 .15 .17	2 peaks 1.8 1 peak
	Coalinga Transmitter Hill (USGS)	36.249°N 120.343°W	54.1	1.6	360° Up 270°	.19 .12 .20	2.2 1 peak 2.5
9 July 1983 2351:52.4 G.m.t. Central Calif. 36.312N, 120.393W Magnitude 3.4	Coalinga Oil City (USGS)	36.229°N 120.360°W	55.2	(2)	360° Up 270°	.06 .02 .06	--- --- ---
12 July 1983 1510:03.4 G.m.t. Alaska 61.031N, 147.286W Magnitude 6.4	Valdez City Hall (USGS) ³	61.137°N 146.362°W	(2)	6.0	360° Up 270°	.12 .07 .13	1.5 --- 1.2

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
12 July 1983 1510:03.4 G.m.t. -continued-	Valdez High School (USGS) ³	61.143°N 146.355°W	(2)	4.1	180° Up 090°	.32 .10 .17	1.3 1 peak 1.0
	Mt. Hamilton (USGS) ³	60.337°N 144.261°W	(2)	(2)		(1)	
	Anchorage Alaska Hospital (USGS) ³	61.21° N 149.82° W	(2)	14.4			
	1st floor					(1)	
	4th floor					(1)	
	7th floor				225° Up 135°	.07 .03 .08	--- --- ---
	Anchorage Federal Building (USGS) ³	61.216°N 149.883°W	(2)	18.0			
	Basement					(1)	
	Anchorage USGS Building (USGS) ³	61.223°N 149.892°W	(2)	(2)			
	Basement					(1)	
	Anchorage Westward Hotel (USGS) ³	61.220°N 149.892°W	(2)	18.8			
	Basement					(1)	
	22d level (roof)				135° Up 045°	.05 .06 .07	--- --- ---
13 July 1983 2116:48.2 G.m.t. Southern Calif. 33.200N, 115.533W Magnitude 4.0	Salton Sea Wildlife Refuge (USGS)	33.18° N 115.62° W	50.5	1.6		(1)	
14 July 1983 1525:42.8 G.m.t. Central Calif. 36.213N, 120.293W Magnitude 3.3	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	43.9	1.6	360° Up 270°	.06 .04 .07	--- --- ---
17 July 1983 2158:08.0 G.m.t. Central Calif. 36.261N, 120.336W Magnitude 3.2	Coalinga Oil City (USGS)	36.229°N 120.360°W	13.7	(2)		(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
18 July 1983 1928:05.2 G.m.t. Central Calif. 36.166N, 120.292W Magnitude 3.7	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	8.9	2.3	360° Up 270°	.09 .02 .07	--- --- ---
22 July 1983 0239:53.7 G.m.t. Central Calif. 36.228N, 120.416W Magnitude 5.9	Pleasant Valley Pump Plant (USBR) ³	36.308°N 120.249°W	(2)	3.6			
	Basement				135° Up 045°	.13 .08 .43	1 peak --- .3
	1st floor				135° Up 045°	.12 .08 .47	1 peak --- .5
	Roof				135° Up 045°	.25 .20 1.10	.9 1.3 6.0
	Switchyard				135° Up 045°	.38 .29 .58	.9 .5 .6
	Free field				360° Up 270°	.41 .12 .21	.9 2 peaks 1 peak
	Coalinga Anticline Ridge (USGS) ³	36.233°N 120.333°W	(2)	1.6			
	Pad				360° Up 270°	.49 .80 1.17	4.1 2.2 4.1
	Coalinga Burnett Company (USGS) ³	36.138°N 120.357°W	(2)	2.4	360° Up 270°	.34 .27 .26	5.0 2.6 6.6
	Coalinga Oil City (USGS) ³	36.229°N 120.360°W	(2)	1.4	360° Up 270°	.40 .37 .85	4.3 4.1 4.6
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	57.6	2.1			
	Free field				360° Up 270°	.20 .13 .22	1.7 1.6 2.1
	Pad				360° Up 270°	.22 .17 .21	1.7 2.5 2.1

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)	
22 July 1983 0239:53.7 G.m.t. -continued-	Coalinga	36.209°N	57.6	2.7	360°	.30	2.2	
	Palmer Avenue	120.292°W			Up	.22	3.9	
	(USGS)				270°	.28	2.1	
	Coalinga	36.275°N	(2)	3.1	360°	.23	1.5	
	Skunk Hollow	120.306°W			Up	.24	1.7	
	(USGS) ³				270°	.39	1.7	
22 July 1983 0249:09.6 G.m.t. Central Calif. 36.211N, 120.422W Magnitude 3.8	Coalinga	36.249°N	(2)	1.7	360°	.96	4.4	
	Transmitter Hill	120.343°W			Up	.50	2.6	
	(USGS) ³				270°	.75	4.1	
	Coalinga	36.209°N	13.3	2.5		(1)		
	Palmer Avenue	120.292°W						
	(USGS)							
22 July 1983 0329:02.6 G.m.t. Central Calif. 36.233N, 120.432W Magnitude 3.5	Coalinga	36.229°N	3.8	1.7	360°	.05	---	
	Oil City	120.360°W			Up	.04	---	
	(USGS)				270°	.10	1 peak	
	22 July 1983 0240 - 0342 G.m.t. Central Calif. Epicenter and magnitude unknown	Coalinga	36.233°N	(2)	(2)			
		Anticline Ridge	120.333°W					
		(USGS) ³						
Pad						(1)		
Coalinga		36.138°N	(2)	.7	360°	.09	---	
Burnett Company		120.357°W			Up	.03	---	
(USGS) ³					270°	.07	---	
Note: One additional record ¹ recovered at the Burnett Company								
Coalinga		36.249°N	(2)	(2)		(1)		
Transmitter Hill		120.343°W						
(USGS) ³								
Coalinga		36.229°N	(2)	(2)	360°	.09	---	
Oil City	120.360°W	Up			.05	---		
(USGS) ³		270°			.10	1 peak		
Note: One additional record ¹ recovered at Oil City.								
22 July 1983 0343:00.6 G.m.t. Central Calif. 36.210N, 120.413W Magnitude 5.0	Pleasant Valley	36.308°N	6.3	3.3				
	Pump Plant	120.249°W						
	(USBR)							
	Basement					(1)		
	1st floor					(1)		
	Roof				135°	.04	---	
					Up	.03	---	
				045°	.11	.5		

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
22 July 1983 0343:00.6 G.m.t. -continued-	Pleasant Valley Pump Plant (continued) Switchyard					(1)	
	Free field					(1)	
	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	4.6	2.1	360° Up 270°	.17 .04 .11	2 peaks --- .3
	Coalinga Anticline Ridge (USGS) ³	36.233°N 120.333°W	(2)	1.9			
	Pad				360° Up 270°	.34 .22 .51	1.6 1 peak 1.6
	Coalinga Oil City (USGS)	36.229°N 120.360°W	3.6	1.6	360° Up 270°	.25 .12 .30	1.2 1 peak .7
Note: One additional record ¹ recovered at Oil City between 0343 G.m.t. July 22 and 2152 G.m.t. July 25.							
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	4.1	2.2			
	Free field				360° Up 270°	.13 .04 .14	1 peak --- 1 peak
	Pad				360° Up 270°	.13 .04 .16	1 peak --- .3
	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	4.2	2.3	360° Up 270°	.30 .08 .33	.6 --- .4
	Coalinga Skunk Hollow (USGS) ³	36.275°N 120.306°W	(2)	2.5	360° Up 270°	.09 .04 .15	--- --- .2
Note: One additional record ¹ recovered at Skunk Hollow.							
	Coalinga Transmitter Hill (USGS)	36.249°N 120.343°W	3.9	1.8	360° Up 270°	.30 .08 .25	1.2 --- .9
	Lake Success Dam (ACOE)	36.061°N 118.920°W	39.1	(2)			
	Right crest					(1)	
	Right abutment					(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
22 July 1983 0343:00.6 G.m.t. -continued-	Lake Success Dam (continued)						
	Slope					(1)	
	Downstream					(1)	
	Left crest					(1)	
	Left abutment					(1)	
	Note: Three each additional records ¹ recovered at left crest, left abutment, slope, downstream, right crest, and right abutment between May 3 and July 22.						
25 July 1983 2231:39.2 G.m.t. Central Calif. 36.215N, 120.406W Magnitude 5.4	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	44.4	3.6			
	Basement					(1)	
	1st floor					(1)	
	Roof				135° Up 045°	.03 .03 .15	--- --- 4.6
	Switchyard					(1)	
	Free field					(1)	
	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	42.0	1.9			
	Free field				360° Up 270°	.59 .30 .55	2.4 .8 2.6
	Pad				360° Up 270°	.43 .29 .56	3.1 .9 2.4
	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	43.0	2.4	360° Up 270°	.39 .26 .66	1.0 1.6 1.0
	Coalinga Oil City (USGS)	36.229°N 120.360°W	42.1	1.5	360° Up 270°	.24 .22 .37	1.3 2.1 2.1
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	42.5	2.1			
	Free field				360° Up 270°	.10 .06 .15	1 peak --- .2
	Pad				360° Up 270°	.12 .06 .18	2 peaks --- .2

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
25 July 1983 2231:39.2 G.m.t. -continued-	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	42.7	2.4	360° Up 270°	.15 .17 .18	.5 1.9 .6
	Coalinga Skunk Hollow (USGS) ³	36.275°N 120.306°W	(2)	2.4	360° Up 270°	.06 .09 .14	--- --- .3
	Coalinga Transmitter Hill (USGS) ³	36.249°N 120.343°W	(2)	1.9	360° Up 270°	.39 .12 .28	1.5 1 peak 1.4
26 August 1982- 27 July 1983 Alaska Epicenter and magnitude unknown	Icy Bay Gulf Timber Company (USGS)	59.968°N 141.643°W	(2)	6.1	180° Up 090°	.20 .02 .20	1.0 --- 2 peaks
30 July 1983 0126:16.7 G.m.t. Eastern Calif. 37.582N, 118.772W Magnitude 3.9	Long Valley Dam Lake Crowley (USGS) ³ Left abutment	37.588°N 118.705°W	(2)	(2)			(1)
	Long Valley Fire Station (USGS)	37.570°N 118.752°W	17.9	.3			(1)
30 July 1983 0416:39.7 G.m.t. Eastern Calif. 37.575N, 118.768W Magnitude 3.6	Long Valley Dam Lake Crowley (USGS) ³ Left abutment	37.588°N 118.705°W	(2)	(2)			(1)
31 July 1983 1643:52.2 G.m.t. Central Calif. 36.215N, 110.272W Magnitude 3.4	Coalinga Oil City (USGS)	36.229°N 120.360°W	54.7	(2)			(1)
8 August 1983 1313:09.5 G.m.t. Central Calif. 36.575N, 121.065W Magnitude 4.0	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	11.9	1.7	130° Up 040°	.06 .03 .06	--- --- ---
	Bear Valley Station 6 James Ranch (USGS)	36.504°N 121.101°W	12.5	2.5	310° Up 220°	.06 .04 .06	--- --- ---
	Bear Valley Station 7 Pinnacles Nat'l Mon. (USGS)	36.483°N 121.180°W	12.9	2.2	310° Up 220°	.04 .02 .06	--- --- ---
	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569°N 121.043°W	11.0	1.5	310° Up 220°	.32 .16 .18	.7 1.1 .8

Note: Two additional records¹ between August 8 and December 7 recovered at Upper Butts Ranch.

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
8 August 1983 1313:09.5 G.m.t. -continued-	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	12.5	2.1	310° Up 220°	.07 .04 .06	--- --- ---
14 August 1983 1243:36.5 G.m.t. Central Calif. 36.297N, 120.387W Magnitude 4.2	Coalinga Oil City (USGS)	36.229°N 120.360°W	38.7	1.9	360° Up 270°	.09 .03 .09	--- --- ---
	Coalinga Transmitter Hill (USGS)	36.249°N 120.343°W	41.8	(2)		(1)	
	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	40.8	(2)			
	Free field					(1)	
	Pad					(1)	
	North					(1)	
	Coalinga Skunk Hollow (USGS) ³	36.275°N 120.306°W	(2)	1.4		(1)	
	Pleasant Valley Pump Plant (USBR)	36.308°N 120.249°W	40.0	3.4			
	Basement					(1)	
	1st floor					(1)	
	Roof					(1)	
	Switchyard					(1)	
	Slope					(1)	
	Free field					(1)	
6 August 1982- 16 August 1983 Alaska Epicenters and magnitudes unknown	Cordova Airport Flight Center (USGS)	60.48° N 145.40° W	(2)	(2)		(1)	
	Note: One additional record ¹ recovered at the Cordova Airport.						
28 May 1983- 24 August 1983 Northern Calif. Epicenter and magnitude unknown	Eel River Valley Array Centerville Beach (USGS)	40.563°N 124.348°W	(2)	6.2		(1)	
24 August 1983 1336:30.9 G.m.t. Northern Calif. 40.305N, 124.767W Magnitude 5.5	Eel River Valley Array Centerville Beach (USGS) ³	40.563°N 124.348°W	(2)	6.8	360° Up 270°	.18 .06 .14	2 peaks --- 2 peaks

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 August 1983 1336:30.9 G.m.t. -continued-	Eel River Valley Array Fortuna Fire Station (USGS) ³	40.599°N 124.154°W	(2)	9.6	360° Up 270°	.09 .02 .08	--- --- ---
	Eel River Valley Array Bunker Hill FAA (USGS) ³	40.498°N 124.294°W	(2)	6.2	360° Up 270°	.05 .02 .04	--- --- ---
26 August 1983 1957:41.9 G.m.t. Central Calif. 36.195N, 120.358W Magnitude 3.8	Coalinga Oil City (USGS)	36.229°N 120.360°W	43.7	2.0		(1)	
29 August 1983 1010:31.0 G.m.t. Central Calif. 35.830N, 121.353W Magnitude 5.2	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	46.5	8.4		(1)	
13 June 1983- 3 September 1983 Alaska Epicenter and magnitude unknown	Whittier Dock Building (USGS)	60.778°N 148.692°W	(2)	9.7	360° Up 270°	.05 .05 .06	--- --- ---
7 September 1983 1922:05.1 G.m.t. Southern Alaska 60.976N, 147.500W Magnitude 6.2	Valdez Valdez City Hall (USGS) ³	61.137°N 146.362°W	(2)	4.7	360° Up 270°	.06 .04 .05	--- --- ---
	Valdez Valdez Dock Company (USGS) ³	61.13° N 146.36° W	(2)	(2)	030° Up 300°	.04 .05 .09	--- --- ---
	Valdez Valdez High School (USGS) ³	61.143°N 146.355°W	(2)	6.1	180° Up 090°	.08 .06 .06	--- --- ---
	Anchorage Alaska Hospital (USGS) ³	61.21° N 149.82° W	(2)	14.6			
	1st floor					(1)	
	4th floor					(1)	
	7th floor				225° Up 135°	.07 .03 .09	--- --- ---
	Anchorage Federal Building (USGS) ³	61.216°N 149.883°W	(2)	(2)			
	Basement					(1)	
	Anchorage Gould Hall (USGS) ³	61.189°N 149.801°W	(2)	(2)		(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
7 September 1983 1922:05.1 G.m.t. -continued-	Anchorage USGS Building (USGS) ³	61.223°N 149.892°W	(2)	(2)			
	Basement					(1)	
	Anchorage Westward Hotel (USGS) ³	61.220°N 149.892°W	(2)	(2)			
	Basement					(1)	
	22d level (roof)				135° Up 045°	.06 .06 .07	--- --- ---
	Whittier Dock Building (USGS) ³	60.778°N 148.692°W	(2)	8.7	360° Up 270°	.08 .07 .08	--- --- ---
	Note: Two additional records ¹ recovered at Whittier Dock Building.						
5 May 1983- 9 September 1983 Central Calif. Epicenter and magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	(2)	2.0	310° Up 220°	.07 .02 .04	--- --- ---
9 September 1983 Time unknown Central Calif. Epicenter and magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	16.2	(2)		(1)	
9 September 1983 0916:14.9 G.m.t. Central Calif. 36.230N, 120.262W Magnitude 5.3	Pleasant Valley Pump Plant (USBR/USGS)	36.308°N 120.249°W	17.6	2.9			
	1st floor					(1)	
	Roof				135° Up 045°	.06 .06 .11	--- --- .9
	Switchyard				135° Up 045°	.07 .08 .08	--- --- ---
	Free field				315° Up 225°	.06 .05 .04	--- --- ---
	Slope				315° Up 225°	.05 .07 .07	--- --- ---
	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	18.5	3.6		(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
9 September 1983 0916:14.9 G.m.t. -continued-	Coalinga Oil City (USGS)	36.229°N	18.0	1.2	360°	.07	---
		120.360°W			Up	.04	---
					270°	.09	---
	Coalinga Transmitter Hill (USGS) ³	36.249°N	(2)	1.5		(1)	
		120.343°W					
	Coalinga Skunk Hollow (USGS) ³	36.275°N	(2)	2.3	360°	.09	---
		120.306°W			Up	.05	---
					270°	.10	1 peak
	Coalinga Anticline Ridge (USGS)	36.233°N	16.8	1.8			
		120.333°W					
	Free field				360°	.23	1.7
					Up	.05	---
					270°	.18	2.4
	Pad				360°	.20	1.4
					Up	.09	---
					270°	.18	1.5
	North				360°	.29	1.8
					Up	.06	---
					270°	.17	2.0
	South				360°	.08	---
					Up	.04	---
					270°	.06	---
9 September 1983 0921:33.3 G.m.t. Central Calif. 36.235N, 120.277W Magnitude 3.5	Coalinga, Oil Fields Fire Station (USGS) ³	36.247°N	(2)	1.5			
		120.314°W					
	Free field				360°	.14	1.6
					Up	.09	---
					270°	.09	---
	Pad				360°	.17	1.5
					Up	.07	---
					270°	.12	2 peaks
11 September 1983 1148:08.0 G.m.t. Central Calif. 36.230N, 120.388W Magnitude 4.3	Pleasant Valley Pump Plant (USBR)	36.308°N	40.0	(2)			
		120.249°W					
	Switchyard					(1)	
	Pleasant Valley Pump Plant (USBR)	36.308°N	9.6	2.9			
		120.249°W					
	Switchyard					(1)	
	Slope					(1)	
	Free field					(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
11 September 1983 1148:08.0 G.m.t. -continued-	Coalinga Burnett Company (USGS)	36.138°N 120.357°W	10.5	2.3	360°	.25	.3
					Up	.09	---
					270°	.31	.3
	Coalinga, Oil Fields Fire Station (USGS)	36.247°N 120.314°W	11.0	(2)			
	Free field					(1)	
	Pad					(1)	
	Coalinga Anticline Ridge (USGS)	36.233°N 120.333°W	10.7	.7			
	Free field				360°	.10	1 peak
					Up	.03	---
					270°	.08	---
	Pad				360°	.09	---
					Up	.04	---
					270°	.10	1 peak
	North				360°	.06	---
					Up	.03	---
					270°	.06	---
	South					(1)	
	Coalinga Oil City (USGS)	36.229°N 120.360°W	9.4	1.6	360°	.09	---
					Up	.03	---
					270°	.09	---
	Coalinga Skunk Hollow (USGS) ³	36.275°N 120.306°W	(2)	2.1	360°	.05	---
					Up	.03	---
					270°	.07	---
	Coalinga Transmitter Hill (USGS) ³	36.249°N 120.343°W	(2)	(2)	360°	.05	---
					Up	.02	---
					270°	.06	---
14 September 1983 1556 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	10.9	(2)		(1)	
27 July 1983- 16 September 1983 Central Calif. Epicenters and magnitudes unknown	Coalinga Palmer Avenue (USGS)	36.209°N 120.292°W	(2)	1.5	360°	.33	2.1
					Up	.13	1.1
					270°	.21	1.5
	Note: 3 additional records ¹ recovered at Palmer Avenue.						
18 September 1983 1434:32.5 G.m.t. Central Calif. 36.300N, 120.283W Magnitude 3.7	Coalinga Oil City (USGS)	36.229°N 120.360°W	37.1	(2)		(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
14 September 1982- 21 September 1983 Alaska Epicenters and magnitudes unknown	Fairbanks Observatory (USGS)	64.86° N 147.83° W	(2)	(2)		(1)	
	Fairbanks Duckering Hall (USGS)	64.85° N 147.82° W	(2)	(2)		(1)	
	Talkeetna (USGS)	62.30° N 150.10° W	(2)	(2)		(1)	
Note: Three additional records ¹ recovered at Talkeetna.							
21 September 1983 2335 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	58.0	(2)		(1)	
4 October 1983 0455:59.2 G.m.t. Central California 36.808N, 121.532W Magnitude 3.4	San Justo Damsite (USBR)	36.827°N 121.445°W	4.5	(2)			
	Right abutment (dike)					(1)	
8 September 1983- 10 October 1983 Southern Alaska Epicenters and magnitudes unknown	Whittier Dock Building (USGS)	60.778°N 148.692°W	(2)	(2)		(1)	
Note: One additional record ¹ recovered at Whittier Dock Building.							
28 October 1983 1406:06.6 G.m.t. Eastern Idaho 44.058N, 113.857W Magnitude 6.2	Boise, Idaho VA Hospital (VA) ³	43.62° N 116.19° W	(2)	18.3		(1)	
	Ririe Dam, Idaho (USBR) ³	43.59° N 111.75° W	(2)	(2)			
	Upper tower					(1)	
	Lower tower					(1)	
	Crest					(1)	
	Abutment					(1)	
	Downstream					(1)	
29 October 1983 0637:59.9 G.m.t. Southern Calif. 33.967N, 116.573W Magnitude 3.6	Whitewater Canyon Trout Farm (USGS)	33.99° N 116.66° W	7.1	(2)		(1)	
29 October 1983 2329:11.5 G.m.t. Western Idaho 44.231N, 114.105W Magnitude 5.8	Dickey, Idaho Smith Ranch (USGS)	44.134°N 113.901°W	17.4	1.4	236° Up 146°	.06 .04 .08	--- --- ---

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
29 October 1983 2339:05.5 G.m.t. Western Idaho 44.281N, 114.115W Magnitude 5.4	Dickey, Idaho Smith Ranch (USGS)	44.134°N 113.901°W	12.8	(2)		(1)	
30 October 1983 0124:51.2 G.m.t. Eastern Idaho 44.083N, 113.970W Magnitude 4.8	Dickey, Idaho Smith Ranch (USGS)	44.134°N 113.901°W	54.4	1.8	236° Up 146°	.05 .05 .08	--- --- ---
30 October 1983 0534 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	17.9	(2)		(1)	
30 October 1983 1225 G.m.t. Eastern Idaho Epicenter and Magnitude unknown	Dickey, Idaho Smith Ranch (USGS)	44.134°N 113.901°W	54.5	1.1		(1)	
30 October 1983 1749:20.3 G.m.t. Eastern Idaho 44.16N, 113.95W Magnitude 3.8	Dickey, Idaho Smith Ranch (USGS)	44.134°N 113.901°W	22.1	(2)		(1)	
5 November 1983 0353 G.m.t. Eastern Idaho Epicenter and magnitude unknown	Dickey, Idaho Smith Ranch (USGS)	44.134°N 113.901°W	36.1	(2)		(1)	
6 November 1983 2104:48.8 G.m.t. Eastern Idaho 44.145N, 113.966W Magnitude 4.6	Dickey, Idaho Smith Ranch (USGS)	44.134°N 113.901°W	52.5	1.0		(1)	
	Dickey, Idaho Whitworth Ranch (USGS)	44.062°N 113.831°W	53.5	(2)		(1)	
12 November 1983 2032 G.m.t. Eastern Idaho Epicenter and magnitude unknown	Dickey, Idaho Hatch Ranch (USGS)	44.338°N 114.051°W	38.2	(2)		(1)	
27 January 1983- 16 November 1983 Hawaii Epicenters and magnitudes unknown	Hawaii National Park Wahaula Center (USGS)	19.329°N 155.031°W	(2)	1.5	145° Up 055°	.12 .08 .07	1 peak --- ---
			(2)	2.0	145° Up 055°	.06 .03 .03	--- --- ---

Note: Three additional records¹ recovered at Wahaula Maintenance Center.

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
27 January 1983- 16 November 1983 -continued-	Mauna Loa Weather Observatory (USGS)	19.539°N 155.580°W	(2)	(2)		(1)	
Note: Two additional records ¹ recovered at Mauna Loa Observatory.							
	Hilo Fish and Wildlife (USGS)	19.731°N 155.100°W	(2)	(2)	360° Up 270°	.12 .03 .06	.6 --- ---
	Honokaa Fire Station (USGS)	20.080°N 155.465°W	(2)	(2)		(1)	
Note: One additional record ¹ recovered at Honokaa Fire Station.							
	Mauna Kea State Park (USGS)	19.752°N 155.530°W	(2)	(2)		(1)	
Note: One additional record ¹ recovered at Mauna Kea State Park.							
	Pahala Kau Hospital (USGS)	19.20° N 155.47° W	(2)	(2)		(1)	
	Waiohinu Ka'u Baseyard (USGS)	19.070°N 155.615°W	(2)	(2)		(1)	
Note: One additional record ¹ recovered at Ka'u baseyard.							
	Waimea Fire Station (USGS)	20.03° N 155.66° W	(2)	(2)		(1)	
16 November 1983 1613:00.0 G.m.t. Southern Hawaii 19.430N, 155.454W Magnitude 6.4	Hawaii National Park Wahaula Center (USGS) ³	19.329°N 155.031°W	(2)	5.1	145° Up 055°	.12 .05 .07	1 peak --- ---
	Hawaii National Park Volcano Observatory (USGS) ³	19.423°N 155.291°W	(2)	2.4	360° Up 270°	.87 .21 .39	8.5 6.6 8.2
	Hilo Sewage Plant (USGS) ³	19.734°N 155.050°W	(2)	4.3	333° Up 243°	.10 .02 .07	1 peak --- ---
	Hilo University of Hawaii (USGS) ³	19.707°N 155.083°W	(2)	3.3	085° Up 355°	.07 .04 .11	--- --- 1 peak
	Kailua-Kona Fire Station (USGS) ³	19.649°N 155.996°W	(2)	5.0	312° Up 222°	.04 .01 .03	--- --- ---
	Kealahakua Kona Hospital (USGS) ³	19.523°N 155.879°W	(2)	5.7	346° Up 256°	.10 .07 .10	1 peak --- 1 peak

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
16 November 1983 1613:00.0 G.m.t. -continued-	Mauna Kea State Park (USGS) ³	19.752°N 155.530°W	(2)	3.9	050° Up 320°	.17 .21 .26	5.4 3.5 7.1
	Kapa'au Kohala Police Station (USGS) ³	20.230°N 155.801°W	(2)	1.5	102° Up 012°	.07 .05 .09	--- --- ---
	Pahoa Fire Station (USGS) ³	19.498°N 154.951°W	(2)	7.0	087° Up 357°	.18 .07 .11	.4 --- 2 peaks
	Waimea Fire Station (USGS) ³	20.03° N 155.66° W	(2)	8.4	155° Up 065°	.13 .07 .08	2.1 --- ---
	Hilo Fish and Wildlife (USGS) ³	19.731°N 155.100°W	(2)	5.0	360° Up 270°	.40 .15 .50	6.3 1.3 10.5
	Honokaa Fire Station (USGS) ³	20.080°N 155.465°W	(2)	8.5	021° Up 291°	.25 .10 .37	4.5 .9 4.4
	Mauna Loa Weather Observatory (USGS) ³	19.539°N 155.580°W	(2)	2.0	030° Up 300°	.34 .46 .58	8.8 6.5 8.4
	Pahala Kau Hospital (USGS) ³	19.20° N 155.47° W	(2)	3.3	188° Up 098°	.59 .16 .31	8.5 5.8 7.7
	Waiohinu Ka'u Baseyard (USGS) ³	19.070°N 155.615°W	(2)	4.7	065° Up 335°	.19 .09 .17	3.8 --- 3.6
	Coalinga Oil City (USGS)	36.229°N 120.360°W	40.1	(2)		(1)	
20 November 1983 2202:36.4 G.m.t. Central Calif. 36.227N, 120.423W Magnitude 3.6							
26 November 1983 1932 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	5.3	1.4		(1)	
21 June 1983- 5 December 1983 Central Calif. Epicenter and magnitude unknown	Isabella Dam Auxiliary Dam (ACOE)	35.642°N 118.470°W	(2)	(2)			
	Right abutment					(1)	
	Right crest					(1)	
	Lower tower					(1)	

Table 1.--Summary of U.S. accelerograph records recovered during 1983 - continued

Earthquake	Station name (owner)	Station location	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
16 November 1983- 11 December 1983 Southern Hawaii Epicenters and magnitudes unknown	Hawaii National Park Volcano Observatory (USGS)	19.423°N 155.291°W	(2)	(2)		(1)	
	Note: One additional record ¹ recovered at the Observatory.						
	Hawaii National Park Wahaula Center (USGS)	19.329°N 155.031°W	(2)	1.6		(1)	
	Honokaa Fire Station (USGS)	20.080°N 155.465°W	(2)	3.3		(1)	
	Note: One additional record ¹ recovered at Honokaa Fire Station.						
	Mauna Kea State Park (USGS)	19.752°N 155.530°W	(2)	(2)		(1)	
	Mauna Loa Weather Observatory (USGS)	19.539°N 155.580°W	(2)	(2)	030° Up 300°	.09 .03 .08	--- --- ---
	Waimea Fire Station (USGS)	20.03° N 155.66° W	(2)	(2)		(1)	
	Note: One additional record ¹ recovered at Waimea Fire Station.						
12 December 1983 0455:36.4 G.m.t. Western Idaho 44.128N, 114.102W Magnitude 4.5	Dickey, Idaho Hatch Ranch (USGS)	44.338°N 114.051°W	39.2	1.4	360° Up 270°	.09 .04 .11	--- --- 1 peak
3 July 1983- 13 December 1983 Central California Epicenter and magnitude unknown	Terminus Dam (ACOE)	36.420°N 119.000°W	(2)	(2)		(1)	
	Main Dam (Right crest)						
15 December 1983 0613:34.8 G.m.t. Western Idaho 44.365N, 114.138W Magnitude 4.1	Dickey, Idaho Hatch Ranch (USGS)	44.338°N 114.051°W	38.4	1.2		(1)	
25 December 1983 0949:01.5 G.m.t. Eastern Idaho 44.143N, 113.924W Magnitude 3.6	Dickey, Idaho Smith Ranch (USGS)	44.134°N 113.903°W	3.7	1.2		(1)	

¹Less than 0.05 g at ground-level or less than 0.10 g at non-ground-level stations.²Questionable or undeterminable.³WWVB time code illegible, or instrument not equipped with a radio receiver;
correlation of accelerogram with event may be questionable.

